Offshore Wind Power Limited

West of Orkney Windfarm Offshore EIA Report

Volume 1, Chapter 14 - Commercial Fisheries

WO1-WOW-CON-EV-RP-0030: Approved by S.Kerr
Document Control 18/09/2023

ASSIGNMENT L100632-S05

DOCUMENT L-100632-S05-A-ESIA-014

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West of Orkney Windfarm

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REV	DATE	DESCRIPTION	ISSUED	CHECKED	APPROVED	CLIENT
A01	01/09/2023	Issued for Use	JG	DB	DB	OWPL
R02	27/01/2023	Re-Issued for Review	SP	DB	DB	OWPL
R01	06/01/2023	Issued for Review	SP	FdB	DB	OWPL

CONTENTS

14 COMMERCIAL FISHERIES

Chapter summary

This chapter of the Offshore Environmental Impact Assessment (EIA) Report assesses the potential effects from the offshore Project on commercial fisheries receptors. This includes direct, indirect, whole project assessment, cumulative, inter-related effects, inter-relationships, and transboundary effects.

A key aspect of the commercial fisheries impact assessment was the establishment of a Project specific Fisheries Working Group, involving representatives across various fisheries groups / organisations. Three Fisheries Working Group meetings were held at various stages of the EIA and were a key source of information for the assessment.

The baseline desktop study, supplemented with data received during consultation, through the Fisheries Working Group, identified the following key fleets as being operational in the commercial fisheries offshore study area: creels (pots and traps) operating across the commercial fisheries offshore study area, but mainly in the International Council of the Exploration of the Sea (ICES) rectangles 46E6 (which includes the offshore Export Cable Corridor (ECC)) and 46E5 (which includes the Option Agreement Area (OAA)), targeting brown crab and to a lesser extent, lobster and velvet crab; demersal trawls targeting haddock and cod, and to a lesser extent monkfish / anglerfish and squid, mainly concentrated in the east of the commercial fisheries offshore study area, relevant to the offshore ECC; scallop dredges operating mainly in ICES rectangles 46E5 and 46E6, relevant to the OAA and the offshore ECC; and non-UK fishing activity is expected to occur in the area, mostly Dutch and Norwegian pelagic vessels. The key species caught include brown crab, lobster, mackerel, whitefish (incl. haddock, cod, saithe), squid, mackerel, herring and king scallops.

The following impacts were identified as requiring assessment during construction, operation and maintenance and decommissioning:

- Displacement of fishing effort;
- Loss or restricted access to fishing grounds;
- Interference with fishing activity as a result of increased vessel traffic;
- Increased steaming times;
- Safety issues for fishing vessels; and
- Socio-economic impacts to commercial fisheries.

The assessment has taken account of embedded mitigation measures for the assessment of potential effects. The assessment concluded that the majority of impacts during construction will be highly localised, short term and not significant. However, there are potentially significant effects on creelers from temporary loss or restricted access to fishing grounds and displacement of fishing effort within the OAA during construction. Therefore, additional mitigation measures have been proposed to reduce the significance of these impacts. Offshore Wind Power Limited (OWPL) will continue dialog with the directly impacted fishers to develop cooperation agreements. Creeling is expected to resume in the Project area following construction. However, it is recognised that some larger vessels may not choose to resume to fish or transit through the OAA due to potential safety risks. Alternative fishing areas are available to these vessels that have a larger operational range compared to creelers. No significant inter-related effects or transboundary effects and no overlap with the effects of the onshore Project and the effects of the offshore Project on commercial fisheries receptors were identified.

OWPL intends to continue monitoring fisheries related issues throughout the Project, in the same manner it has to date, having built a strong relationship with the local fishing industry through the Fisheries Working Group, Fishing Industry Representatives (FIRs) and Fisheries Liaison Officers (FLOs). All mitigation will be summarised in a Fisheries Management and Mitigation Strategy (FMMS) an outline of which is provided with the application.

Engagement with the fishing industry during the EIA, indicated it would be appropriate to put resources into research projects into commercially important fish and shellfish species. This will ensure that research / monitoring resources are aligned with strategic initiatives, such as the Scottish Marine Energy Research (ScotMER) fish and fisheries evidence map.

14.1 Introduction

This chapter of the Offshore Environmental Impact Assessment (EIA) Report presents the commercial fisheries receptors of relevance to the offshore Project and assesses the potential impacts from the construction (including pre-construction), operation and maintenance, and decommissioning of the offshore Project on these receptors. Where required, mitigation is proposed, and the residual impacts and their significance are assessed. Potential cumulative and transboundary impacts are also considered. It should be noted that this chapter focuses on impacts relating to commercial fishing, and navigational safety impacts to vessels in transit are discussed in chapter 15: Shipping and navigation.

Table 14-1 below provides a list of all the supporting studies which relate to and should be read in conjunction with the commercial fisheries impact assessment. All supporting studies are appended to this Offshore EIA Report and issued on the accompanying Universal Serial Bus (USB).

Table 14-1 Supporting studies

DETAILS OF STUDY	LOCATIONS OF SUPPORTING STUDY
Commercial Fisheries Baseline Report	Offshore EIA Report, Supporting study (SS) 12: Commercial fisheries baseline report.
Navigational Risk Assessment	Offshore EIA Report, Supporting study (SS) 13: Navigational risk assessment.

The impact assessment presented herein draws upon information presented within other impact assessments within this Offshore EIA Report, including chapter 11: Fish and shellfish ecology, which assesses the impacts on fish and shellfish, including those of commercial importance; chapter 15: Shipping and navigation, which assesses the impacts on transiting fishing vessels; and chapter 19: Socio-economics, which assesses the indirect socio-economic impacts on associated with impacts on commercial fisheries receptors. Equally, the commercial fisheries impact assessment also informs other impact assessments. This interaction between the impacts assessed within different topic-specific chapters on a receptor is defined as an 'inter-relationship'. The chapters and impacts related to the assessment of potential effects on commercial fisheries are provided in Table 14-2.

Table 14-2 Commercial fisheries inter-relationships

CHAPTER	IMPACT	DESCRIPTION
Fish and shellfish ecology (chapter 11, Offshore EIA Report)	Impacts on commercially important fish and shellfish species.	Impacts on fish and shellfish from an ecological perspective could impact commercial fish stocks.
Shipping and navigation (chapter 15, Offshore EIA Report)	Direct impacts from safety issues through vessel-to-vessel collision, and vessel to structure allision.	In addition to safety issues associated with vessels actively fishing, safety issues arising from vessel-to-vessel collision, and vessel to structure allision are also relevant to fishing vessels.
	Direct impact on fishing vessel displacement.	Vessel displacement assessed in chapter 15: Shipping and navigation is also relevant to fishing vessels. This impact is discussed within this chapter with reference to increased steaming times.
Socio-economics (chapter 19, Offshore EIA Report)	Socio-economic impacts on the commercial fishing industry.	The direct impacts on commercial fisheries receptors assessed within this chapter may result in downstream socio-economic impacts (e.g. impacts on onshore processing facilities as a result of loss of landings). These impacts are assessed in chapter 19: Socio-economics.

Xodus Group Limited (Xodus) are the sole contributor to the commercial fisheries baseline description and impact assessment and has prepared this Offshore EIA Report chapter.

14.2 Legislation, policy and guidance

Over and above the legislation presented in chapter 3: Planning policy and legislative context, the following legislation, policy and guidance are relevant to the assessment of impacts from the offshore Project on commercial fisheries:

- Legislation:
  - Fisheries Act 2020: As a result of Brexit, the United Kingdom (UK) is now a sovereign independent coastal state with the right to manage the resources in its waters, which was established through the Fisheries Act 2020 (as amended). The UK Government is responsible for managing the UK's territorial waters (out to 12 nautical mile (nm)) and the Exclusive Economic Zone (EEZ) (out to 200 nm or the median line with other states). Non-UK vessels now require licences to fish in UK waters, as per Section 16 of the Fisheries Act 2020 and the Trade and Cooperation Agreement, which came into force on 1st January 2021. During a transition period up to 2026, licenced European Union (EU) vessels have access to fish specific Total Allowable Catch (TAC) and non-quota stocks in UK waters between the 12 nm and 200 nm limit and in areas where vessels have historic fishing rights between the 6 nm and 12 nm limit. Gradual changes to quota shares and TACs will occur between 2021 and 2026, including a gradual reduction of EU quota shares within UK waters and the transfer of 25% of EU's fishing rights in UK waters to UK fleets (European Commission, 2020; European Council, 2021). Following the transition period, annual consultations will take place to determine access for EU vessels in UK waters and quota shares.
- Policy:
  - Scotland's National Marine Plan (Marine Scotland, 2015): Sets out policies and objectives requiring marine planners and decision-makers to consider the potential impacts of development on fisheries interests and is useful to identify some of the key concerns and issues that should be addressed in any impact assessment. Policies under Chapter 6 Sea Fisheries (FISHERIES 1 – 5) and General Policies GEN 1 General Planning Principle, GEN 2 Economic Benefit, GEN 3 Social Benefit, GEN 4 Co-existence, and GEN 17 Fairness are considered relevant to commercial fisheries;
  - National Islands Plan (Scottish Government, 2019a): Sets out 13 objectives to address crucial sectors within island communities. Under Strategic Objective 2: to improve and promote sustainable economic development, there is a commitment to build on the Scotland's National Marine Plan to ensure that fishing and other economic activities stemming from the sea provide increased opportunities for island communities, but at the same time are pursued in a sustainable manner. During the consultation of the plan, participants highlighted many economic drivers, including the fishing industry, as important for sustainable economic development;
  - Pilot Pentland Firth and Orkney Waters Marine Spatial Plan (Marine Scotland, 2016): This non-statutory plan sets out an integrated planning policy framework to guide marine development, activities and management decisions, whilst ensuring the quality of the marine environment is protected; and
  - Orkney Islands Regional Marine Plan: Consultation Draft (Orkney Islands Council, Dec 2022): The Plan sets out an integrated planning policy framework to guide marine development and activities, whilst ensuring the quality of the marine environment is protected, and where appropriate, enhanced. It supports the delivery of a vision for Orkney's coastal and marine environment, economy and communities.

- Guidance:
  - Best practice guidance for fishing industry financial and economic impact assessments (UKFEN, 2012): The guidance provides information on the impacts to the fishing industry as a result of areas that are closed or restricted to normal fishing operations;
  - Options and opportunities for marine fisheries mitigation associated with wind farms (Blyth-Skyrme, 2010): The guidance provides useful measures to reduce the impacts for offshore floating wind and included fisheries representatives in the process;
  - Fishing and Submarine Cables – Working Together (ICPC, 2009): This guidance provides information that promotes high standards of reliability and safety in the submarine cable environment;
  - Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW) Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison (FLOWW, 2014): This guidance was developed to inform developers within the offshore renewable energy sector and the commercial fisheries community on the need for effective communication at all stages in the development and operation of offshore renewable energy installation;
  - FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendation for Fisheries Disruption Settlements and Community Funds (FLOWW, 2015): This guidance complements the above FLOWW document and is to be used to inform discussions in conjunction with this document;
  - Good Practice Guidance for Assessing Fisheries Displacement by Other Licensed Marine Activities (and associated Literature Review) (Scottish Government and Xodus Group Limited (2022)): These documents provide good practice guidance for assessing fisheries displacement by other licensed marine activities; and
  - Guidance on preparing a Fisheries Management and Mitigation Strategy (Draft) (Marine Scotland, 2020): This draft guidance document outlines the key considerations for the preparation of a Project-specific Fisheries Management and Mitigation Strategy ("FMMS") that should aim to facilitate effective coexistence between the offshore wind and commercial fisheries sectors.

14.3 Scoping and consultation

Stakeholder consultation has been ongoing throughout the EIA and has played an important part in ensuring the scope of the baseline characterisation and impact assessment are appropriate with respect to the Project and the requirements of the regulators and their advisors.

The Scoping Report, which covered the onshore and offshore Project was submitted to Scottish Ministers (via Marine Scotland - Licensing Operations Team (MS-LOT)[1]) and The Highland Council (THC) on 1st March 2022[2]. MS-LOT circulated the Scoping Report to consultees relevant to the offshore Project and a Scoping Opinion was received on 29th June 2022. Relevant comments from the Scoping Opinion to commercial fisheries are provided in Table 14-4

[1] *MS-LOT have since been renamed Marine Directorate - Licensing Operations Team (MD-LOT).*

[2] *The Scoping Report was also submitted to Orkney Islands Council (OIC), as the scoping exercise included consideration of power export to the Flotta Hydrogen Hub, however, this scope is not covered in this Offshore EIA Report and will be subject to separate Marine Licence and onshore planning applications.*

below, which provides a high-level response on how these comments have been addressed within the Offshore EIA Report.

Further consultation has been undertaken throughout the pre-application stage. Offshore Wind Power Limited (OWPL) set up a Fisheries Working Group to ensure a good working relationship with the fishing industry, discuss any issues arising and consult the fishing industry on relevant matters. Table 14-3 details the key points discussed at each working group. The group currently comprises representatives from the following groups / organisations:

- OWPL;
- Fishing Industry Representative (FIR);
- Scottish Fishermen's Federation (SFF);
- Scottish Whitefish Producers Association (SWFPA);
- Orkney Fishermen's Society (OFS);
- Orkney Fisheries Association (OFA);
- North East Coast Regional Inshore Fisheries Group (NECRIFG);
- Development Economics; and
- Xodus.

Table 14-3 Fisheries Working Group meetings during the EIA

CONSULTEE AND TYPE OF CONSULTATION	DATE	SUMMARY
Fisheries Working Group 1	5th May 2022	Key points discussed: • Importance of early engagement with the local fishing community; • Key data sources to inform the EIA (including their relevance to the offshore Project); • Fishing patterns and key fishing grounds in the vicinity of the offshore Project (including discrete areas beyond the shallow banks in deep waters and the area east of the 4-degree line (see chapter 4: Site selection and alternatives); and • Potential impacts from subsea cables (e.g. Electromagnetic Field (EMF) effects) on migratory brown crab and their larval developments (see chapter 11: Fish and shellfish ecology).
Fisheries Working Group 2	8th September 2022	Key points discussed: • Use of site specific data to inform the assessment of effects on fish and shellfish (e.g. the benthic survey and eDNA, see chapter 11: Fish and shellfish ecology); • The availability of inshore fisheries data (i.e. for vessels 10 m and under); – OWPL organised a separate meeting on the 25th October 2022 (see separate table entry) to discuss inshore fisheries data;

CONSULTEE AND TYPE OF CONSULTATION	DATE	SUMMARY
		• Potential socio-economic impacts on the fishing industry, including impacts on onshore fish and shellfish processing industry, considered in section 14.6.7 and chapter 19: Socio-economics[3]; and • Potential impacts on brown crab (e.g. EMF) in the context of the general decline of brown crab in the UK. It was raised that fishing effort in the region has increased without a corresponding increase in catch and potential causes of the decline were discussed, such as climate change.
Consultation on the proposed offshore ECC	8th September 2022	The site selection and offshore ECC routing process was discussed, including the environmental and technical constraints mapping (e.g. bathymetry, waves, tides, currents, seabed features, other sea users, third-party cables, environmental designated sites, fish and shellfish spawning grounds, technical and installation risks, and commercial fishing and shipping activity). Input from the Fisheries Working Group was requested, such as information on the potential overlap with key fishing grounds. It was agreed by the Fisheries Working Group that the offshore ECC options presented were appropriate for the Project based on the grid connection location and no immediate concerns were raised. However, the following points were raised for consideration, either for the EIA or future Project decisions: • The potential for cable exposure within the banks of the OAA, which will be considered as part of the Cable Burial Risk Assessment (CBRA); • The presence of squid spawning grounds off Whitten Head, approximately 25 kilometre (km) west of the landfall; • The presence of scallop dredging in the nearshore area and the potential effects of cable protection on this fishery, and the preference for the use of rock protection over concrete mattresses; and • The importance of the area to the east of the 4-degree line. The feedback above has been incorporated into the assessment in sections 14.4 and 14.6, where appropriate. Further information on the offshore ECC routing and Project design considerations is included in chapter 4: Site selection and consideration of alternatives.
Inshore fisheries data consultation (attended by representatives from the OFA and NECRIFG)	25th October 2022	The aim of the meeting was to discuss the suitability of the ScotMap data as a representation of the 10 m and under vessel fishing grounds with the OFA and NECRIFG. It was agreed in the meeting that ScotMap is the best available data source for 10 m and under fishing vessels in Scotland and the OFA confirmed that their members fishing locations were consistent with the

[3] A recommendation to use the soon-to-be published Scottish Government guidance on Community Benefits for Offshore Windfarms was made. However, at time of writing, this guidance has not been published.

CONSULTEE AND TYPE OF CONSULTATION	DATE	SUMMARY
		ScotMap data. The limitations of the ScotMap data are discussed in section 14.4.7.
Fisheries Working Group 3	10th January 2023	Key points discussed: • The Project team shared the Project Design Envelope and the worst case scenarios that form the basis of the commercial fisheries impact assessment (see section 14.5.5); and • The initial findings of the EIA were presented and any feedback from the Fisheries Working Group was discussed. The comments made by the Fisheries Working Group have informed the assessment of effects presented in section 14.6.

Table 14-4 Comments from the Scoping Opinion response relevant to commercial fisheries

CONSULTEE	COMMENT	RESPONSE
Scottish Ministers (via MS-LOT)	The Scottish Ministers are broadly content with the proposed study area identified within section 2.7.2 and figure 2-29 of the Scoping Report.	Noted, no response required.
Scottish Ministers (via MS-LOT)	In regard to data sources identified in Table 2-42 of the Scoping Report, the Scottish Ministers highlight that the 2020 landings data are now available though, in line with the MSS advice, these should be carefully interpreted due to the impacts of the Covid-19 pandemic. The Scottish Ministers also advise that the Developer considers the upcoming MSS advice in relation to 'best practice guidance for assessing fisheries displacement from licensed marine activities' once published.	Noted, the most recent landings data have been analysed and are described in section 14.4.4 and assessed in detail in SS12: Commercial fisheries baseline report. The limitation regarding the 2020 and 2021 landings data is noted and is acknowledged in section 14.4.7. To account for this, five years of landings data have been thoroughly analysed and assessed before use. The "Good Practice Guidance for Assessing Fisheries Displacement by Other Licensed Marine Activities" has been used to inform the impact assessment, as outlined in section 14.2 and 14.6.
Scottish Ministers (via MS-LOT)	In Table 2-45 of the Scoping Report the Developer summarises the impacts to commercial fisheries and proposes to scope in potential impacts for all phases of the Proposed Development. The Scottish Ministers broadly agree with the impacts currently scoped into the EIA Report however highlight the representations from the OFA and OIC, and advise that the Developer must carry out further consultation with fisheries representatives, to fully identify the impacts on commercial fisheries to be scoped into the EIA Report. The Scottish Ministers also advise that fisheries impacts will depend on which wind turbine technology is selected in the final design as there are major differences in potential impacts between	Extensive consultation with the fishing industry has been carried out through the Fisheries Working Group, as outlined in section 14.3. This consultation has informed the assessment of potential effects in section 14.6. The difference in fisheries impacts with Wind Turbine Generator (WTG) technology is noted. As outlined in section 14.5.5, the assessment considers the 'worst case scenario' for each impact, representing the offshore Project design option (or combination of options) predicted to result in the greatest potential impact. Floating technology has been removed from the Project

CONSULTEE	COMMENT	RESPONSE
	fixed foundations and floating wind turbines and draw attention to the MSS advice in this regard.	Design Envelope for the Section 36 Consent and Marine Licence applications which are the subject of the EIA.
Scottish Ministers (via MS-LOT)	With regards to the impacts of temporary loss or restricted access to fishing grounds, the Scottish Ministers direct the Developer to the representations from OIC and the OFA and advise that the Developer must take account of seasonal and year round operations of fisheries in its assessment. Displacement impacts should include any impacts on the wider environment as well as changes in fuel use by fishing vessels. Safety issues for fishing vessels should include consideration of safe access for fishing vessels to the seabed, water column and sea surface, and navigational access to ports, harbours or slipways that support fishing vessels when transiting to and from landfall areas.	Seasonal and annual variation has been considered in SS12: Commercial fisheries baseline report and has been considered in the assessment of potential effects associated with temporary loss or restricted access in section 14.6. The assessment of displacement is included in section 14.6 and has been conducted in accordance with the "Good Practice Guidance for Assessing Fisheries Displacement by Other Licensed Marine Activities". Impacts associated with safety issues associated with transiting vessels are assessed in chapter 15: Shipping and navigation. Safety issues associated with active fishing are discussed in section 14.6.
Scottish Ministers (via MS-LOT)	The Scottish Ministers advise that commercial fisheries should be included in the cumulative effects assessment, in line with the MSS advice.	Noted, the list of development, plans and activities for consideration in the cumulative effects assessment is included in section 14.7 and considers both licenced marine activities and nature conservation designations.
Scottish Ministers (via MS-LOT)	Figure 1-1 of the Scoping Report depicts the extensive cable corridor search area under consideration. The Scottish Ministers advise the Developer to engage with stakeholders including the Scottish Fishermen's Federation ("SFF") and Orkney Fisheries Association ("OFA") with regards to refinement of the cable corridors. The EIA Report must detail the chosen cable routes providing clear justification as to the selection over the alternatives considered taking into consideration the outcome of engagement with stakeholders.	During the EIA, consultation with the local fishing communities has been ongoing, through the Fisheries Working Group and FIRs. SFF and OFA have been consulted with regards to the export cable route corridors. Consultation with fisheries organisations is summarised in Table 14-3.
Marine Analytical Unit Response	Impacts on the other receptors have the potential to generate socio-economic impacts. For example, impacts on commercial fisheries may have social and cultural effects, impacts	Direct socio-economic impacts to commercial fisheries receptors are assessed in section 14.6.

CONSULTEE	COMMENT	RESPONSE
	on culture and heritage could have an effect on tourism (wreck diving is an important attraction in the area), and impacts on seabirds could affect tourism as well.	Indirect socio-economic impacts associated with any impacts on commercial fisheries, such as those on onshore processing facilities, are assessed in chapter 19: Socio-economics.
Marine Analytical Unit Response	At the bottom of page 404 the report states "The assessment will also consider the potential implications of the Project for existing local industries, including tourism." We welcome this, and would like to ensure that all existing local industries are considered, including commercial fisheries.	Direct socio-economic impacts to commercial fisheries receptors are assessed in section 14.6. Indirect socio-economic impacts associated with any impacts on commercial fisheries, such as those on onshore processing facilities, are assessed in chapter 19: Socio-economics.
Marine Scotland Science (MSS)	MSS are content with the study area and identified ICES rectangles for commercial fisheries.	Noted, no response required.
MSS	MSS note that 2019 landings data by ICES rectangle are used. MSS highlight that 2020 landings data are now available, although MSS would urge careful interpretation of these most recent data due to the impacts of the Covid pandemic on the commercial fishing industry.	Noted, the most recent landings data available at the time have been analysed and are described in section 14.4.4 and assessed in detail in SS12: Commercial fisheries baseline report. The limitation regarding the 2020 and 2021 landings data is noted and is acknowledged in section 14.4.7. To account for this, five years of landings data have been thoroughly analysed and assessed before use.
MSS	As noted in the EIA report, the ScotMap data are out of date and the fishing industry have cautioned against the use of these data without considering other industry data such as AIS data to get a contemporary reflection of current fishing activity. MSS agrees that further consultation with the fishing industry is required to understand the fishing activity by smaller, inshore vessels.	The ScotMap data is currently the best available data source for inshore fisheries but has been considered in conjunction with other data sources and with further consultation. As requested by the Fisheries Working Group, OFA, Orkney Sustainable Fisheries (OSF) and the NECRIFG were asked to provide further information on the validity of the ScotMap data during a meeting held on 25th October 2022. It was agreed in the meeting that ScotMap is the most comprehensive and detailed data presently available, and that the data should be used for the Offshore EIA Report in the absence of any other

CONSULTEE	COMMENT	RESPONSE
		available datasets. OFA also confirmed that their members fishing locations were consistent with the ScotMap data.
MSS	MSS recommend that commercial fisheries monitoring is carried out pre- and post-construction of the windfarm and associated cabling to allow a comparison of fishing activity and effort and to evaluate any impacts to fisheries such as displacement.	Noted. The monitoring requirements are discussed in section 14.11. OWPL has a good working relationship with the fishers within the Project area through its local FIR, FLO updates and Fisheries Working Group. OWPL will continue this engagement throughout the Project. Following engagement with the fishing industry, it was concluded that it would be more meaningful to put resources into research projects into commercially important fish and shellfish species (further detail included in chapter 11: Fish and shellfish ecology).
MSS	MSS recommend that other licenced marine activities and nature conservation designations that have fisheries restrictions are included in the Cumulative Effects Assessment.	Noted, the list of developments, plans and activities for consideration in the cumulative effects assessment is included in section 14.7 and considers both licenced marine activities and nature conservation designations.
MSS	MSS also highlight that Marine Scotland have commissioned a 'Best practice guidance for assessing fisheries displacement from licensed marine activities'. The publishing of this guidance has previously been delayed, however it is due to be published shortly. MSS recommends consideration of this guidance when it is published.	Noted, "the Good Practice Guidance for Assessing Fisheries Displacement by Other Licensed Marine Activities" is now published and has been used to inform the impact assessment, as outlined in sections 14.2 and 14.6.
North & East Coast – Regional Inshore Fisheries Group (NECRIFG)	We are firstly very pleased to see that fishing had been comprehensively accounted for.	Noted, no response required.
NECRIFG	The cable corridor options are, however, very large and we would ask that the fishing industry are approached and involved in the cable positions. There are a number of fishers	Since the production of the Scoping Report, the offshore ECC has been refined. The routing of the offshore ECC was discussed with the Fisheries

CONSULTEE	COMMENT	RESPONSE
	who have experience of fishing in the area of the proposed wind farm and would be well placed to provide information to the developers.	Working Group in September 2022, where the fishing industry understood the constraints that influence the proposed corridor and were requested to provide additional input. No further information was received by OWPL from the commercial fishing industry. OWPL will continue to consult with the fishing industry on any further offshore Project refinements to ensure coexistence with fisheries.
NECRIFG	With regard to section 2.4.10 we would answer yes to all the questions.	Noted, no response required.
Orkney Fisheries Association	Do you agree with the data sources listed to be used to inform the EIA baseline? Yes, but echo the fact that ScotMap data is outdated.	The ScotMap data is currently the best available data source for inshore fisheries but has been considered in conjunction with other data sources and with further consultation. As requested by the Fisheries Working Group, OFA, OSF and the NECRIFG were asked to provide further information on the validity of the ScotMap data during a meeting held on 25th October 2022. It was agreed in the meeting that ScotMap is the most comprehensive and detailed data presently available and that the data should be used for the Offshore EIA Report in the absence of any other available datasets. OFA also confirmed that their members fishing locations were consistent with the ScotMap data.
Orkney Fisheries Association	Are there any additional commercial fisheries organisations that you would recommend be consulted? Consultees include "Orkney Fisheries Society". Orkney Fisheries Society does not exist- there is Orkney Fisheries Association, Orkney Sustainable Fisheries (which is the IFG), and Orkney Fishermen's Society. Additionally, it is "Orkney Trout Fishing Association" not Orkney Trout Fishermen's Association.	Noted, this has been amended throughout the Offshore EIA Report.

CONSULTEE	COMMENT	RESPONSE
Orkney Fisheries Association	Do you agree that all receptors and impacts have been identified for socio-economics? This section does not adequately address the socio-economic impact on vessels from a potential loss of fishing grounds, or the potential decreased catches due to impacts such as noise and EMF on catches. The impact of the development on commercial species such as crab, as well as the potential for the loss of fishing grounds may have an impact on the local crab processors who rely heavily on the vessels fishing within the development area.	An assessment of the direct socio-economic impacts of the offshore Project is provided in section 14.6. Indirect socio-economic impacts associated with any impacts on commercial fisheries receptors, such as downstream effects on onshore processing facilities are assessed in chapter 19: Socio-economics. The assessment of effects on fish and shellfish ecology, including commercial species is provided in chapter 11: Fish and shellfish ecology. This addresses potential impacts from noise and EMF. The indirect socio-economic impacts on commercial fisheries receptors are summarised in section 14.6.
Orkney Fisheries Association	Do you agree that the impacts suggested can be scoped out of the EIA section? Will depend on how they incorporate fisheries data into the assessment.	The assessment has considered a five year data set to minimise any recent changes in fishing practices based on reductions in effort due to Covid (and seven years for scallops, as advised during consultation). The landings data has been used in conjunction with several other data sources to help identify key fishing areas which are consistently present in association with the offshore Project area. This approach also allows trends to be identified and capture any follow ground practices where fisheries may cease fishing an area for a period of time to let ground recuperate after a period of sustained activity. The Project has also engaged with local fisheries to ensure this data is captured and fed into the process.
Orkney Fisheries Association	Do you agree with the proposed approach assessment? Will depend on how they incorporate fisheries data into the assessment.	See note above.
Orkney Fisheries Association	Which major energy or other infrastructure projects should be included as part of the cumulative impact assessment? N/A	No response required.

CONSULTEE	COMMENT	RESPONSE
Orkney Fisheries Association	Do you agree with scoping out transboundary impacts? N/A	No response required.
Orkney Islands Council (OIC)	Table 2-45 EIA Scoping Assessment for Commercial Fisheries The proposed development should avoid, minimise or appropriately mitigate, significant adverse impacts: • on commercial fishing opportunities, taking into account seasonality and the year-round operation of the affected fishery. • on nursery, spawning and feeding areas for commercially fished species, and associated habitats and species. • due to the displacement, including impacts on fish stocks, the wider environment, the use of fuel by fishing vessels and the associated socio-economic costs to fishers and their communities. • safe access to marine space including the seabed, water column and sea surface, and navigational access to and from landfall areas, e.g. ports, harbours or slipways, that support fishing vessels. on the economic, and where appropriate, cultural importance of fishing, in particular to fragile island communities.	Noted. Impacts relating to loss of access, displacement and socio-economic impacts on commercial fisheries receptors have been assessed in section 14.6 and chapter 19: Socio-economics. Impacts on transiting fishing vessels (e.g. navigational access) are assessed in chapter 15: Shipping and navigation.
OIC	Orkney Sustainable Fisheries, Orkney Fisheries Association and fishers that use an area that could be affected by a proposed development and associated activities should be consulted at an early stage.	Fishers, fisheries associations and IFGs have been consulted and invited to the Fisheries Working Group. OWPL will continue to engage with local fishers and the wider fishing industry as the Project develops.

CONSULTEE	COMMENT	RESPONSE
Scottish Fishermen's Federation (SFF)	At this stage the given export cable corridors for survey are huge, fishers knowledge of the actual seabed terrain must be accessed, in order to increase the chances of co-existence. In the experience of the SFF this could help find the best route for burial, less rock dumping, less time and cost, if this is done before going to the Crown Estate Scotland with a final, unconsulted corridor.	Since the production of the Scoping Report, the offshore ECC has been refined. The routing of the offshore ECC was discussed with the Fisheries Working Group in September 2022, where the fishing industry understood the constraints that influence the proposed corridor and were requested to provide additional input. No further information was received by OWPL from the commercial fishing industry. OWPL will continue to consult with the fishing industry on any further offshore Project refinements to ensure coexistence with fisheries.
SFF	Then in 2.4.10 our response would be yes to all questions.	Noted, no response required.
SFF	The chapter on commercial fisheries accepts that data may be limited, but as in 2.7.3.1, if that is ground truthed with OFA, that should be covered.	Noted. OFA have been consulted as part of the Fisheries Working Group, and were involved in specific discussions around the relevance of the ScotMap data.
SFF	Only other comment is, P242, table 2.44 is a list of H&S actions, not necessarily anything to do with fisheries mitigation.	A summary of the embedded mitigation measures relevant to impacts on commercial fisheries receptors is included in section 14.5.4. This includes measures that will reduce safety risks to fishers in the area. In addition, measures to promote co-existence between the offshore Project and the commercial fishing industry have also been considered as embedded mitigation, including those that will be detailed in the FMMS. An outline FMMS is provided in Offshore EIA Report, Outline Plan (OP) 3: Outline Fisheries Management and Mitigation Strategy. OWPL has a good working relationship with the fishers within the offshore Project area and will continue this engagement throughout the Project. The Fisheries Working Group will be a vehicle to continually communicate between the fishers and the Project team.

14.4 Baseline characterisation

This section outlines the current baseline for commercial fisheries within the commercial fisheries offshore study area. The baseline has been characterised using desk-based sources, supplemented by and data provided through consultation (see Table 14-5).

Further details on the commercial fisheries baseline are provided in the SS12: Commercial fisheries baseline report.

14.4.1 Study area

The commercial fisheries offshore study area is defined by the International Council of the Exploration of the Sea (ICES) rectangles within which the offshore Project resides, including 46E5, 46E6 and 47E5 (Figure 14-1). ICES rectangle 47E6 is also considered as part of the commercial fisheries offshore study area due to its close proximity to the Option Agreement Area (OAA) and this also provides a regional context for certain fisheries. Each ICES rectangle boundary extends over 1 degree longitude by 30 minutes latitude.

Reference is also made to waters outside of these four ICES rectangles where appropriate in order to provide contextual information on fishing activity at a regional basis or for the consideration of potential cumulative effects.

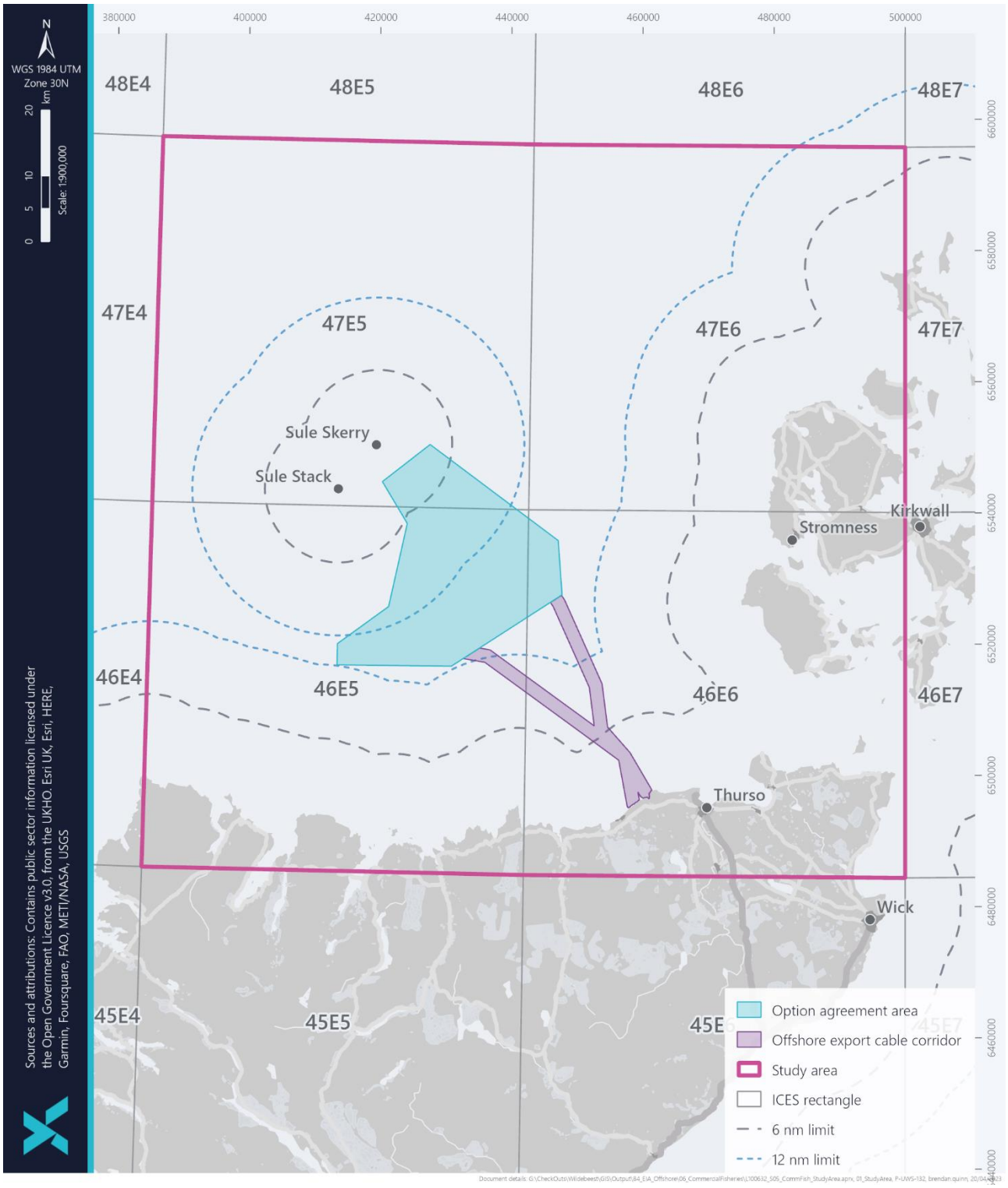

Figure 14-1 Commercial fisheries offshore study area

14.4.2 Data sources

The existing data sets and literature with coverage relevant to the offshore Project, which have been used to inform the baseline characterisation for commercial fisheries, are outlined in Table 14-5.

Table 14-5 Summary of key datasets and reports

TITLE	SOURCE	YEAR	AUTHOR
Surveillance Sightings (2015 – 2021)	Access via request under the Freedom of Information Act (FOIA).	2020a 2021a	MMO Marine Scotland
Marine Management Organisation (MMO)[4] Fisheries Statistics (landings data (value) by fishing method, vessel length and species) (2016 – 2021)	As above.	2021, 2022	MMO
MMO Vessel Monitoring System (VMS) (2017 – 2020)	https://environment.data.gov.uk/	2020b	MMO
Marine Scotland VMS (2010 – 2020)	https://marine.gov.scot/maps/1680 https://marine.gov.scot/maps/1832 https://marine.gov.scot/maps/1679	2021b,c,d	Marine Scotland
Automatic Identification System (AIS) data (2015 – 2019)	https://environment.data.gov.uk/	2019	MMO
ScotMap – Inshore Fisheries Mapping Project in Scotland	https://marine.gov.scot/information/scotmap-inshore-fisheries-mapping-project-scotland	2013	Kafas *et al.*
Spatial data on fisheries (e.g. areas where fishing is restricted or prohibited)	https://marinescotland.atkinsgeospatial.com/nmpi/ and https://kingfisherrestrictions.org/fishing-restriction-map	2022	Marine Scotland (2022b) and Kingfisher Information Service (2022)

[4] *Marine Directorate publish fisheries statistics annually (Marine Scotland, 2022a) but these do not provide values or effort by fishing method and are for the ICES areas 24.7a, 27.4.b , 27.6.a , 27.6.b , 27.2.a and 27.7.a.*

TITLE	SOURCE	YEAR	AUTHOR
Mapping fisheries and habitats in the North and East Coast RIFG	https://rifg.scot/storage/article/57/NAFC%20Report%20Final%20-%20Mapping%20fisheries%20and%20habitats%20-%20North-%20East%20Coast%20-%202021-09-%2027.pdf	2021	Shelmerdine and Mouat
Orkney Islands Regional Marine Plan: Consultation Draft	https://www.orkney.gov.uk/Service-Directory/D/orkney-islands-regional-marine-plan.html	2022	OIC
Pilot Pentland Firth and Orkney Waters Marine Spatial Plan	Pilot Pentland Firth and Orkney Waters Marine Spatial Plan – gov.scot (www.gov.scot)	2016	Scottish Government
State of the Environment Assessment: A Baseline Assessment of the Orkney Islands Marine Region	https://www.orkney.gov.uk/Files/Planning/Development-and-Marine-Planning/20210107-OIC-Report-V9-screen%20v2.pdf	2020	OIC
Sectoral Marine Plan: Regional Locational Guidance	https://www.gov.scot/publications/sectoral-marine-plan-regional-locational-guidance/documents/	2020	Scottish Government
EU Data Collection Framework Database landings statistics (2014 – 2020)	https://stecf.jrc.ec.europa.eu/	2020	Scientific, Technical and Economic Committee for Fisheries (STECF)
Data on fishing grounds gathered during consultation meetings, where possible	Various.	N/A	Various

14.4.3 Project site-specific surveys

A marine traffic survey was undertaken in August 2022 (summer) and November 2022 (winter) to observe / record vessel traffic within and around the OAA. This information was used to inform the assessment of navigation related impacts on commercial fisheries receptors. Further details are available in SS13: Navigational risk assessment.

14.4.4 Existing baseline

A review of literature and available data sources, augmented by consultation, has been undertaken to describe the current baseline environment for commercial fisheries.

The principal fleets operating in areas relevant to the offshore Project have been identified as follows:

- Creel fleet;
- Demersal trawl fleet (including seine netters); and
- Scallop dredging fleet.

A summary of the commercial fisheries baseline for each of these fleets is given in the following sections. Further detailed fisheries baseline information is provided in SS12: Commercial fisheries baseline report.

Whilst other fishing methods have been identified in the regional study area, as suggested by surveillance sightings data (2015-2021), VMS data (2017 – 2020) and fisheries statistics (2017-2021), their activity is comparatively low within the region (see SS12: Commercial fisheries baseline report). One potential exception to this is pelagic trawling, which was associated with high landings values in 2021 in ICES rectangle 47E5, which overlaps with the northeast of the OAA. However, only low effort levels were recorded by pelagic trawlers between 2017 and 2021 (Table 6-3 and Figure 6-6, SS12: Commercial fisheries baseline report), indicating that the pelagic trawling was associated with high value species and/or high Catch Per Unit Effort (CPUE) with a high variability by year. Therefore, this fishing method is not considered to be a principal fleet for the offshore Project area, as described in SS12: Commercial fisheries baseline report.

Furthermore, whilst the majority of fishing activity within the commercial fisheries study area is by UK vessels, two of the top ten ports with the highest average landings value from the ICES rectangles in the commercial fisheries study area are non-UK ports (Table 6-4, SS12: Commercial fisheries baseline report). It is anticipated that these high landings values for non-UK ports are due to the high value catches of large pelagic trawler vessels, as described above. Although high values of pelagic fishing activity occur within the commercial fisheries study area associated with non-UK fishing activity, according to Vessel Monitoring System (VMS) data, the majority of pelagic fishing activity occurs outwith the OAA and offshore ECC (Figure 6-11, SS12: Commercial fisheries baseline report).

14.4.4.1 Creel fleets

Creel fleets are active throughout the whole commercial fisheries study area. Within the study area, crabs (*Cancer pagurus*) and lobsters (*Homarus gammarus)* are the main species targeted by this fleet. Sightings data (2015-2019) showed potters / whelkers are located within the offshore ECC and OAA (Figure 6-3, SS12: Commercial fisheries baseline report). In addition, information gained through consultation confirmed that creelers are present within ICES rectangle 46E6.

Sightings in the east of ICES rectangle 47E6 (which is outwith the OAA) within the 12 nm limit along the west of the Orkney Islands are dominated by UK potters / whelkers (Figure 6-3, SS12: Commercial fisheries baseline report). UK potters / whelkers, are also recorded towards the south and east of ICES rectangle 46E6 and within the offshore ECC. As whelks do not form a large proportion of the landings statistics in the commercial fisheries study area, the majority of these sightings are expected to be potters targeting lobster and crab (i.e. creelers). Further offshore, towards the north of ICES rectangles 46E5 and 46E6 and in the offshore waters of ICES rectangles 47E5 and 47E6, UK potter /

whelkers account for the majority of sightings (together with demersal trawlers). The UK potter / whelkers sightings further offshore are assumed to be vivier[5] crabbers, catching large volumes of crab on each trip.

The landings data generally corroborates the sightings data, indicating that pots and traps account for the vast majority of fishing activity in the commercial fisheries study area, and that the activity is concentrated in the coastal ICES rectangles of 46E5 and 46E6, in the south of the commercial fisheries study area (Figure 6-5 and Figure 6-6, SS12: Commercial fisheries baseline report). According to MMO landings data by ICES rectangle for 2016 to 2020, in terms of species, crabs account for the highest proportion of landings values in ICES rectangles 46E5 and 46E6, consistent with the high landings values for pots and traps in these ICES rectangles. Lobster targeted by pots and traps contribute to a lower proportion of landings values. In the offshore ICES rectangles 47E5 and 47E6, there is a lower contribution of pots and trap to landings values, and accordingly, also a lower contribution of crab and lobster. Landings data also shows that the 2021 landings values for pots and traps are proportionally lower in ICES rectangles 47E6 and 47E5 than in ICES rectangles 46E5 and 46E6.

Further detail on the distribution of creeling activity within the commercial fisheries study area can be obtained from a review of AIS and VMS data, as well as from information gained through consultation.

AIS data (2015-2019) show tracks characteristic of active fishing by creelers, going back and forth over a small area. These occur in the south of ICES rectangles 45E5 and 46E6 as well as in waters further offshore to the north, in the vicinity of the OAA (Figure 6-12, SS12: Commercial fisheries baseline report). Potting activity is evident as straight lines, often in a north / south orientation along the north coast of Caithness, and consultation confirmed the vivier crabbers also use a north-south orientation in the OAA.

VMS data show passive fishing activity (such as pots and traps), is moderate to high across the commercial fisheries study area, concentrated in ICES rectangle 46E5 and 46E6 (Figure 6-10, SS12: Commercial fisheries baseline report). This is consistent with the high landing values recorded for pots and traps recorded in the commercial fisheries study area. Effort and value in the remainder of the commercial fisheries study area are concentrated in the south of ICES rectangle 46E5, with comparably lower value and effort in ICES rectangles 47E5 and 47E6.

Notably, the majority (89%) of 10 m and under vessels represented in the landings values between 2016 and 2020 are attributed to pots and traps and will not be represented by the MMO VMS data or AIS data, which only covers vessels over 15 m in length. During consultation, local fishers were requested to provide details on their fishing grounds, and it was identified that creeling vessels are operational across the commercial fisheries study area, targeting mainly crab, but also lobster to a lesser extent. This is confirmed by the ScotMap data which, despite being an old data set, was verified as the most appropriate data to inform the assessment by the OFA and IFGs, who confirmed that their members fishing locations were consistent with the data.

14.4.4.2 Demersal trawlers

Surveillance sightings data between 2015 and 2019 suggests that the majority of sightings within the study area are of UK demersal stern trawlers (together with scallop dredging – see section 14.4.4.3), particularly in the east of ICES

[5] *Larger vessels targeting crab with a vivier tank on board to store the specimen until landed.*

rectangle 47E6 within the 12 nm limit along the west of the Orkney Islands, and concentrated towards the northwest of ICES rectangle 47E6 (Figure 6-3, SS12: Commercial fisheries baseline report). Pelagic trawling is only recorded at very low effort levels according to the landings statistics for the commercial fisheries offshore study area, therefore it is assumed that the majority of stern trawlers (pelagic / demersal) are demersal.

Further offshore, towards the north of ICES rectangles 46E5 and 46E6 and in the offshore waters of ICES rectangles 47E5 and 47E6, UK demersal stern trawlers also account for the majority of sightings. This is consistent with a substantial proportion of the landings values being attributed to demersal trawls within these ICES rectangles.

The landings data for 2016 to 2020 and 2021 generally corroborate the sightings data, indicating that demersal trawlers account for the vast majority of fishing activity in the commercial fisheries study area, and that a high proportion of fishing activity by this fleet is concentrated in the north of the commercial fisheries study area (Figure 6-5 and Figure 6-6, SS12: Commercial fisheries baseline report). Average landings values in the north of the commercial fisheries study area in ICES rectangles 47E5 and 47E6 are dominated by demersal trawls.

Demersal trawlers in the commercial fisheries study area mainly target demersal whitefish and to a lesser extent squid (Decapodiformes). Pelagic species, such as herring (*Clupea harengus*) and mackerel (*Scomber scombrus*), are also landed by demersal trawls in the commercial fisheries study area, and pelagic trawling was not recorded at any high levels in the fisheries statistics, with the exception of 2021. Analysis of the annual variation in the landings statistics also indicates a high degree of inter-annual variation in the landings weights and value of pelagic species caught by demersal trawlers, indicating that these fish are being caught opportunistically. For these reasons, pelagic species are not considered to be a target species for demersal trawlers in the commercial fisheries study area (Table 6-3, SS12: Commercial fisheries baseline report). Therefore, the following sections focus on demersal trawling for whitefish and squid.

Demersal whitefish, mainly haddock (*Melanogrammus aeglefinus*) and cod (*Gadus morhua*), contribute to a high proportion of landings values in the commercial fisheries study area, especially in ICES rectangles 46E6 and 47E6. Cod landings values in ICES rectangle 46E5 are comparably lower, with herring, haddock, and squid contributing to the majority of landings values. Notably, squid contributes to a greater proportion of landings in ICES rectangle 46E5 when compared to the other ICES rectangles in the commercial fisheries study area, forming 64% of the average landings values for this species across the commercial fisheries study area between 2016 and 2020. It is also understood through consultation that a squid fishery is present within ICES rectangle 46E5, approximately 25 km to the west of the offshore ECC (Figure 6-5 and Figure 6-6, SS12: Commercial fisheries baseline report).

VMS data indicate that demersal trawling is highest in the east of the commercial fisheries study area in ICES rectangles 46E6 and 47E6, overlapping with the offshore ECC in ICES rectangle 46E6 (Figure 6-7, SS12: Commercial fisheries baseline report). The nearshore area of the offshore ECC, in the south of ICES rectangle 46E6, experiences lower demersal trawling value and effort, and this is expected to be partly due to the Dounreay Food and Environment Protection Act (FEPA) Order Zone. Comparably lower average VMS values are present in the OAA in ICES rectangle 46E5 and 47E5 when compared with the offshore ECC.

VMS data presented within a North Atlantic Fisheries College (NAFC) Marine Centre report which maps fisheries and habitats within the NECRIFG area indicate that both otter trawling and seine netting activity occurs along the west of ICES rectangle 46E6, overlapping with the east of the offshore ECC (Shelmerdine and Mouat, 2021). During consultation, it was also identified that Scottish seine netting vessels and trawlers are operational in the vicinity of the

offshore ECC, predominantly to the west. This is also consistent with the Marine Scotland VMS data for 2010 to 2020, which shows the highest fishing effort within the northeast of the commercial fisheries study area, with relatively low effort levels within the OAA. Much of the seine netting activity within the OAA relates to an individual seine net fisher from the Caithness area, and based on plotter data supplied, this fisher has a wide operational range.

14.4.4.3 Scallop dredging

Surveillance sightings data between 2015 and 2019 suggest that the majority of sightings within the commercial fisheries study area are of UK scallop dredgers (together with demersal stern trawlers, see section 14.4.4.2) (Figure 6-3, SS12: Commercial fisheries baseline report).

Landings by scallop dredges are recorded in the commercial fisheries study area, with the highest values recorded in ICES rectangle 46E5 and 46E6 (Figure 6-5 and Figure 6-6, SS12: Commercial fisheries baseline report). In ICES rectangle 46E6 in particular, scallop dredges contribute to a high proportion of landings values. Landings values for scallop dredges are proportionally lower in ICES rectangles 47E6 and 47E5 than ICES rectangles 46E5 and 46E6. Landings within the 6 nm limit are likely to be associated with more locally resident vessels or vessels with a smaller number of dredges. The OAA and offshore ECC outside of the 6 nm limit will mostly be associated with larger vessels / more nomadic fleet which accesses grounds on a much larger geographical scale.

VMS data indicates that the OAA sustains low to moderate levels of scallop dredging mainly over Whitten Head Bank (Figure 6-8, SS12: Commercial fisheries baseline report). Higher levels of scallop dredging occur in the west of the commercial fisheries study area, concentrated in ICES rectangle 46E5, outside the OAA and offshore ECC. ICES rectangle 46E6, to the east and west of the commercial fisheries study area nearshore and in the vicinity of the export cable landfall, supports relatively low levels of dredging activity for scallops, with low to moderate levels of scallop dredging activity taking place in this area. The surrounding ICES rectangles to the north of ICES rectangle 46E6, including ICES rectangles 47E6 and 47E5, support patchy small areas of low dredging activity. When compared to the offshore Project area, dredging activity is considered to be higher and more widespread in the west in ICES rectangle 46E5 and higher still in the wider Scottish region, such as in the Moray Firth, southeast of the commercial fisheries study area. VMS datasets for scallop dredging available through Marine Scotland, which cover 2010 to 2020 are consistent with the average VMS value from 2017 to 2020 data.

14.4.5 Future baseline

It is anticipated that, as a result of the UK's withdrawal from the EU, gradual changes to quota shares and TACs are expected to result in a decrease in the EU quota share in UK waters.

The future baseline may also gradually change due to changes in:

- Stock abundance (e.g. resulting from range shifts of commercial species driven by climate change (Barange *et al.*, 2018; SFF, 2020). See SS1: Climate and carbon assessment;
- Fisheries management measures and licencing;
- Gear technology / efficiency;
- Fuel costs and/or maintenance costs; and
- Market prices (which could drive changes in target species).

Overall, the current baseline described in section 14.4.4, which spans five years in most cases, is considered to be generally consistent with the future baseline, whilst recognising the multitude of factors that can alter commercial fishing activity.

14.4.6 Summary and key issues

Table 14-6 Summary and key issues for commercial fisheries

SUMMARY AND KEY ISSUES

OFFSHORE PROJECT AREA

The top five ports for highest average landings value include:

- Scrabster;
- Peterhead;
- Stromness;
- Burray; and
- Tingwall.

The top five ports for highest average vessel number include:

- Scrabster;
- Peterhead;
- Stromness;
- Kinlochbervie; and
- Fraserburgh.

THE KEY SPECIES AND KEY FLEETS IN THE AREA INCLUDE:

SPECIES CAUGHT	GEAR USED	WHERE CAUGHT	TARGETED FISHERY?
Brown crab and lobster	Pots, creels, traps	OAA, and offshore ECC	Yes
Whitefish species (e.g. haddock, cod), flatfish, squid, and *Nephrops*	Demersal otter trawls	OAA, and offshore ECC (mainly offshore ECC)	Yes (although *Nephrops* is either by-catch or associated with a targeted fishery within Scapa Flow).
King scallops	Dredges	OAA, and offshore ECC	Occasional, more so over offshore ECC
Mackerel, herring	Pelagic trawlers	OAA, offshore ECC	Very rare and/or infrequent

14.4.7 Data limitations and uncertainties

It is well known within the fishing industry that there is a lack of data for inshore fisheries. ScotMap is one of the only published data sources available to inform the inshore fisheries baseline. The Project team therefore undertook consultation with inshore fisheries groups and associations, in order to source details on inshore fisheries characteristics. It was agreed in the consultation meeting held on 25th October 2022 that ScotMap provides the most comprehensive and detailed data presently available and that the data should be used for the Offshore EIA Report. Further details on this consultation meeting are included in section 14.3.

See section 3 of SS12: Commercial fisheries baseline report for further information on the data sources use to inform this chapter, and their limitations.

14.5 Impact assessment methodology

14.5.1 Impacts requiring assessment

The impacts identified as requiring consideration for commercial fisheries are listed in Table 14-7. Information on the nature of impact (i.e. direct or indirect) is also described. Cumulative and transboundary impacts are discussed in sections 14.7 and 14.10, respectively.

Socio-economic impacts have been considered across the entire Project lifecycle throughout construction, operation and maintenance and decommissioning. As such this impact has been considered separately.

Table 14-7 Impacts requiring assessment for commercial fisheries

POTENTIAL IMPACT	NATURE OF IMPACT
Construction (including pre-construction) and decommissioning*	
Displacement of fishing effort	Direct / indirect
Temporary loss or restricted access to fishing grounds	Direct
Interference with fishing activity as a result of increased vessel traffic	Direct
Increased steaming times	Direct
Safety issues for fishing vessels	Direct

POTENTIAL IMPACT	NATURE OF IMPACT
Operation and maintenance	
Displacement of fishing effort	Direct / indirect
Loss of access to fishing grounds	Direct
Interference with fishing activity as a result of increased vessel traffic	Direct
Increased steaming times	Direct
Safety issues for fishing vessels	Direct
Socio-economic impacts	
Socio-economic impacts on commercial fisheries	Direct / indirect

In the absence of detailed information regarding decommissioning works, and unless otherwise stated, the impacts during the decommissioning of the offshore Project considered analogous with, or likely less than, those of the construction stage. Where this is not the case, decommissioning impacts have been listed separately and have been assessed in section 14.6.6.

14.5.2 Impacts scoped out of the assessment

No impacts have been scoped out for commercial fisheries.

14.5.3 Assessment methodology

An assessment of potential impacts is provided separately for the construction, operation and maintenance, and decommissioning stages of the Project.

The assessment for commercial fisheries is undertaken following the principles set out in chapter 7: EIA methodology. The sensitivity of the receptor is combined with the magnitude of impact to determine the impact significance. Topic-specific sensitivity and magnitude criteria are assigned based on professional judgement, as described in Table 14-8 and Table 14-9.

It should be noted that there is no guidance currently available in relation to the definition of receptor sensitivity and impact magnitude specific for the assessment of impacts on commercial fisheries receptors. Whilst the application of a systematic receptor sensitivity and impact magnitude approach to determine impact significance helps guide the assessment, it is difficult to apply standard definitions of sensitivity and magnitude consistently across the range of impacts requiring assessment in respect of commercial fisheries. Furthermore, impacts of offshore developments

upon commercial fishing activities cannot be easily categorised following this approach. Therefore, to a large extent, commercial fisheries assessments are qualitative and need to rely on expert judgement.

The criteria for the assessment of safety issues on commercial fisheries differs from those set out in chapter 7: EIA methodology. Safety issues are assessed in terms of potential risk (severity of consequence and frequency of occurrence). This is in line with Marine Guidance Note (MGN) 654 and the International Maritime Organization (IMO) Formal Safety Assessment (FSA) process, as outlined in chapter 15: Shipping and navigation.

Table 14-8 Sensitivity criteria

SENSITIVITY OF RECEPTOR	DEFINITION
High	• Limited operational range and/or limited gear / target species versatility; and • High dependence upon a single fishing ground.
Medium	• Moderate extent of operational range and/or limited gear / target species versatility; and • Dependence upon a limited number of fishing grounds.
Low	• Extensive operational range and/or some gear / target species versatility; and • Ability to fish a number of fishing grounds.
Negligible	• Extensive operational range and high gear / target species versatility; and • Vessels are able to exploit a large number of fishing grounds.

Table 14-9 Magnitude criteria

MAGNITUDE CRITERIA	DEFINITION
High	• The area affected by the impact sustains high levels of activity by the fleet and covers a moderate extent of its grounds; and/or • The impact is permanent or long-term (temporary but occurs over a long period (i.e. years)).
Medium	• The area affected by the impact sustains medium / high levels of activity by the fleet and covers a small extent of its grounds; and/or • The impact is temporary but occurs over a relatively long period (i.e. months).

MAGNITUDE CRITERIA	DEFINITION
Low	• The area affected by the impact sustains medium / low levels of activity by the fleet and covers a small extent of its grounds; and/or • The impact is temporary and occurs over a relatively short timescale (i.e. weeks).
Negligible	• The fleet has very little or no history of fishing in the area affected; and/or • The impact is short term (i.e. days).

The consequence and significance of effect is then determined using the matrix provided in chapter 7: EIA methodology.

14.5.4 Embedded mitigation

As described in chapter 7: EIA methodology, certain measures have been adopted as part of the Project development process in order to reduce the potential for impacts to the environment, as presented in Table 14-10. These have been accounted for in the assessment presented below. The requirement for additional mitigation measures (secondary mitigation) will be dependent on the significance of the effects on commercial fisheries receptors.

Table 14-10 Embedded mitigation measures relevant to commercial fisheries

MITIGATION MEASURE	FORM (PRIMARY OR TERTIARY)	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Cable protection	Primary	Suitable implementation and monitoring of cable protection (via burial or external protection). The cable will be buried as the first choice of protection. External cable protection will only be used where adequate burial cannot be achieved and this will be minimised as far as is practicable. This will be informed by a CBRA, undertaken post-consent following results of the geotechnical survey.	Final cable design will be informed by the CBRA and detailed within the Cable Plan (CaP), required under Section 36 Consent and/or Marine Licence conditions.
Consideration of commercial fisheries receptors in final WTG locations and cable route and design	Primary	The fishing industry has been consulted through the Fisheries Working Group on the proposed offshore ECC. The fishing industry will continue to be consulted on the final	Final cable route and design will be informed by the CBRA and detailed in the CaP, required

MITIGATION MEASURE	FORM (PRIMARY OR TERTIARY)	DESCRIPTION	HOW MITIGATION WILL BE SECURED
		WTG layout and cable routes and design through the Fisheries Working Group (or equivalent post consent).	under Section 36 Consent and/or Marine Licence conditions. The final WTG layout will be presented within the Development Specification and Layout Plan (DSLP), required under Section 36 Consent and/or Marine Licence conditions. Consultation with the fishing industry is an ongoing commitment for OWPL.
Navigational Safety and Management Plan (NSVMP)	Tertiary	Development and adherence to a NSVMP that sets out Project vessel management procedures and navigational safety measures.	Section 36 Consent and/or Marine Licence conditions for a NSVMP. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan.
International Regulations for the Prevention of Collisions at Sea (COLREGs) and the International Regulations for the Safety of Life at Sea (SOLAS)	Tertiary	All vessels will comply with the provisions of COLREGs and SOLAS, including the display of appropriate lights and shapes such as when vessels are restricted in their ability to manoeuvre.	Legislative requirement that will be detailed within the NSVMP, required under Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application in Outline Plan (OP) 4: Outline Navigational Safety and Vessel Management Plan. The outline NSVMP contains details on the adherence of vessels to COLREGs and SOLAS.
Fisheries management and mitigation strategy (FMMS)	Tertiary	Development and adherence to an FMMS, covering: communication, Developers Marine Monitoring Centre (MMC), safety zones, guard vessels, dropped objects, transit plans, monitoring and cooperation agreements.	Production and approval of an FMMS will be required under Section 36 Consent and/or Marine Licence conditions. An outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy.

MITIGATION MEASURE	FORM (PRIMARY OR TERTIARY)	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Fisheries liaison	Tertiary	The Project has already engaged an FLO to engage in proactive consultation with the fishing industry with adherence to best practice guidance with support from Fisheries Industry Representatives (FIRs) (e.g. FLOWW, 2014; 2015 or equivalent). Use of a FLO will continue throughout the construction, operation and maintenance and decommissioning. An Offshore Fisheries Liaison Officer (OFLO) will also be appointed, as needed. The OFLO will be stationed on construction vessels, as required, and will act as an on-site point of communication for fishing vessels.	Section 36 Consent and/or Marine Licence conditions for the appointment of a FLO. Details on the fisheries liaison for the offshore Project, including the roles and responsibilities of the FLO will be detailed in the FMMS. An outline FMMS is provided as part of the offshore application OP3: Outline Fisheries Management and Mitigation Strategy. The outline FMMS contains details on the proposed approach for fisheries liaison.
Dropped objects procedures	Tertiary	Procedures for dropped objects and claim processes for loss / damage to fishing gear / vessels.	Procedures will be detailed within the FMMS, required under Section 36 Consent and/or Marine Licence conditions. An outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy.
Promulgation of information, such as Notice to Mariners, Kingfisher notifications and other navigational warnings on the location, duration and nature of works	Tertiary	Timely and efficient distribution of Notice to Mariners (NtMs), Kingfisher notifications and other navigational warning on the location, duration and nature of works.	Secured through Section 36 Consent and/or Marine Licence conditions. Procedures will be detailed within the NSVMP and FMMS, required under Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application OP4: Outline Navigational Safety and Vessel Management Plan and an outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy. The outline NSVMP and outline FMMS include details on the communication and

MITIGATION MEASURE	FORM (PRIMARY OR TERTIARY)	DESCRIPTION	HOW MITIGATION WILL BE SECURED
			information dissemination to other mariners and fishing vessels.
Charting of installed infrastructure	Tertiary	Notification to the UK Hydrographic Office (UKHO) / Kingfisher of the proposed works to facilitate the promulgation of maritime safety information and updating of nautical / admiralty charts and publications.	Charting requirements will be secured as a Section 36 Consent and/or Marine Licence condition. Details will be included within the NSVMP and FMMS. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan and an outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy. The outline NSVMP and outline FMMS include details on the communication and information dissemination to other mariners and fishing vessels.
The use of guard vessels and Offshore Fisheries Liaison Officers (OFLO), where required	Primary	The use of guard vessels and OFLOs, where appropriate. Where possible, these will be sourced locally and /or will be Scottish.	Requirements will be detailed within the FMMS, required under Section 36 Consent and/or Marine Licence conditions. An outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy. The outline FMMS includes details on the use of guard vessels and OFLO, where required.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).

14.5.5 Worst case scenario

As detailed in chapter 7: EIA methodology, this assessment considers the worst case scenario for the offshore Project parameters, which are predicted to result in the greatest environmental impact, known as the 'worst case scenario'. The worst case scenario represents, for any given receptor and potential impact, the design option (or combination of options) that would result in the greatest potential for change.

Given that the worst case scenario is based on the design option (or combination of options) that represents the greatest potential for change, the development of any alternative options within the design parameters will give rise to no worse effects than those assessed in this impact assessment. Table 14-11 presents the worst case scenario for potential impacts on commercial fisheries during construction, operation and maintenance, and decommissioning.

Table 14-11 Worst case scenario specific to commercial fisheries receptor impact assessment

POTENTIAL IMPACT	WORST CASE SCENARIO	JUSTIFICATION
Construction		
Displacement of fishing effort	• Pre-construction activities including: – Geophysical surveys; – Unexploded Ordnance (UXO) clearance requiring detonation of up to 22 targets over 22 days, with one detonation per 24-hour period.; – Pre-lay grapnel run along the entire length of all cables; – Boulder clearance width of up to 30 m per cable circuit and at up to 125 WTGs and up to five Offshore Substation Platform (OSP) foundations; and – Bedform clearance[6] along the inter-array cables, interconnector cables, offshore export cables and at up to 125 WTG and five OSP foundations. • WTGs and OSPs: – Construction of up to 125 WTGs with a minimum spacing of 944 m; – Construction of up to five OSPs; and – WTGs and OSPs across the entire OAA.	This would result in the maximum extent and duration of potential temporary loss of access, resulting in temporary displacement from fishing vessels who usually fish within the OAA and offshore ECC on top of other fishing grounds, causing secondary displacement and potentially gear conflict.

[6] *Bedforms include sandwave bedforms, bedform fields comprising of sand and gravel, megaripples and rippled scour depressions which are present in different areas across the offshore Project area (see chapter 8: Marine physical and coastal processes for further information).*

POTENTIAL IMPACT	WORST CASE SCENARIO	JUSTIFICATION
	• Inter-array cables: – Maximum total length of 500 km with 50 m maximum seabed disturbance width (totalling 25 km^2). • Interconnector cables: – Maximum total length of 150 km total length with 50 m maximum seabed disturbance width. • Offshore export cables: – Maximum total length of 320 km total length with 50 m maximum seabed disturbance width across the 1000 m offshore ECC; and – Maximum of six HDD exit pits (five plus one spare), each of an area of 300 m^2 (totalling 1,800 m^2), at a water depth of approximately 10 - 40 m below Lowest Astronomical Tide (LAT) (approximately at a minimum of 100 m offshore from 0 mLAT). • 500 m statutory safety zones around WTG and OSPs during construction, implemented on a rolling basis, and 500 m advisory safety zones around construction vessels and areas of cable awaiting burial or protection; • Temporary ancillary equipment within construction area (e.g. mooring buoys); • A total of four years of construction (with an additional one year of pre-construction activities e.g. UXO and boulder clearance); and • Maximum of 30 construction and support vessels at the offshore Project area at one time.	
Temporary loss or restricted access to fishing grounds	• As displacement of fishing effort as this will result in the greatest potential for temporary loss or restricted access to fishing grounds.	This would result in the maximum extent and duration of potential exclusion from fishing during the construction stage, however the exclusions will not be in place for the offshore Project area or for the entire construction

POTENTIAL IMPACT	WORST CASE SCENARIO	JUSTIFICATION
		period., as statutory safety zones around WTGs and OSPs will be in place on a rolling basis.
Interference with fishing activity as a result of increased vessel traffic	• Up to 30 construction vessels construction on site simultaneously; • Up to 1,772 vessel transits; and • A total of four years of construction (with an additional one year of pre-construction activities e.g. UXO).	Maximum number of vessels and vessel transits would result in the maximum potential for interference / conflict between construction vessels and fishing activity.
Increased steaming times	• As per displacement of fishing effort as this will result in the greatest potential for increased steaming times.	The maximum duration of construction, number of safety zones and spatial extent of construction works would result in the greatest potential increase in steaming times.
Safety issues for fishing vessels	• As per displacement of fishing effort as this will result in the greatest potential for safety issues, as well as: – Potential for dropped objects.	Installation of greatest number and extent of infrastructure would result in the greatest potential for safety issues for fishing vessels.
Operation and maintenance		
Displacement of fishing effort	• Operational life up to 30 years; • WTGs and OSPs: – Presence of up to 125 WTGs with a minimum spacing of 944 m, a total seabed footprint per WTG of up to 1.25 km^2 and up to 41 m jacket leg spacing;	The maximum physical presence of infrastructure and cables would result in the greatest potential loss of access during the operation and maintenance stage.

POTENTIAL IMPACT	WORST CASE SCENARIO	JUSTIFICATION
	– Presence of up to five OSPs with up to eight legs per foundation, 63 m jacket leg spacing and 0.1071 km^2 maximum seabed footprint; and – WTGs and OSPs across the entire OAA. • Inter-array cables: – Maximum total length of 500 km; – Maximum cable protection footprint = 2 km^2; – 1-3 m target burial depth with up to 20% of the cable (100 km) requiring protection, with a 3 m height and 20 m width; and – Protection material: concrete mattresses, rock placement, grout bags, cement bags, sandbags, articulated pipes, cast iron shells, bend restrictors, filter units/gabion bags (rock bags). • Interconnector cables: – Maximum total length of 150 km; – Maximum cable protection footprint = 1.98 km^2; – 1-3 m target burial depth with up to 66% of the cable (99 km) requiring protection, with a 3 m height and 20 m width; and – Protection material: concrete mattresses, rock placement, grout bags, cement bags, sandbags, articulated pipes, cast iron shells, bend restrictors, filter units / gabion bags (rock bags). • Offshore export cables: – Maximum total length of 320 km; – Maximum cable protection footprint = 1.87 km^2; and	

POTENTIAL IMPACT	WORST CASE SCENARIO	JUSTIFICATION
	– 1-3 m target burial depth with up to 29% of the cable (93.5 km) requiring protection concrete mattresses, rock placement, grout bags, cement bags, sandbags, articulated pipes, cast iron shells, bend restrictors, filter units / gabion bags (rock bags) (maximum height of 3 m, maximum width of 20 m). • Up to 10 total cable crossings across the offshore Project area with five within the offshore ECC (including with the consented SHET-L Caithness to Orkney HVAC Link) and an additional five with the inter-array and interconnector cables. Cable protection at crossings over a maximum area of 1.25 km^2, with a 4 m height and 25 m width using concrete mattresses, rock placement, grout/cement bags, or Cable Protection Systems (CPS); • Presence of 500 m statutory safety zones around WTGs and OSPs during major maintenance with up to 5 concurrent safety zones at any one time and 500 m advisory safety zones around vessels during maintenance activities; and • Up to 12,695 transits through operational life by operation and maintenance vessels.	
Loss of access to fishing grounds	• As per displacement of fishing effort as this will result in the greatest potential loss of access to fishing grounds.	This would result in the maximum extent of potential loss of access, resulting in displacement from fishing vessels who usually fish within the OAA and offshore ECC on top of other fishing grounds, causing secondary displacement and potentially gear conflict.
Increased steaming times	• As per displacement of fishing effort as this will result in the greatest potential for increased steaming times.	The maximum physical presence of infrastructure and cables would result in the greatest increase in steaming times during the operation and maintenance stage.
Interference with fishing activity as a result of increased vessel traffic	• Operation and maintenance vessels (maximum of 12,695 transits through operational life); • Maximum number of operation and maintenance vessels working at the same time; and	Maximum number of vessels and vessel transits would result in the maximum potential for interference / conflict between operation and maintenance vessels and fishing activity.

POTENTIAL IMPACT	WORST CASE SCENARIO	JUSTIFICATION
	• Presence of 500 m statutory safety zones during major maintenance with up to five concurrent safety zones at any one time and 500 m advisory safety zones around vessels during maintenance activities.	
Safety issues for fishing vessels	• As per displacement of fishing effort as this will result in the greatest potential for safety issues.	Installation of greatest number and extent of infrastructure would result in the greatest potential for safety issues for fishing vessels.
Decommissioning		
In the absence of detailed information regarding decommissioning works, the implications for commercial fisheries are considered analogous to or likely less than those of the construction stage. Therefore, the worst case parameters defined for the construction stage also apply to decommissioning. The decommissioning approach is set out in chapter 5: Project description.		
Socio-economic impacts		
Socio-economic impacts on commercial fisheries	The worst case scenario has been informed by the Scottish Government (2019b) social and economic impact assessment of ScotWind developments on the fishing industry, as discussed in section 14.6.4. This assessment included consideration of loss or restricted access to fishing grounds, changes in fishing patterns arising from displacement, obstruction of fishing vessel navigation routes, fouling of fishing on cables or seabed infrastructure and impacts to seafood processors. The worst case scenario assessed for the N1 Plan Option (PO) (within which the OAA is located) was the construction of a 2 Gigawatt (GW) wind farm. Further details on the specific assumptions used in the socio-economic impact assessment are detailed in Annex E of the Scottish Government (2019b) social and economic impact assessment.	Providing a quantitative assessment of the socio-economic impact of offshore developments on the fishing industry is complex, as this will depend on a multitude of factors (e.g. fluctuations in fish stocks, changes in fisheries legislation or quotas) that are not easily predicted. Therefore, despite the limitations the assessment provided by the Scottish Government has been considered as the worst case scenario for the socio-economic impacts on the fishing industry.

14.6 Assessment of potential effects

14.6.1 Displacement of fishing effort

14.6.1.1 Potential effects during construction (including pre-construction)

As a result of the temporary loss of access to fishing grounds during construction, fishing activity may be temporarily displaced to alternative areas. Displacement of fishing activity can cause competition for space and gear conflict both within a fleet (e.g. static fishing gear being relocated to areas where existing static fishing gear is typically set) and between fleets (e.g. static fishing gear being relocated into areas where mobile vessels are active). This will directly impact vessels being displaced from the offshore Project area (i.e. primary displacement impacts) and indirectly impact vessels in established fishing grounds that vessels from the offshore Project area are displaced to (i.e. secondary displacement impacts).

Displacement within the OAA may occur from the 500 m statutory safety zones around WTGs and OSPs, implemented on a rolling basis, and the 500 m advisory safety zones associated with construction vessels and areas of unburied cable awaiting burial or additional remedial protection.

Within the offshore ECC, displacement will result from the 500 m advisory safety zones associated with construction vessels and areas of unburied cable awaiting burial or additional remedial protection.

The displacement of fishing activity is assessed with direct reference to the assessment of loss or restricted access to fishing grounds, as the latter leads to the former. However, predicting where fishing is likely to be displaced to is complex and depends on a number of different assumptions which make these predictions unreliable. It is expected that vessels will focus displaced effort in established fishing grounds for the same fishing method and target species. However, it is acknowledged that this will not always be the case as this will depend on the fishing patterns of individual skippers. For the assessment, it is assumed that fishing vessels with a greater operational range and a wider availability of alternative grounds will be less sensitive to displacement impacts.

14.6.1.1.1 Creelers

It is understood that creelers are active across the offshore Project area, with potentially more vessels with an operational range that could explore these fishing grounds. The fisheries statistics indicate that both over and under 10 m creelers are active in the commercial fisheries study area, with vessels mostly targeting lobster and crab.

By nature of the general size of vessels used for creeling, this fleet has lower flexibility in terms of where they can deploy their fishing gear, and a large proportion of the fleet is bound to their local area. There are also a small number of vivier[7] crabbers in the OAA and certain areas of the offshore ECC, which are larger vessels that work further offshore, often beyond the 12 nm limit, depending on crew staffing requirements.

[7] *Larger vessels targeting crab with a vivier tank on board to store the specimen until landed.*

Creelers are considered to have a lower availability of fishing grounds. This is due to creelers typically having smaller operating ranges. Consultation with the fishing industry showed that only a limited number of vessels fish the offshore Project area and that the general offshore Project area is not completely saturated with creels. However, as pots and traps are left unattended on the seabed, this fishing method is also vulnerable to gear conflict. Therefore, creelers are considered to be of **medium sensitivity** to displacement.

A high proportion of the landings values in ICES rectangle 46E6 and 46E5 are attributed to pots and traps (i.e. creels). Sightings of potters / whelkers are fairly evenly spread across these two ICES rectangles. Information gained through consultation indicate that creeling does occur within the OAA and offshore ECC, meaning displacement of effort is likely to occur. Vessels operating static gear will be requested to relocate their gear outside of working construction areas.

Available data indicate that creeling activity of moderate to high value and effort occurs in the areas surrounding the OAA and offshore ECC, and it is assumed that the majority of effort will be displaced to these surrounding fishing grounds. Secondary displacement impacts resulting from vessels operating mobile gear being displaced from the offshore Project area to fishing grounds traditionally fished by creelers may also occur. Demersal trawlers and scallop dredgers are active within the 12 nm limit, where smaller creeling vessels are known to fish, meaning there is the potential for gear conflict to arise between creelers and displaced scallop dredgers and demersal trawlers. However, vessels operating mobile gears typically have larger operational ranges as the fish species they target are not restricted to such specific seabed habitats and it would be expected that displaced vessels operating mobile gear would focus their effort to areas which are traditionally fished by these fleets and be able to avoid established areas fished by creelers. Vessels operating mobile gear also have a degree of manoeuvrability to avoid pots and traps unattended on the seabed. Within the OAA, vivier crabbers sustain relatively high levels of activity, largely constrained to beyond the 12 nm limit.

Considering the temporary and spatially limited nature of the displacement at any one time during construction, displacement impacts are expected to be minimal. However, it is acknowledged that some displacement impacts are likely to occur. Taking the longer duration of construction works within the OAA, the impact is defined as being of **medium magnitude.** Within the offshore ECC, construction works will be of a shorter duration, and taking this, as well as the lower levels of fishing activity within this area, the impact is defined as being of **low magnitude.**

Embedded mitigation measures and management plans are presented in section 14.5.4, including the preparation and adherence to the FMMS which will incorporate evidence-based additional mitigations for vessels requested to relocate gear in line with FLOWW guidance (2014; 2015). An outline FMMS is provided in OP3: Outline Fisheries Management and Mitigation Strategy.

In addition to the above embedded mitigations, OWPL will continue dialog with the directly impacted fishers and develop a cooperation agreement which may incorporate provisions such as new gear, adaptations to gear (e.g. escape hatches to reduce juvenile catch and improve overall productivity and sustainability of the stock), guard vessel offset etc. These discussions are ongoing and any cooperation discussions will be held post-consent once the layout and construction schedule is finalised. With the implementation of the secondary mitigation, the impact would reduce to having a **low magnitude.** The residual consequence is **minor** and **not significant** in EIA terms.

Evaluation of significance

Taking the medium sensitivity of creelers and the medium magnitude of impact, the overall effect to creelers is considered to be **moderate** and **significant** in EIA terms within the OAA.

Taking the medium sensitivity of creelers and the low magnitude of impact, the overall effect to creelers is considered to be **minor** and **not significant** in EIA terms within the offshore ECC.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Medium	Medium	Moderate
Offshore ECC	Medium	Low	Minor

OAA impact significance – SIGNIFICANT

Offshore ECC significance – NOT SIGNIFICANT

14.6.1.1.2 Demersal trawlers

Demersal trawlers (including seine netters) targeting whitefish and squid are active in the commercial fisheries study area. The landings value data indicate that demersal trawling accounts for the majority of the landings within the commercial fisheries study area, particularly in ICES rectangles 47E5 and 47E6. The majority of the OAA falls within ICES 46E5, where approximately half of the landing data by gear type is from demersal trawls, mainly catching herring and haddock, with lower landings values for squid in this ICES rectangle.

Demersal trawlers are considered to have greater versatility in terms of target species when compared with scallop dredgers. Although demersal fish species are dependent on certain seabed habitats, there are fewer constraints in terms of the seabed habitat requirements for this fishing method when compared to other fishing methods, such as demersal trawlers targeting *Nephrops*. It is acknowledged, however, that this may be dependent on the quotas allocated to the vessel. The majority of landings values in the study area are associated with demersal trawlers over 10 m in length; therefore, the operational range of these vessels is expected to be moderate to high. For these reasons, demersal trawlers are considered to have a wide availability of alternative grounds and a high versatility in terms of their target species (dependent on quota limits). Demersal trawlers are considered to be of **low sensitivity** to displacement.

Based on VMS data, demersal trawling within the OAA is of low to moderate value and effort, with higher levels occurring to the east of the OAA and within the offshore ECC. The OAA is considered to represent a small extent of the available fishing grounds in the area. Displacement of demersal trawlers during construction will be spatially limited to the 500 m statutory safety zones around WTGs and OSPs, implemented on a rolling basis, and 500 m advisory safety zones around construction vessels and areas of cable awaiting cable burial or protection, over a total period of four years, with an additional one year of pre-construction activities.

Secondary displacement impacts on demersal trawlers may also occur from other fleets being displaced from the OAA and offshore ECC. Vessels operating other types of mobile gear (e.g. scallop dredgers and demersal seines)

typically have wide operational ranges, reducing the potential for conflict and competition to occur. It is also anticipated that displaced creelers will largely avoid established fishing grounds for demersal trawling to reduce any chance of damage to static gear by these mobile methods, although it is acknowledged that smaller vessels may have more limited operational ranges for fishing effort to be displaced to.

Considering the small area that vessels will be displaced from at any given time and the wide operational range of demersal trawlers within the commercial fisheries study area, there is considered to be a limited potential for increased competition and gear conflict as a result of displacement during construction. Considering this, the impact is defined as being of **medium magnitude**.

Evaluation of significance

Taking the low sensitivity of demersal trawlers and the medium magnitude of impact, the overall effect to demersal trawlers is considered to be **minor** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	Medium	Minor
Offshore ECC	Low	Medium	Minor
Impact significance – NOT SIGNIFICANT			

14.6.1.1.3 Scallop dredgers

Larger scallop dredgers are typically nomadic with wide operational ranges and a wide availability of alternative grounds. However, scallop grounds have become more limited in recent years due to the implementation of restrictions on dredge numbers and through the construction of wind farms across the UK. Hence, scallop dredgers are considered to be of **medium sensitivity** to displacement.

Similar to demersal trawlers, vessels will be displaced from a relatively small area during construction. Considering that the offshore Project area sustains low to moderate levels of scallop dredge fishing, as well as the temporary and localised nature of displacement during construction, displacement impacts resulting from vessels displaced from the offshore Project area are considered to be minimal. Furthermore, as per demersal trawlers, scallop dredgers are expected to be able to avoid areas used by creelers displaced from the offshore Project area and combined with the wide operational ranges of displaced vessels operating other types of mobile gear, secondary displacement impacts to scallop dredgers are expected to be limited. Therefore, the impact is defined as being of **low magnitude.**

Evaluation of significance

Taking the medium sensitivity of scallop dredgers and the low magnitude of impact, the overall effect to scallop dredgers is considered to be **minor** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Medium	Low	Minor
Offshore ECC	Medium	Low	Minor

Impact significance – NOT SIGNIFICANT

14.6.1.1.4 Non-UK fishing vessels

EU vessels operating in the commercial fisheries study area have large operational ranges. Analysis of the effort data shows that all vessels are over 18 m in length, with the majority over 40 m (Gibin *et al.*, 2021). Furthermore, most non-UK vessels operate pelagic fishing gear within the commercial fisheries study area, targeting highly mobile pelagic species which are not constrained by a particular seabed habitat. Therefore, non-UK fishing vessels are considered to be of **negligible** sensitivity to displacement.

Fishing effort by non-UK vessels is low within the offshore Project area, and hence, only low effort levels will be displaced during construction. Therefore, impacts relating to non-UK vessels being displaced from the offshore Project are expected to be minimal.

Taking the above into account, the impact is defined as being of **negligible** magnitude.

Evaluation of significance

Taking the negligible sensitivity of non-UK fishing fleets and the negligible magnitude of impact, the overall effect to non-UK fishing fleets is considered to be **negligible** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Negligible	Negligible	Negligible
Offshore ECC	Negligible	Negligible	Negligible

Impact significance – NOT SIGNIFICANT

14.6.1.2 Potential effects during operation and maintenance

As described in section 14.6.1.1, loss or restricted access to fishing grounds may result in the relocation of fishing effort to alternative grounds, potentially increasing competition and gear conflict. The impact assessment considers both primary and secondary displacement impacts.

14.6.1.2.1 Creelers

Creel vessels are more limited in their availability of grounds with less flexibility in terms of target species / gear versatility. The gear is also left unattended on the seabed making it vulnerable to gear conflict. Consultation with the fishing industry showed that only a limited number of vessels fish the offshore Project area and that the general offshore Project area is not completely saturated with creels, indicating that there are alternative grounds available for these vessels. Therefore, creelers are considered to have a medium sensitivity to displacement.

It is assumed that creel fishing may be possible within the OAA, and therefore, displacement during the operation and maintenance stage is likely to be very limited. It is also assumed that fishing can resume over cables as this fishing method has a relatively low potential to interact with subsea infrastructure. Any displacement would be associated with the 500 m statutory safety zones around WTGs and OSPs during major maintenance activities and the 500 m advisory safety zones around vessels during other maintenance works. This temporary displacement would be highly localised and on a short-term basis only.

The OAA is considered to be of moderate value for creeling and it is assumed that the majority of vessels will be displaced to surrounding fishing grounds already established for creeling. As the OAA represents a small proportion of the available fishing grounds for this fleet, with other grounds available to this fleet in the surrounding area, the displacement impacts are expected to be minimal.

With regards to secondary displacement impacts, it is acknowledged that vessels operating mobile gear within the OAA are unlikely to resume fishing, and therefore, secondary displacement impacts on creelers associated with vessels operating mobile gear being displaced to creeling grounds is unlikely to occur. As described for construction, considering the relatively wide operational range of vessels operating mobile gear, it is anticipated that most mobile vessels will be displaced across a relatively wide area and focussed to grounds already established for mobile fishing method.

Considering the relatively small area encompassed by the OAA, relative to available areas for fishing, it is expected that displacement of effort can occur without any major increase in gear conflict and competition. Therefore, despite the impact being long-term, the impact is defined as being of low magnitude.

Evaluation of significance

Taking the medium sensitivity of creelers and the low magnitude of impact, the overall effect to creelers is considered to be **minor** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Medium	Low	Minor
Offshore ECC	Medium	Low	Minor
Impact significance - NOT SIGNIFICANT			

14.6.1.2.2 Demersal trawlers

As described for construction, demersal trawlers are considered to have a **low sensitivity** to displacement as those present in the study area are mainly over 10 m and this fleet has a wide availability of alternative grounds and a high versatility in terms of target species.

Larger demersal trawlers are unlikely to resume fishing within the OAA when constructed, considering the operational spread of this gear and the potential safety risks. Smaller demersal trawlers may be able to fish whilst the offshore Project is operational. Therefore, for the larger demersal trawlers, displacement is likely to occur for the operational life of the offshore Project, although and potentially less so for smaller demersal trawlers. There are alternative grounds of moderate to high value surrounding the OAA (e.g. in ICES rectangle 47E6) which vessels could be displaced to. Considering the relatively small proportion of the available grounds that the OAA represents, and the availability of fishing grounds surrounding the OAA, the primary displacement impacts are expected to be minimal.

For the same reasons described for construction in section 14.6.1.1, secondary displacement impacts are also expected to be minimal.

Despite this impact being long-term, considering the wide availability of alternative grounds for demersal trawlers and the small proportion of these grounds that the OAA represents, it is expected that alternative fishing grounds will be able to accommodate the relocation of effort. Therefore, the impact is defined as having a **low magnitude.**

Evaluation of significance

Taking the low sensitivity of demersal trawlers and the low magnitude of impact, the overall effect to demersal trawlers is considered to be **negligible** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	Low	Negligible
Offshore ECC	Low	Low	Negligible

Impact significance - NOT SIGNIFICANT

14.6.1.2.3 Scallop dredgers

Larger scallop dredgers are mainly nomadic with wide operational ranges. However, scallop grounds have become more limited in recent years due to the implementation of restrictions on dredge numbers and the construction of wind farms across the UK. Scallop dredgers are mainly nomadic with wide availability of grounds. As described for construction, scallop dredgers are considered to have a **medium sensitivity** to displacement.

The OAA sustains low to moderate levels of scallop dredge fishing, with higher levels of value and effort in the waters outside the OAA, including in ICES rectangle 46E5, as described in section 14.4.4.3. There are considered to be higher value grounds for this fishing method in the areas surrounding the OAA and offshore ECC and considering the wide availability of grounds for scallop dredges, and the small proportion of the grounds that the offshore Project area represents, the impact is defined as being of **low magnitude**.

Secondary displacement impacts are also considered to be low for the same reasons described in section 14.6.1.1.3.

Evaluation of significance

Taking the medium sensitivity of scallop dredgers and the low magnitude of impact, the overall effect to scallop dredgers is considered to be **minor** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Medium	Low	Minor
Offshore ECC	Medium	Low	Minor

Impact significance - NOT SIGNIFICANT

14.6.1.2.4 Non-UK fishing vessels

For the same reasons described for construction, non-UK fishing vessels are considered to have a **negligible sensitivity** to displacement.

Very low levels of effort are recorded by non-UK fishing vessels within the offshore Project area. The offshore Project area represents a very small proportion of the available grounds for this method and there is a wide availability of alternative grounds for these vessels. Considering this, the impact is defined as being of **negligible magnitude**.

Evaluation of significance

Taking the negligible sensitivity of non-UK fishing fleets and the negligible magnitude of impact, the overall effect to non-UK fishing fleets is considered to be **negligible** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Negligible	Negligible	Negligible
Offshore ECC	Negligible	Negligible	Negligible

Impact significance - NOT SIGNIFICANT

14.6.2 Loss or restricted access to fishing grounds

14.6.2.1 Potential effects during construction (including pre-construction)

Within the OAA, there will be temporary 500 m statutory safety zones around each WTG and OSP, implemented on a rolling basis, throughout the OAA as construction is undertaken over a four year period. Access to fishing grounds within these safety zones will be temporarily lost during the offshore Project's construction stage. In addition, 500 m advisory safety zones will be implemented around construction vessels and in areas of cable awaiting burial or protection. Therefore, the area occupied by statutory and advisory safety zones may increase as construction progresses, over the four year construction period (with an additional one year of pre-construction activities).

The offshore ECC will not have a statutory construction safety zone; however, the offshore export cable construction vessels, when present, will have 500 m advisory safety zones and loss of access may also occur in areas of unburied cable awaiting burial or additional cable protection. The offshore export cable construction vessels will be present intermittently over a four year period as a worst case scenario (with an additional year of pre-construction activities). The advisory safety zones will not be present in a single location for the duration as the construction vessels will progress along the offshore ECC.

The total number of vessel trips associated with construction is expected to be 1,772. However, the maximum number of vessels present within the offshore Project area at one time will be 30.

This temporary loss of access to fishing grounds impact will be reduced through the embedded mitigation measures outlined in Table 14-10, including communications from the OFLO and promulgation of information through NtMs and Kingfisher notifications to ensure that fishers are aware of the construction works and provided with updated information. Guard vessels and an OFLO (where required) will also be onsite, where appropriate, during construction works to aid offshore communications between the offshore Project vessels and fishing vessels active in the area.

14.6.2.1.1 Creelers

It is understood that creelers are active across the offshore Project area, with potentially more vessels with an operational range that could explore these fishing grounds. The fisheries statistics indicate that creelers both over and under 10 m are active in the commercial fisheries study area, with vessels mostly targeting lobster and crab.

By nature of the general size of vessels used for creeling, this fleet has lower flexibility in terms of where they can deploy their fishing gear, and a large proportion of the fleet is bound to their local area. There are also a small number of vivier[8] crabbers in the OAA and certain areas of the offshore ECC, which are larger vessels and work further offshore, often beyond the 12 nm limit, depending on crew staffing requirements. Consultation with the fishing industry showed that only a limited number of vessels fish the offshore Project area and that the general offshore Project area is not completely saturated with creels. Therefore, creelers are considered to be of low sensitivity to loss of access to fishing grounds within the offshore ECC due to the wider availability of fishing grounds, and medium sensitivity within the OAA due to the dependence of the vivier crabber vessels operating within the OAA on these fishing grounds.

Temporary loss or restricted access to fishing grounds may occur throughout the offshore Project area, as fishers operating static gear will be requested to relocate their gear outside of working construction areas. During periods where no construction works are underway, if required, the site will be marked, or guard vessels will be present for the unprotected or unburied sections of infrastructure (where appropriate). This may further restrict fishing within the area.

Embedded mitigations presented in section 14.5.4 will reduce impacts associated with loss of or restricted access to fishing grounds during the construction stage. This includes ensuring effective liaison with the fishing industry and the offshore Project, including the promulgation of information on the presence of statutory and advisory safety zones and unburied or unprotected areas of cable, to ensure all fishers are aware of the construction works in a timely manner. Liaison will be maintained through the construction stage through the appointment of a FLO and FIR, and where appropriate, OFLOs and guard vessels will be on site to aid offshore communications between the offshore Project vessels and fishing vessels active in the area.

Based on VMS data, the creel fishing grounds at the offshore Project area are considered to be of moderate value and represent a small extent of the available grounds within the commercial fisheries study area. It may take several months for creel fishing grounds to recover from the disturbance to crab and this could increase the duration of any temporary loss of access for creelers following construction activities (see chapter 11: Fish and shellfish ecology) to long-term. Therefore, the impact is defined as being of high magnitude within the OAA due to the long-term duration of restricted access within the OAA. However, within the offshore ECC, this impact is assessed to be of low magnitude due to the shorter duration.

[8] *Larger vessels targeting crab with a vivier tank on board to store the specimen until landed.*

Evaluation of significance

Taking the medium sensitivity of creelers and the high magnitude of impact within the OAA, the overall effect to creelers is considered to be **moderate** and **significant** in EIA terms.

Taking the medium sensitivity of creelers and the low magnitude of impact within the offshore ECC, the overall effect to creelers is considered to be **minor** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Medium	High	Moderate
Offshore ECC	Medium	Low	Minor

OAA impact significance – SIGNIFICANT

Offshore ECC impact significance – NOT SIGNIFICANT

Embedded mitigation measures and management plans are presented in section 14.5.4, including the preparation and adherence to the FMMS which will incorporate evidence based additional mitigations for vessels requested to relocate gear in line with FLOWW guidance (2014; 2015). An outline FMMS is provided in OP3: Outline Fisheries Management and Mitigation Strategy.

In addition to the above embedded mitigations, OWPL will continue dialog with the directly impacted fishers and develop a cooperation agreement which may incorporate provisions such as new gear, adaptations to gear (e.g. escape hatches to reduce juvenile catch and improve overall productivity and sustainability of the stock), guard vessel offset etc. These discussions are ongoing and any cooperation discussions will be held post-consent once the layout and construction schedule is finalised. With the implementation of the secondary mitigation, the impact would reduce to having a **low magnitude.** The residual consequence is **minor** and **not significant** in EIA terms.

14.6.2.1.2 Demersal trawlers

As described above in section 14.6.1.1.2, effort by demersal trawlers active in the commercial fisheries study area are mostly over 10 m in length, and therefore have a wide availability of alternative grounds and these vessels targeting whitefish and to a lesser extent squid have fewer constraints in terms of seabed habitat requirements compared with other target species such as *Nephrops*. Therefore, demersal trawlers are considered to be of **low sensitivity** to loss of access to fishing grounds.

Based on VMS data, demersal trawling within the OAA is of low to moderate value and effort, with high levels occurring to the east of the OAA and within the offshore ECC. Therefore, loss of access will mostly occur as a result of activities within the offshore ECC. Within the offshore ECC, temporary loss or restricted access to fishing grounds will result from 500 m advisory safety zones around construction vessels and in areas of unburied cable awaiting burial or additional cable protection. It is expected that construction will take place over two months per year (over a total of three years), and therefore, this temporary loss of access will be intermittent.

The OAA is considered to represent a small extent of the available fishing grounds in the area. Temporary loss or restricted access to fishing grounds within the OAA are anticipated to apply only to the 500 m statutory safety zones around the WTGs and OSP topsides that will be implemented on a rolling basis, and the 500 m advisory safety zones around construction vessels and in areas of cable awaiting burial or protection. As described in section 14.5.4, any temporary loss of access to fishing grounds will be reduced through the implementation of embedded mitigation measures, including effective fisheries liaison to ensure all fishers are aware of construction works and can plan accordingly.

Considering the information described above, the impact is defined as being of **medium magnitude**.

Evaluation of significance

Taking the low sensitivity of demersal trawlers and the medium magnitude of impact, the overall effect to demersal trawlers is considered to be **minor** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	Medium	Minor
Offshore ECC	Low	Medium	Minor

Impact significance – NOT SIGNIFICANT

14.6.2.1.3 Scallop dredgers

Most vessels operating scallop dredges in the study area are over 10 m in length. Many larger scallop dredges are nomadic, meaning they operate all around the UK, to opportunistically fish in a pattern which corresponds to the cyclical and fluctuating nature of scallop density in a location over time. Although fishing grounds for scallop dredges are widespread across the UK, these have become more limited in recent years, due to the implementation of restrictions on dredge numbers and the construction of wind farms across the UK. Considering this, scallop dredgers are considered to be of **medium sensitivity** to loss of access to fishing grounds.

The OAA, mainly Whitten Head Bank, sustains low to moderate levels of scallop dredge fishing, with higher levels of value and effort in the waters outside the OAA, including in ICES rectangle 46E5. Loss of access will be temporary and confined to the 500 m statutory safety zones around WTGs and OSPs, implemented on a rolling basis, and 500 m advisory safety zones around construction vessels and areas of cable awaiting burial of protection. Scallop dredging also occurs moderately around and, at lower levels, within the offshore ECC; therefore, temporary loss or restricted access are mainly expected to result from 500 m advisory safety zones around installation vessels within the offshore ECC and in areas of unburied cable awaiting burial or additional remedial protection. Scallop dredging within the OAA is expected to remain low to moderate, and so any loss of access is not expected to be considerable for this fishing method. Furthermore, as described in section 14.5.4, any temporary loss of access to fishing grounds will be reduced through the implementation of embedded mitigation measures, including effective fisheries liaison to ensure all fishers are aware of construction works and can plan accordingly. Therefore, the impact is defined as being of **low magnitude.**

Evaluation of significance

Taking the medium sensitivity of scallop dredgers and the low magnitude of impact, the overall effect to scallop dredgers is considered to be **minor** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Medium	Low	Minor
Offshore ECC	Medium	Low	Minor

Impact significance – NOT SIGNIFICANT

14.6.2.1.4 Non-UK fishing fleets

EU vessels operating in the commercial fisheries study area have large operational ranges. Analysis of the effort data shows that all vessels are over 18 m in length, with the majority over 40 m (Gibin *et al.*, 2021). Taking into account the large operational range of these vessels and the wide availability of grounds, non-UK fishing vessels are considered to be **negligible sensitivity** to loss of access to fishing grounds.

Fishing effort data for the commercial fisheries study area indicate that non-UK fishing effort within the OAA is likely to be very low, and very low within the offshore ECC which is partly due to the restrictions on fishing activity by non-UK vessels within the 12 nm limit. Considering the low effort levels sustained within the offshore Project area, alongside the temporary and localised nature of any loss of access to fishing grounds during construction, the impact is defined as being of **negligible magnitude**.

Evaluation of significance

Taking the negligible sensitivity of non-UK fishing fleets and the negligible magnitude of impact, the overall effect to non-UK fishing fleets is considered to be **negligible** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Negligible	Negligible	Negligible
Offshore ECC	Negligible	Negligible	Negligible

Impact significance – NOT SIGNIFICANT

14.6.2.2 Potential effects during operation and maintenance

The WTG layout has not been confirmed at this stage; however, the worst case scenario for loss of access during the operation and maintenance period assumes that the WTGs and OSPs are spread out across the full OAA. The minimum WTG and OSP spacing will be 944 m. There is no legislative requirement for the prevention of fishing within

operational wind farm sites. Therefore, the loss of access during operation and maintenance will be localised around the footprint of the offshore Project infrastructure.

500 m statutory safety zones around WTGs and OSPs during major maintenance activities will result in temporary loss of access during the operation and maintenance stage. 500 m advisory zones may also be established around vessels during non-major maintenance works. No loss of access over areas of inter-array or interconnector cables would be expected in the exception of any 500 m advisory safety zones implemented during maintenance activities.

It is acknowledged that the decision to fish within the OAA will be at the discretion of each skipper, based on their perception of risk which will be influenced by vessel size, manoeuvrability and the operational spread of gear deployed by the vessel, as well as weather and tidal conditions. Gray *et al.* (2016) analysed fishing activity data in areas within and relevant to six operational windfarms in the Irish Sea. The findings of this study showed an overall reduction of fishing effort by demersal trawling vessels, which was explained in part by changes in TAC allocations. Displacement of activity by *Nephrops* trawlers was observed in relation to Walney 2, whereas for all other operational offshore wind farms in the study no significant displacement of this fishery was recorded.

It is assumed that some fishing within the OAA by vessels operating mobile gear is possible in the operation and maintenance stage. It is more likely that static fishing will resume fishing within the OAA. The potential return of fishing within the OAA once operational by the various fishing fleets identified as relevant to the offshore Project area described in the sections below (section 14.6.1.2.1 and 14.6.1.2.4) and is based on the worst-case scenario parameters, the operational spread of fishing gear and the potential safety risks associated with returning to fish within the OAA.

As a worst case, it is assumed that five offshore export cables will be installed in separate trenches within the offshore ECC. The offshore export cables will be buried to a target depth of between 1-3 m where possible, and this will be informed by a CBRA. It is expected that up to a maximum of 29% of the offshore export cables will be buried with the potential for 93.5 km requiring additional protection. It is anticipated that up to 500 km of the inter-array cables will be installed on the seabed and that up to a maximum of 100 km will require additional protection and that up to 99 km of the 150 km interconnector cables may require additional protection.

It is assumed where the offshore export cables are buried to the target depth of between 1-3 m, informed by the CBRA, that fishing may be able to resume safely over the cables. The requirement for post-lay surveys will be discussed and included within the Cable Plan, where relevant.

14.6.2.2.1 Creelers

Creelers are known to be active both within the OAA and the offshore ECC. As described for construction in section 14.6.2.1.1, creelers within the OAA and offshore ECC are considered to be of medium sensitivity to loss of access to fishing grounds.

The safety risks associated with fishing within operational wind farms are generally considered to be lower for creelers, as this gear is less vulnerable to snagging compared with towed gear. Some changes to operating practices may be required to fish within the OAA, although it is expected fishing will be able to resume.

The offshore export cables will be buried to a target depth of between 1-3 m and where this is not possible, which is expected to be along up to 29% of the cables, additional cable protection will be installed, this is assumed to be a

worst case and will be informed by the CBRA, where it is anticipated that the percentage of cables requiring additional protection will be reduced. It is assumed that fishing by creelers will be able to resume over the offshore export cables during the operation and maintenance stage. Therefore, with respect to the offshore export cables, any loss of access will be temporary, resulting from 500 m advisory safety zones around vessels during maintenance works. The fishing industry will be informed of any safety zones surrounding maintenance works required during the operation and maintenance stage through the embedded mitigation measures outlined in section 14.5.4 which will reduce any potential impact caused.

The fishing grounds in the offshore Project area are considered to be of moderate value and represent a small proportion of the available grounds in the area. The loss of access may be long-term within the OAA where the WTGs and OSPs are present, lasting the full design life of the offshore Project (i.e. 30 years). Additional areas of temporary loss of access due to the relocation of gear during maintenance activities may also occur (e.g. safety zones associated with maintenance works). Fishing will be able to resume within the offshore ECC and there will likely also be fishing within the OAA. Therefore, the impact is defined as being of low magnitude.

Evaluation of significance

Taking the medium sensitivity of creelers and the low magnitude of impact within the OAA and offshore ECC, the overall effect to creelers is considered to be minor and not significant in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Medium	Low	Minor
Offshore ECC	Medium	Low	Minor

Impact significance – NOT SIGNIFICANT

14.6.2.2.2 Demersal trawlers

As described for construction in section 14.4.4, based on VMS data, demersal trawling within the OAA is of low to moderate value and effort, with high levels occurring to the east of the OAA and within the offshore ECC. In addition, this gear type has high versatility. Therefore, demersal trawlers are considered to be of low sensitivity to loss of access to fishing grounds. However, it should be noted that seine netting would not be able to continue within the OAA due to the WTG spacing and the length of gear that needs to be deployed (approximately 3.6 km). Therefore, for seine netting the sensitivity would be higher. However, much of the seine netting activity within the OAA relates to an individual seine net fisher from the Caithness area, and based on plotter data supplied, this fisher has a wide operation range.

Demersal trawl nets are held open by trawl doors (otter boards) and the net is towed several tens or hundreds of metres behind the vessel, with the width between the trawl doors also being up to tens or hundreds of metres. It is assumed based on the operational spread of demersal trawling gear and the spacing between the WTGs, that only fishing by smaller demersal trawlers may resume in the OAA during the operation and maintenance stage. However, it is recognised that fishing within operational offshore wind farms has been demonstrated previously in offshore wind farms on the west coast of England (Gray *et al.*, 2016).

The offshore export cables will be buried to a target depth of between 1-3 m and where this is not possible, which is expected to be up to 29% of the cables, additional cable protection will be used, this is assumed to be a worst case and will be informed by the CBRA, where it is anticipated that the percentage of cables requiring additional protection will be reduced. The final target cable burial depth will be informed by a CBRA and will consider fishing activity in the area. The fishing industry would be communicated with as soon as a cable exposure is identified and this would be charted as appropriate, as described in section 14.5.4. It is acknowledged that fishing by demersal trawlers may be impacted within areas with additional cable protection. The as-built locations of the cable and any areas of protection will be issued to Kingfisher. The requirement for post-lay surveys will be discussed and included within the CaP, where relevant.

The value of the offshore Project area for demersal trawlers is considered to be low to moderate, representing a small extent of the available grounds in the area. However, considering the relatively small area lost to demersal trawlers when compared to the available fishing grounds alongside the long-term nature of the impact, the impact is defined as being of medium magnitude.

Evaluation of significance

Taking the low sensitivity of demersal trawlers and the medium magnitude of impact within the OAA and offshore ECC, the overall effect to demersal trawlers is considered to be minor and not significant in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	Medium	Minor
Offshore ECC	Low	Medium	Minor
Impact significance - NOT SIGNIFICANT			

14.6.2.2.3 Scallop dredgers

Larger scallop dredgers are mainly nomadic with wide operational ranges. However, scallop grounds have become more limited in recent years due to the implementation of fishing restrictions and the construction of wind farms across the UK. Scallop dredgers are considered to have a medium sensitivity to loss of access to fishing grounds.

Scallop dredging vessels operate a rigid metal frame onto which is attached a chain mail bag and at the mouth a series of spring-loaded teeth which penetrate the seabed, dredging the scallops which are mostly sedentary and are seabed dependent. The dredges are attached to a spreading bar which is often attached to one of two beams, on either side of the fishing vessel. Each scallop dredge is approximately 0.75-m wide and the maximum number of dredges which can be operated is 16 within the 6 nm limit, 20 between the 6 nm to 12 nm limit and 28 in any other part of Scottish waters[9]. Whilst actively fishing, vessels have a lower manoeuvrability which may restrict fishing within

[9] *The Regulation of Scallop Fishing (Scotland) Order 2017.*

the OAA when operational. Therefore, it is assumed that fishing within the OAA may only resume in a very limited manner during operation. The OAA is considered to have a low value for scallop dredging. Surrounding areas in the commercial fisheries study area (e.g. ICES rectangle 46E5) are considered to be of a higher value than the OAA and offshore ECC.

The gear penetrates the seabed to dredge scallops and will often dredge the same area with repeat passes. Therefore, vessels may avoid dredging over areas of remedial protection. As mentioned previously, it is assumed that up to 29% of the offshore export cables may require additional cable protection, this is assumed to be a worst case and will be informed by the CBRA, where it is anticipated that the percentage of cables requiring additional protection will be reduced. As described for demersal trawlers, the as-built locations of the cable and any areas of protection will be issued to Kingfisher and the requirement for post-lay surveys will be discussed and included within the CaP, where relevant.

Although the impact will be long-term, any permanent loss from the OAA or offshore ECC will represent a small proportion of the available fishing grounds to this fleet. Therefore, the impact is defined as being of low magnitude.

Evaluation of significance

Taking the medium sensitivity of scallop dredgers and the low magnitude of impact, the overall effect to scallop dredgers is considered to be minor and not significant in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Medium	Low	Minor
Offshore ECC	Medium	Low	Minor

Impact significance - NOT SIGNIFICANT

14.6.2.2.4 Non-UK fishing vessels

As described for construction in section 14.6.2.1.4, EU vessels operating in the commercial fisheries study area are mostly over 40 m and are considered to have wide operational ranges. Therefore, non-UK fishing vessels are considered to be of negligible sensitivity to loss of access to fishing grounds.

Considering the size of the non-UK vessels operational in the commercial fisheries study area, the vessels are considered to have low manoeuvrability and are unlikely to fish within the OAA when operational.

As the fishing effort by non-UK vessels within the offshore Project area is very low and represents a very small proportion of the fishing grounds available for non-UK vessels, the impact is defined as being of negligible magnitude.

Evaluation of significance

Taking the negligible sensitivity of non-UK fishing fleets and the negligible magnitude of impact, the overall effect to non-UK fishing fleets is considered to be **negligible** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Negligible	Negligible	Negligible
Offshore ECC	Negligible	Negligible	Negligible
Impact significance - NOT SIGNIFICANT			

14.6.3 Interference with fishing activity as a result of increased vessel traffic

14.6.3.1 Potential effects during construction (including pre-construction)

Increased vessel traffic associated with construction works may lead to interference with fishing activity (e.g. fouling of static gear markers), or damage to gear / loss of gear. This may have economic impacts on the fishermen as it may take time to replace damaged / lost gear. Any increased risk of navigational safety hazards for fishing vessels associated with increased vessel traffic as a result of the offshore Project are discussed in chapter 15: Shipping and navigation.

There will be ongoing communication with commercial fisheries stakeholders via the communication channels listed within the embedded mitigation in section 14.5.4, such as the circulation of information through NtMs. An FLO will be in place to coordinate communications with the fishing industry. Furthermore, statutory vessel routes and anchor areas will be in place for construction vessels, reducing the potential risks associated with the increased vessel traffic, and these will be detailed in the NSVMP, and communicated to the fishing industry (see OP4: Outline Navigational Safety and Vessel Management Plan). All construction vessels will adhere to the COLREGs.

Guard vessels and an OFLO (where required) will also be onsite, where appropriate, during construction works to aid offshore communications and warnings of any hazards associated with the offshore Project.

All fleets are considered to have a **low sensitivity**, taking into account all embedded mitigation. Since this impact could lead to significant damage to the vessels involved and potential injury to crew members, it is defined as being of **high magnitude**.

Evaluation of significance

Taking the low sensitivity of all commercial fisheries receptors and the high magnitude of impact, the overall effect is considered to be **minor** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	High	Minor
Offshore ECC	Low	High	Minor

Impact significance - NOT SIGNIFICANT

14.6.3.2 Potential effects during operation and maintenance

Increased vessel traffic associated with maintenance works may lead to interference with fishing activity (e.g. fouling of static gear markers), or damage to gear / loss of gear. This may have economic impacts on the fishermen as it may take time to replace damaged / lost gear. Increased risk of navigational safety hazards with active fishing vessels are discussed in chapter 15: Shipping and navigation.

There will be ongoing communication with commercial fisheries stakeholders via the communication channels listed within the embedded mitigation in section 14.5.4, such as the circulation of information through NtMs. Vessel routes and anchor areas for operation and maintenance vessels (e.g. ancillary equipment) will be in place for offshore Project vessels, reducing the potential risks associated with the increased vessel traffic, and these will be detailed in the NSVMP, produced post-consent, and communicated to the fishing industry (see OP4: Outline Navigational Safety and Vessel Management Plan). All maintenance vessels will adhere to the COLREGs.

All fleets are considered to have a **low sensitivity**, taking into account all embedded mitigation and the rare occasions maintenance vessels will be onsite. Since this impact could lead to significant damage to the vessels involved and potential injury to crew members, it is defined as being of **high magnitude**.

Evaluation of significance

Taking the low sensitivity of all fleets and the high magnitude of impact, the overall effect is considered to be **minor** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	High	Minor
Offshore ECC	Low	High	Minor

Impact significance – NOT SIGNIFICANT

14.6.4 Increased steaming times

14.6.4.1 Potential effects during construction (including pre-construction)

The abovementioned risks, including temporary loss or restricted access to fishing grounds, displacement of fishing effort and increased vessel traffic may result in a requirement for vessels to alter transit routes to fishing grounds and potentially increase steaming times to their fishing grounds.

As described in chapter 15: Shipping and navigation, construction buoyage will be in place during the construction stage. There will be no restrictions on entry into the buoyed construction area. However, it is anticipated that some vessels will choose to avoid transiting through this area, and therefore, some deviations may be required.

14.6.4.1.1 Small local vessels

Smaller, local vessels are expected to be more affected by increased steaming times than larger vessels due to their more limited operational range. The fishing activity of these smaller, local fishing vessels mainly concentrates in nearshore waters and therefore inshore of the offshore Project area, potentially on the offshore ECC. As such, steaming times to fishing grounds would only be affected as a result of export cable installation activities in the nearshore area where the fishing activity and the offshore ECC overlap. Considering this, the requirement for changes in steaming routes to avoid advisory safety zones will be limited. The fleet is therefore considered to have a low sensitivity.

Recognising the short term nature of export cable construction activity and the spatial extent of any effects associated with safety zones during cable installation (advisory 500 m safety zones around cable construction vessels and unburied or unprotected cables), the potential increase in steaming times would be low. Furthermore, the embedded mitigation measures outlined in section 14.5.4, including fisheries liaison to ensure all fishers are aware of the nature, location and timing of construction works, will minimise impacts. Therefore, impact has been defined as low magnitude, as any potential increase in steaming times would be low.

Evaluation of significance

Taking the low sensitivity of small local fishing vessels and the low magnitude of impact, the overall effect is considered to be negligible and not significant in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	Low	Negligible
Offshore ECC	Low	Low	Negligible
Impact significance - NOT SIGNIFICANT			

14.6.4.1.2 Other vessels

Larger vessels, including local and non-local, are expected to be less affected by increased steaming times due to their larger operational range. The implementation of 500 m statutory safety zones around WTGs and OSPs during construction works, implemented on a rolling basis and 500 m advisory safety zones around construction vessels and in areas of cable awaiting burial and protection could result in some limited, short term increases in steaming distances and times for larger vessels. Considering the larger operational ranges of these fleets, they are considered to have a low sensitivity in respect of increased steaming times.

The embedded mitigation measures outlined in section 14.5.4, including fisheries liaison to ensure all fishers are aware of the nature, location and timing of construction works, will minimise impacts. This will enable fishers to plan vessel routes accordingly and in a timely manner.

Recognising the discrete areas that will be covered by statutory and advisory safety zones at any one time and their temporary nature over a four year period, the impact is considered to have a low magnitude within the offshore ECC. Consultation with the fishing industry indicated that during periods of poor weather, larger vessels may not choose to steam through the OAA due to potential safety concerns. However, due to the concerns raised through consultation, for the OAA, the impact is considered to have a medium magnitude.

Evaluation of significance

Taking into account the low sensitivity of other vessels and the medium magnitude of impact within the OAA, the overall effect is considered to be minor and not significant in EIA terms.

Taking into account the low sensitivity of other vessels and the low magnitude of impact within the offshore ECC, the overall effect is considered to be negligible and not significant in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	Medium	Minor
Offshore ECC	Low	Low	Negligible

Impact significance – NOT SIGNIFICANT

14.6.4.2 Potential effects during operation and maintenance

The abovementioned risks, including loss of access to fishing grounds, displacement of fishing effort and increased vessel traffic may result in a requirement for vessels to alter transit routes to fishing grounds and potentially increase steaming times to their fishing grounds.

Chapter 15: Shipping and navigation also assesses the potential impacts of vessel displacement, including for fishing vessels.

14.6.4.2.1 Small local vessels

Smaller, local vessels are expected to be more affected by increased steaming times than larger vessels due to their limited operational range. During operation, vessels are allowed to continue to fish within the offshore Project area and are not expected to have increased steaming times. During maintenance, vessels may be requested to leave the area for a short periods of time until maintenance has finished.

As described for construction, small local vessels are considered to have a **low sensitivity** to this impact, taking into account that the requirement for changes in steaming routes to avoid any advisory safety zones in the offshore ECC would be limited. Since this impact would only be for shorts periods of time, combined with embedded mitigation measures outlined in section 14.5.4 that will ensure vessels are aware of the locations of all infrastructure and the timing of any maintenance activities, it is defined as being of **low magnitude**.

Evaluation of significance

Taking the low sensitivity of small local vessels and the low magnitude of impact, the overall effect is considered to be **negligible** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	Low	Negligible
Offshore ECC	Low	Low	Negligible

Impact significance – NOT SIGNIFICANT

14.6.4.2.2 Other vessels

Larger vessels, including local and non-local are expected to be less affected by increased steaming times due to their larger operational range. Additionally, all vessels are allowed to steam and fish within the offshore Project area during operation and maintenance. During major maintenance, fishing vessels will temporarily be requested to keep to the 500 m statutory safety zones.

Other vessels are considered to have a **low sensitivity** to the impact, taking into account their larger operational range. Since any changes in steaming routes associated with the offshore ECC would only be for shorts periods of time and over a highly localised area, it is defined as being of **negligible magnitude** for the offshore ECC. Larger vessels may not choose to steam through the OAA during periods of poor weather due to potential safety concerns. The embedded mitigation measures outlined in section 14.5.4 will ensure that all fishers are aware of the location of WTGs and OSPs and the timing and nature of maintenance works. Therefore, the impact for the OAA is assessed as being of **medium magnitude.**

Evaluation of significance

Taking into account the low sensitivity of other vessels and the negligible magnitude of impact in the offshore ECC, the overall effect is considered to be **negligible** and **not significant** in EIA terms.

Taking into account the low sensitivity of other vessels and the medium magnitude of impact in the OAA, the overall effect is considered to be **minor** and **not significant** in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	Medium	Minor
Offshore ECC	Low	Negligible	Negligible

Impact significance – NOT SIGNIFICANT

14.6.5 Safety issues for fishing vessels

14.6.5.1 Potential effects during construction (including pre-construction)

This section only assesses the risk during active fishing; all other aspects with regards to navigational safety are assessed in chapter 15: Shipping and navigation.

14.6.5.1.1 Static gear

When being deposited on the seabed, static gear may be dragged behind the vessel for a short period of time. During this time, structures on or near the seabed may present a potential snagging risk to the fishing gear. During the construction stage within the offshore Project area, this includes pre-installed infrastructure, such as WTGs, OSPs, inter-array and interconnector cables awaiting burial or protection and dropped objects. Within the offshore ECC, potential snagging points include areas of offshore export cable awaiting burial or protection and dropped objects.

The risk of safety issues for static gear vessels is considered to be low for the following reasons:

- 500 m statutory safety zones will be established around each WTG and OSP when construction work is underway, and implemented on a rolling basis, reducing any potential snagging risk associated with the installations themselves;
- Static gear vessels will be requested to relocate their gear outside of working construction areas. Commercial fisheries stakeholders will be informed of the locations of any areas of pre-installed infrastructure or unburied cables via the communication channels listed within the embedded mitigation in section 14.5.4, such as the circulation of information through NtMs;
- A FLO will be in place to coordinate communications with the fishing industry; and
- Notifications, guard vessels and an OFLO will also be onsite, where appropriate, during construction windows to aid offshore communications and warnings of any temporary hazards associated with the offshore Project.

Vessels operating static gear are considered to have a **negligible sensitivity**, as this fishing method has a lower potential to interact with the seabed, and thus, the potential for damaged or lost gear is low. The severity of consequence is **serious** in terms of safety risk. Since this impact could lead to significant damage to the vessels

involved and potential injury to crew members, it is defined as being of a **high magnitude,** taking into account all embedded mitigation. However, the frequency of occurrence is considered to be **extremely unlikely** in terms of safety risk.

Evaluation of significance

Taking the negligible sensitivity of vessels operating static gear and the high magnitude of impact, the overall consequence is defined as being of **negligible consequence**, and **not significant** in EIA terms. Considering the serious severity and the unlikely frequency of occurrence, the overall risk is considered to be **tolerable** and within **acceptable limits.**

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Negligible	High	Negligible
Offshore ECC	Negligible	High	Negligible

Impact significance – NOT SIGNIFICANT

14.6.5.1.2 Mobile gear

Structures on or near the seabed present a potential snagging risk to fishing gear which is towed along the seabed. During the construction stage within the offshore Project area, this includes pre-installed infrastructure, such as WTGs, OSPs, inter-array and interconnector cables awaiting burial or protection and dropped objects. Within the offshore ECC, potential snagging points include areas of offshore export cables awaiting burial or protection, and dropped objects.

Impacts are anticipated to be similar for all mobile fishing fleets, therefore all mobile fleets, including scallop dredgers, and demersal trawlers, have been assessed together.

The risk of safety issues for vessels operating mobile gear is considered to be low for the following reasons:

- 500 m statutory safety zones will be established around each WTG and OSP when construction is underway, and implemented on a rolling basis, reducing any potential snagging risk associated with the installation itself;
- Commercial fisheries stakeholders will be informed of the locations of any areas of pre-installed infrastructure or unburied cable via the communication channels listed within the embedded mitigation in section 14.5.4, such as the circulation of information through NtMs;
- A FLO will be in place to coordinate communications with the fishing industry; and
- Guard vessels and an OFLO (where required) will also be onsite, where appropriate, during construction works to aid offshore communications and warnings of any hazards associated with the offshore Project.

Vessels operating mobile gear are considered to have a **low sensitivity**, as this fishing gear may be towed along the seabed, there is the potential for gear to be lost or damaged. The severity of consequence is **serious** in terms of safety risk. Since this impact could lead to significant damage to the vessels involved and potential injury to crew members, it is defined as being of **high magnitude,** taking into account all embedded mitigation. However, the frequency of occurrence is considered **remote** in terms of safety risk.

Evaluation of significance

Taking the low sensitivity of vessels operating mobile gear and the high magnitude of impact, the overall effect is assessed as being **minor** and **not significant** in EIA terms. Considering the serious severity and the remote frequency of occurrence, the overall risk is considered to be **tolerable** and **within acceptable limits.**

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	High	Minor
Offshore ECC	Low	High	Minor

Impact significance – NOT SIGNIFICANT

14.6.5.2 Potential effects during operation and maintenance

This section only assesses the risk during active fishing, all other aspects with regards to safety are assessed in the chapter 15: Shipping and navigation.

14.6.5.2.1 Static gear

When actively fishing within the OAA, a fishing vessel may lose control and collide with infrastructure.

When being deposited on the seabed, static gear may be dragged behind the vessel for a short period of time. During this time, structures on or near the seabed may present a potential snagging risk to the fishing gear. During the operational and maintenance stage within the OAA, this includes WTGs, OSPs, exposed cable and dropped objects. Within the offshore ECC, potential snagging points include areas of exposed cable and dropped objects.

All vessels are allowed to fish within the offshore Project area during operation, with the exception of any 500 m statutory and advisory safety zones required during maintenance. Commercial fisheries stakeholders will be informed of the locations of all infrastructure, exposed cables or maintenance works via the communication channels listed within the embedded mitigation in section 14.5.4, such as the circulation of information through NtMs. Guard vessels and an OFLO (where required) will also be onsite, where appropriate, during major maintenance works to aid offshore communications and warnings of any hazards associated with the offshore Project.

Vessels operating static gear are considered to have a **negligible sensitivity** to this impact, as this fishing method has a lower potential to interact with the seabed, and thus, the potential for damaged or lost gear is low. The severity of consequence is **serious** in terms of safety risk. Since this impact could lead to significant damage to the vessels involved and potential injury to crew members, it has been defined as being of a **high magnitude**. However, the frequency of occurrence is considered to be **extremely unlikely** in terms of safety risk.

Evaluation of significance

Taking the negligible sensitivity of vessels operating static gear and the high magnitude of impact, the overall effect is considered to be **negligible** and **not significant** in EIA terms. Considering the serious severity and the unlikely frequency of occurrence, the overall risk is considered to be **tolerable** and **within acceptable limits.**

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Negligible	High	Negligible
Offshore ECC	Negligible	High	Negligible

Impact significance – NOT SIGNIFICANT

14.6.5.2.2 Mobile gear

When actively fishing within the OAA, a fishing vessel may lose control and collide with infrastructure.

Structures on or near the seabed present a potential snagging risk to fishing gear which is towed along the seabed. During the operation and maintenance stage within the OAA, this includes WTGs, OSPs, exposed cables and dropped objects. Within the offshore ECC, potential snagging points include areas of exposed cable, dropped objects and areas of cable protection.

Impacts are anticipated to be similar to all mobile fishing fleets, therefore all mobile fleets have been assessed together.

Commercial fisheries stakeholders will be informed of the locations of any areas of all infrastructure, exposed cables or maintenance works via the communication channels listed within the embedded mitigation in section 14.5.4, such as the circulation of information through NtMs. A FLO will be in place to coordinate communications with the fishing industry. Guard vessels and an OFLO (if required) will also be onsite, where appropriate, during major maintenance works to aid offshore communications and warnings of any hazards associated with the offshore Project.

Vessels operating mobile gear are considered to have a **low sensitivity** to this impact, as this fishing gear may be towed along the seabed, there is the potential for gear to be lost or damaged. The severity of consequence is **serious** in terms of safety risk. Since this impact could lead to significant damage to the vessels involved and potential injury to crew members, it has been defined as being of **high magnitude**. However, the frequency of occurrence is considered **remote** in terms of safety risk.

Evaluation of significance

Taking the low sensitivity of vessels operating mobile gear and the high magnitude of impact, the overall effect is considered to be **minor** and **not significant** in EIA terms. Therefore, the overall risk is considered to be **within acceptable limits.** Considering the serious severity and the remote frequency of occurrence, the overall risk is considered to be **tolerable** and **within acceptable limits.**

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	High	Minor
Offshore ECC	Low	High	Minor

Impact significance – NOT SIGNIFICANT

14.6.6 Potential effects during decommissioning

The preferred decommissioning option will be for as close to full removal as possible (i.e. clear seabed), whilst recognising that this will be subject to assessments and consultation closer to the time of decommissioning. It is expected that WTGs and OSPs will be removed and any foundations that extend below the seabed will be cut approximately 1 m below the seabed to allow removal of the foundation structures. The same applies for the offshore export cables, inter-array cables and the interconnector cables with a clear seabed being the preferred option, although some materials may be left *in situ*.

A Decommissioning Programme will be developed, consulted on and approved pre-construction to address the principal decommissioning measures for the offshore Project, this will be written in accordance with applicable guidance and will detail the management, environmental management and schedule for decommissioning. Prior to the commencement of any decommissioning works, the Decommissioning Programme will be reviewed and revised as required in accordance with the industry practice at that time. The decommissioning activities are expected to take a similar duration as the construction programme.

Given the nature of the decommissioning activities, which will largely be a reversal of the installation process, the impacts during decommissioning are expected to be similar to or less than those assessed for the construction stage. Therefore, the magnitude of impacts assigned to commercial fisheries receptors during the construction stage is also applicable to the decommissioning stage. It is also assumed that the receptor sensitivities will not materially change over the lifetime of the offshore Project. Therefore, the decommissioning effects are not expected to exceed those assessed for construction.

As all abovementioned assessments are not expected to exceed the affects during construction, the same sensitivity and magnitude of impact as construction apply to decommissioning.

14.6.7 Potential socio-economic impacts

The Scottish Government (2019b) has provided methodologies for the quantitative assessment of economic impacts on the commercial fishing industry for ScotWind developments. In the Social and Economic Impact Assessment

Report (Scottish Government, 2019b), the potential impact is calculated through a direct Gross Value Added (GVA)[10] over the period 2020 – 2059, where it is assumed that for all ScotWind POs construction will begin in 2028 with construction completing and operation starting in 2030. For the whole Northern region[11], the expected potential effects are assessed as £614,000 for a low wind scenario (1 GW), £1,227,000 for a medium wind scenario (2 GW) and £1,617,000 for a high wind scenario (3 GW). For the maximum development scenario (2 GW) in the N1 area, the direct GVA impact is estimated to be £1,392,000, which equates to £696,000 per GW installed. The potential annual average value of landings affected per GW installed under the maximum development scenario (2 GW) for N1[12] was calculated to be £106,000 and the potential annual average direct GVA affected for commercial fisheries under the maximum development scenario was calculated to be £101,000. The report concluded that the potential impact on GVA of all fleet segments under all regional scenarios is less than 1% of the regional direct GVA of each fleet segment and the direct GVA affected per fleet segment for the N1 region (annual average, 2019 prices) shows a direct GVA affected as % of regional GVA of less than 0.2% under all scenarios.

The calculations as done by the Scottish Government are based on various assumptions; they only include UK vessels, they assume all landings are lost and there is no displacement into other areas, cables are not included, and a worst case scenario is assessed, therefore potential mitigation from any form of spatial planning was not considered. It also should be noted that the maximum development scenarios (GW) have been exceeded when ScotWind was awarded by Crown Estate Scotland, therefore some estimates may differ slightly.

The loss of access to fishing grounds and displacement of fishing effort may result in socio-economic impacts, such as changes in landings, increased steaming times to alternative fishing grounds, or increased potential for gear conflict. Vessels may also have to invest in adaptations to their gear.

The assessment of potential effects during construction or operation and maintenance, as described above, concluded that the impact of the offshore Project on all commercial fisheries receptors is not significant for all impacts with the exception of displacement of fishing effort and temporary loss of access on creelers within the OAA during construction. However, OWPL will mitigate this impact through the development of cooperation agreements, as required (see sections 14.6.1.1.1 and 14.6.2.1.1). Chapter 11: Fish and shellfish ecology has also concluded that no significant effects are predicted on commercial fish and shellfish species during all offshore Project stages.

14.6.7.1 Small local vessels

Small local vessels are considered to have a medium sensitivity to socio-economic impacts, and this relates to the lower capacity of these vessels to accommodate socio-economic impacts when compared with larger vessels with a wider availability of fishing grounds. Socio-economic impacts may be long-term. Embedded mitigations described in section 14.5.4, such as the development and adherence to a FMMS will manage impacts to local, smaller vessels (see OP3: Outline Fisheries Management and Mitigation Strategy). Furthermore, the effects of the offshore Project are expected to affect a small number of vessels only, and as smaller local vessels are expected to be able to resume

[10] *GVA is defined as the measure of the value of goods and services produced in an area, by an industry, or by an individual company.*

[11] *The Northern region encompasses plan option (PO) areas N1, N2, N3 and N4.*

[12] *N1 is one of the 15 PO areas identified for the development of commercial scale offshore wind farms as part of the ScotWind leasing round. The Crown Estate Scotland (CES) awarded OWPL the OAA in January 2022 for the development of the proposed Project within the N1 PO.*

fishing within the OAA and offshore ECC to some degree (subject to the perception of risk by the skipper), the impact has been defined as being of low magnitude.

Evaluation of significance

Taking the medium sensitivity of all smaller local vessels and the low magnitude of impact, the overall effect is considered to be minor and not significant in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Medium	Low	Minor
Offshore ECC	Medium	Low	Minor

Impact significance – NOT SIGNIFICANT

14.6.7.2 Other vessels

Larger vessels are considered to have a low sensitivity to socio-economic impacts, and this relates to the wider availability of fishing grounds, as well as the larger earnings typically associated with these vessels. Socio-economic impacts may be long-term. However, the effects of the offshore Project are expected to affect a small number of vessels only that have the ability to fish in alternative grounds. Furthermore, embedded mitigations described in section 14.5.4, such as the development and adherence to a FMMS will manage impacts (see OP3: Outline Fisheries Management and Mitigation Strategy). Therefore, the impact has been defined as being of low magnitude.

Evaluation of significance

Taking the low sensitivity of other vessels and the low magnitude of impact, the overall effect is considered to be negligible and not significant in EIA terms.

Offshore Project area	Sensitivity	Magnitude of impact	Consequence
OAA	Low	Low	Negligible
Offshore ECC	Low	Low	Negligible

Impact significance – NOT SIGNIFICANT

14.6.8 Summary of potential effects

A summary of the outcomes of the assessment of potential effects from the construction, operation and maintenance, and decommissioning of the offshore Project is provided in Table 14-12. A significant effect on creelers was identified from displacement of fishing effort and temporary loss or restricted access to fishing grounds within the OAA. Therefore, additional mitigation measures have been proposed to reduce the significance of effect from moderate to minor.

Table 14-12 Summary of potential effects

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
Construction and decommissioning							
Displacement of fishing effort	Creelers	OAA	Medium	Medium	Moderate (significant)	With the implementation of secondary mitigation outlined in section 14.11, the magnitude is reduced from medium to low. Therefore, the residual consequence is minor and not significant.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Demersal trawlers	OAA	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Scallop dredgers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Non-UK fishing vessels	OAA	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Temporary loss or restricted access to fishing grounds	Creelers	OAA	Medium	High	Moderate (significant)	With the implementation of secondary mitigation outlined in section 14.11, the magnitude is reduced from high to low. Therefore, the residual consequence is minor and not significant.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Demersal trawlers	OAA	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
	Scallop dredgers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Non-UK fishing vessels	OAA	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Interference with fishing activities as a result of increased vessel traffic	All fleets	OAA	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
Increased steaming times	Small local vessels	OAA	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
	Other vessels	OAA	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Safety issues for fishing vessels	Vessels operating static gear	OAA	Negligible	High	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	High	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
	Vessels operating mobile gear	OAA	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
Operation and maintenance							
Displacement of fishing effort	Creelers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Demersal trawlers	OAA	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
	Scallop dredgers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Non-UK fishing vessels	OAA	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Loss of access to fishing grounds	Creelers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Demersal trawlers	OAA	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Scallop dredgers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Non-UK fishing vessels	OAA	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Interference with fishing activities as	All fleets	OAA	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
a result of increased vessel traffic		Offshore ECC	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
Increased steaming times	Small local vessels	OAA	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
	Other vessels	OAA	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Safety issues for fishing vessels	Vessels operating static gear	OAA	Negligible	High	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	High	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
	Vessels operating mobile gear	OAA	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
Socio-economic impacts							
Socio-economic impacts to commercial fisheries	Small local vessels	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Other vessels	OAA	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)

14.7 Assessment of cumulative effects

14.7.1 Introduction

Potential impacts from the offshore Project have the potential to interact with those from other projects (developments), plans and activities, resulting in cumulative impacts on commercial fisheries receptors. The general approach to the cumulative effects assessment is described in chapter 7: EIA methodology and further detail is provided below.

The list of relevant developments for inclusion within the cumulative effects assessment is outlined in Table 14-13. This has been informed by a screening exercise, undertaken to identify relevant developments for consideration within the cumulative effects assessments for each EIA topic, based on defined Zones of Influence (ZoI). As requested in the scoping opinion, consideration has also been given to nature conservation designations (see below).

The potential for a cumulative impact on commercial fisheries receptors depends on the extent of the fishing grounds for the receptors potentially affected. Developments within 100 km of the offshore Project are considered to have the potential to result in cumulative impacts for all fishing methods with the exception of scallops, that may be affected beyond this distance. 100 km is considered to represent a conservative distance for the majority of fishing methods operational within the offshore Project. It is recognised that some vessels may have operational ranges beyond this distance, however, this 100 km range captures developments that will affect vessels with smaller operating ranges that are more sensitive to any potential cumulative impacts posed by the offshore Project with other developments, plans and activities.

Developments beyond 100 km have been considered qualitatively with regards to the potential to impact larger scallop dredgers, as these vessels have wide operational ranges and typically fish nomadically at established scallop beds throughout UK waters on a cyclical basis. These developments were identified through a review of VMS data for scallop dredging around the UK to identify those potentially located in scallop dredge fishing grounds.

Other ScotWind developments, Offshore Wind Leasing Round 4 developments, and Innovation and Targeted Oil and Gas (INTOG) leasing round developments have been considered where there is sufficient publicly available information to conduct a meaningful assessment of cumulative effects. However, if sufficient detail is not available, it has not been possible to conduct a meaningful assessment of potential cumulative effects, and therefore, these developments have not been considered within the cumulative effects assessment.

Table 14-13 List of developments considered for the commercial fisheries cumulative impact assessment

LOCATION	DEVELOPMENT TYPE	DEVELOPMENT NAME	DISTANCE TO OAA (KM)	DISTANCE TO OFFSHORE ECC (KM)	STATUS	CONFIDENCE[13]	RELEVANT RECEPTORS
West of Orkney and Scapa Flow	Cable	West of Orkney – transmission connection to Flotta Hydrogen Hub	0	0	Pre-application	Low	All
Dounreay, Caithness	Offshore wind farm	Pentland Floating Offshore Windfarm (PFOWF)[14]	20	2	Consented	Medium	All
Dounreay, Caithness to Warebeth, Orkney	Cable	Scottish Hydro Electric Transmission Plc (SHET-L) Caithness to Orkney High Voltage Alternating Current (HVAC) Link	22	0	Consented	Medium	All
Muckle Bay, Caithness to Rackwick Bay, Orkney	Cable	Pentland Firth East (3) Cable Replacement	26	11	Under construction	High	All

[13] Confidence ratings have been applied to each cumulative development where: 'Low' = pre-application or application, 'Medium' = consented and 'High' = under construction or operational.

[14] Pentland Floating Offshore Wind Farm (PFOWF) will incorporate the currently consented Pentland Floating Offshore Wind Demonstrator turbine, and hence PFOWF only has been considered. The PFOWF Section 36 Consent and Marine Licence was granted for 10 years. However, the cumulative effects assessment has been based on the Project Design Envelope, as specified within the EIA, and therefore, an operational life of up to 30 years for the PFOWF has been considered. Since consent was granted in June 2023, PFOWF have submitted a Screening Report to MD-LOT with the intention to request a variation to the Section 36 Consent. This variation will incorporate refinements to the Project Design Envelope and to extend the operational life to 25 years.

LOCATION	DEVELOPMENT TYPE	DEVELOPMENT NAME	DISTANCE TO OAA (KM)	DISTANCE TO OFFSHORE ECC (KM)	STATUS	CONFIDENCE[13]	RELEVANT RECEPTORS
Caithness[15]	Space Hub	Space Hub Sutherland	38	44	Under construction	High	All
Orkney Islands	Port / Harbour	Hatston Pier and Terminal Expansion	55	54	Pre-application	Low	All
Orkney Islands	Port / harbour	Scapa Deep Water Quay	55	52	Pre-application	Low	All
Orkney Islands	Tidal Array	Fall of Warness	65.5	68	Pre-application for proposed change to operational development	Low	All
Orkney Islands	Tidal Array	Lashy Sound Tidal Array	73	76	Pre-application	Low	All

[15] *The Space Hub Sutherland launch site will be onshore. However, launch exclusion zones may extend offshore in the vicinity of the offshore Project.*

LOCATION	DEVELOPMENT TYPE	DEVELOPMENT NAME	DISTANCE TO OAA (KM)	DISTANCE TO OFFSHORE ECC (KM)	STATUS	CONFIDENCE[13]	RELEVANT RECEPTORS
Moray Firth	Offshore wind farm	Caledonia Offshore Windfarm	92	64	Pre-application	Low	All
Moray Firth	Offshore wind farm	Moray West Offshore Windfarm	96	64	Under construction	High	All
Moray Firth	Oil & Gas	Beatrice Decommissioning Programme	98	65	Consented	Medium	All
UK waters	Offshore wind farm	Other UK offshore windfarms which may overlap with scallop grounds (e.g. Marram Wind, Ossian Wind, Salamander offshore wind farm, Seagreen, Seagreen 1A, Inch Cape Offshore Windfarm, Neart Na Gaoithe Offshore Windfarm, Berwick Bank Offshore Windfarm, Dogger Bank B, Morecambe Offshore Windfarm, Dogger Bank A, Hornsea Project Three, and Rampion 2)	> 100	> 100	Pre-application, application, consented or under construction	Low to High	Nomadic scallop dredgers
UK waters	Cable	Other proposed UK cable developments which may overlap with scallop grounds and may be constructed at the same time as the offshore Project (e.g. Cambois cable connection, Scotland England Green Link 2, Neuconnect and Sea Link)	>100	> 100	Pre-application, application, or consented	Low	Nomadic scallop dredgers

Fisheries restricted areas (e.g. closures), including those associated with sites designated for nature conservation interests, may also act cumulatively with the offshore Project by further restricting access to fishing grounds or resulting in displaced effort. It is acknowledged that management measures in designated sites could come into effect in the future and act cumulatively with the offshore Project. In July 2023, the Scottish Government decided to not take forward Highly Protected Marine Areas (HPMAs), which are areas of the seabed where fishing would have been prohibited. HPMAs would have covered at least 10% of the Scottish seabed. Fisheries management measures can still be implemented in Scotland through area restrictions and closures, potentially within designated sites, based on the advice of Statutory Nature Conservation Bodies (SNCBs) and depending on the features of the designated site, their condition and the conservation objectives of the site. Furthermore, although sandeels do not form an important fishery within the offshore Project area, a sandeel quota has not been allocated in the UK since 2021, and in July 2023, the Scottish Government opened a consultation for the permanent closure of sandeel fishing in all Scottish waters in order to protect the sandeel stock (Scottish Government, 2023).

It is not certain as to whether restrictions will be implemented for nearby designated sites, or indeed what these restrictions would entail, and therefore, a meaningful cumulative impact assessment cannot be conducted. Notably, the Joint Nature Conservation Committee (JNCC) website for the North West Orkney Nature Conservation Marine Protected Area (NCMPA), the closest designated site to the OAA, notes that there are currently no fisheries targeting sandeels (the designated features of this site) (JNCC, 2022). Therefore, no fisheries restrictions in this designated site are expected to be implemented. Potential fisheries management restrictions are suggested for mobile bottom contact fishing gear within the Solan Bank Reef Special Area of Conservation, located 25 km west of the Project (JNCC, 2023). However, at the time of writing, it is uncertain 1) whether Marine Directorate and Scottish Ministers will choose to implement fisheries management measures, as advised by the JNCC; and 2) If implemented, whether these would involve a reduction or removal of fishing pressure. Therefore, meaningful cumulative impact assessment cannot be conducted. It should also be noted that according to the Marine Directorate average intensity (hours) VMS data, bottom trawling and dredging within the Solan Bank Reef SAC is at comparatively low levels when compared with the surrounding area, and therefore, any potential cumulative effect is not expected to be significant.

The following impacts have been taken forward for the cumulative effects assessment:

- Construction and decommissioning:
  - Displacement of fishing effort;
  - Temporary loss or restricted access to fishing grounds;
  - Interference with fishing activity as a result of increased vessel traffic;
  - Increased steaming times;
  - Safety issues for fishing vessels;
  - Socio-economic impacts on commercial fisheries;
- Operation and maintenance:
  - Displacement of fishing effort;
  - Loss of access to fishing grounds;
  - Interference with fishing activity as a result of increased vessel traffic;
  - Increased steaming times;
  - Safety issues for fishing vessels; and
  - Socio-economic impacts on commercial fisheries.

14.7.2 Displacement of fishing effort

14.7.2.1 Cumulative construction effects

As noted for the assessment of displacement for the offshore Project alone, displacement is directly linked to loss of access, as loss of access will lead to displacement.

14.7.2.1.1 Creelers

As described for the offshore Project alone, creelers are considered to be of medium sensitivity to displacement.

Smaller inshore creeling vessels are more limited in their operational range and are mainly constrained to within the 12 nm limit, within ICES rectangles 46E6 and 46E5. It is therefore expected that the SHET-L Caithness to Orkney HVAC Link and the PFOWF will have the greatest potential to result in cumulative impacts for this fleet. These developments could result in additional displacement of creelers into adjacent grounds, increasing the spatial extent or duration of any primary or secondary displacement effects. PFOWF is expected to be constructed between 2024 and 2026, and therefore, will not overlap with the offshore Project construction stage.

The Project are also aware of an offshore vivier crabber that operates beyond the 12 nm limit within the OAA, as well as some other larger creeling vessels over 15 m in length. These vessels have larger operational ranges and may be affected by other developments at a greater distance from the offshore Project, including the transmission connection to the Flotta Hydrogen Hub.

Other developments in the vicinity of the offshore Project represent a small proportion of the grounds available to this fleet and the majority of developments are expected to already be operational (reducing the spatial extent of displacement impacts as the offshore Project is being constructed). As mentioned for loss of access, it would also be expected that other developments requesting creelers to remove gear would also establish an evidence-based mitigation following FLOWW guidelines, which would also reduce the effect of any displacement effects. Therefore, the impact remains as being of medium magnitude for the OAA and low magnitude for the offshore ECC. The overall effect to creelers is considered to be minor and not significant for the offshore ECC and moderate and significant within the OAA. Secondary mitigation has been proposed to reduce the magnitude of impact on creelers within the OAA, as described for the Project-alone assessment in section 14.6.1.1.1. No additional mitigation measures are considered necessary as lower levels of activity by the creel fleets operational within the OAA are expected at the other developments considered within this cumulative effects assessment. Therefore, the residual consequence for the OAA is minor and not significant.

14.7.2.1.2 Demersal trawlers

As described for the offshore Project alone, demersal trawlers are considered to have a low sensitivity to displacement.

Demersal trawlers typically have larger operational ranges than creelers, and other developments within 100 km of the offshore Project have the potential to result in cumulative impacts for this fleet. This includes the offshore developments within the Pentland Firth and the waters around, as well as those in the Moray Firth. It is also acknowledged that several fisheries management measures may be implemented for demersal trawlers throughout

the UK, including within nature conservation sites to reduce seabed disturbance to sensitive benthic features / species and that more may be implemented in the future. This could also act cumulatively with any displacement of effort resulting from the offshore Project during construction.

Except for the SHET-L Caithness to Orkney HVAC Link, the transmission connection to Flotta Hydrogen Hub and the Caledonia offshore wind farm, the cumulative developments listed in Table 14-13 are expected to be operational at the time of the construction of the offshore Project, reducing the spatial extent of any cumulative impact, as fishing should be able to resume along offshore export cables and the extent of any safety zones will be smaller. It should also be highlighted that this fleet has a wide operational range and demersal trawling within the offshore Project area and in the proposed wind farms in the cumulative development list is of relatively low effort and value. The main exception to this is the Moray Firth windfarms, however, the effort is concentrated inshore along the export cables of these developments. The area of restricted access across any wind farms being constructed at the same time as the offshore Project will largely be limited to statutory and advisory safety zones, and therefore, the cumulative developments represent a small proportion of the grounds available to these vessels.

Considering the above, the impact remains as being of medium magnitude for demersal trawlers. Therefore, the overall effect is considered to be minor and not significant for both the OAA and offshore ECC.

14.7.2.1.3 Scallop dredgers

As described for the offshore Project alone, scallop dredgers are considered to be of medium sensitivity to displacement.

Larger scallop dredgers are nomadic and fish opportunistically along the UK coastline. Effort is mainly concentrated around the west and east coast of Scotland, around the Isle of Man, along the west coast of Wales and Cornwall and within the English Channel. Therefore, cumulative impacts are most likely to arise with developments in these areas. As described for demersal trawlers, fisheries management measures may be implemented for dredging throughout the UK which could act cumulatively with any loss of access resulting from the offshore Project during construction.

As for demersal trawlers, any displacement associated with developments being constructed at the same time as the offshore Project would be limited to the areas affected by statutory and advisory safety zones. Scallop dredgers may also refrain from fishing within operational floating offshore wind farms, such as the PFOWF, due to the potential safety risks.

It recognised that there are several proposed developments and fisheries management measures from which access for scallop dredging could be lost, which limits the grounds within which fishing can be displaced to. However, the wide availability of grounds available to this fleet is still considered to be able to accommodate displacement from the construction stage, in addition to that from other proposed developments or fisheries management measures, without a significant increase in gear conflict or increased competition. Therefore, the impact remains as low magnitude. The overall effect is considered to be minor and not significant for both the OAA and offshore ECC.

14.7.2.1.4 Non-UK fishing fleets

For the same reasons described for the offshore Project alone, non-UK fishing vessels are considered to have a negligible sensitivity to displacement. Considering the wide availability of grounds for non-UK fishing vessels and the low value of the offshore Project for these vessels, the impact remains as being of negligible magnitude.

Therefore, the overall effect to non-UK fishing vessels is considered to be negligible and not significant for both the OAA and offshore ECC.

14.7.2.2 Cumulative operation and maintenance effects

14.7.2.2.1 Creelers

As described for the offshore Project alone, creelers are considered to be of medium sensitivity to displacement.

Cumulative displacement impacts may arise as creelers may choose to not fish within the OAA and who may also be displaced from other developments. It would also be expected that fishing over the SHET-L Caithness to Orkney HVAC Link and the PFOWF offshore export cables would resume when operational.

For creeling vessels that operate further offshore within the OAA, it is expected fishing will be able to resume, although some changes to operating practices may be required. VMS data for vessels operating static gear indicates that they are mostly active along the continental shelf and on the west coast of Scotland, with limited effort in the Moray Firth where the Moray East, Moray West and Caledonia wind farms are located. Therefore, there is considered to be low effort levels for larger creel vessels within the developments considered for the cumulative assessment.

Taking the above into account, as well as the small proportion of the available fishing grounds lost in association with other cumulative developments for this fleet, the impact remains as being of low magnitude. Therefore, the overall effect to creelers is considered to be minor and not significant for both the OAA and offshore ECC.

14.7.2.2.2 Demersal trawlers

As described for the offshore Project alone, demersal trawlers are considered to have a low sensitivity to displacement.

Cumulative displacement impacts may arise if demersal trawlers are displaced from other sites in addition to the OAA. Demersal trawling may not resume within operational wind farms (subject to the risk perception of the skipper). However, fishing over the offshore export cable may be possible where the target burial is met.

The fishing grounds associated with the offshore Project and the cumulative developments are considered to be of relatively low effort and value. Therefore, considering this and the wide availability of grounds for these vessels, it would be expected that displacement impacts would be limited. Therefore, the impact remains as being of low magnitude. Therefore, the overall effect is negligible and not significant for both the OAA and offshore ECC.

14.7.2.2.3 Scallop dredgers

As described for the offshore Project alone, scallop dredgers are considered to be of **medium sensitivity** to displacement.

As described for construction, it is acknowledged that several offshore wind farms are proposed to be located within scallop dredge grounds and that it may not be possible for fishing to resume over these sites. It is expected that fishing will also be displaced from the OAA and in areas of additional remedial protection along the offshore export cables. As the value of grounds within the OAA is relatively low, and the PFOWF array area also supports low levels of scallop dredging, displacement impacts in the immediate vicinity of the offshore Project will be low. However, it is recognised that there are offshore wind farms across the UK located within more valuable grounds (e.g. English Channel). Although any displacement will be a long-term impact, considering the wide operational range of nomadic scallop dredgers, the potential for cumulative displacement impacts is low. Considering this, the impact remains as **low magnitude.** Therefore, the overall effect to scallop dredgers is considered to be **minor** and **not significant** for both the OAA and offshore ECC.

14.7.2.2.4 Non-UK fishing vessels

As described for the offshore Project alone, non-UK fishing vessels are considered to have a **negligible sensitivity** to displacement.

Considering the wide availability of grounds for non-UK fishing vessels and the low value of the offshore Project area for these vessels, the impact remains as being of **negligible magnitude**. Therefore, the overall effect to non-UK fishing vessels is considered to be **negligible** and **not significant** for both the OAA and offshore ECC.

14.7.3 Loss or restricted access to fishing grounds

14.7.3.1 Cumulative construction effects

There is the potential for cumulative loss or restricted access to fishing grounds, if the same receptors affected by the offshore Project are affected by loss or restricted access associated with other developments. This cumulative impact could increase the spatial extent or duration of any loss or restricted access.

14.7.3.1.1 Creelers

As described above for the offshore Project alone, creelers are considered to have a **medium sensitivity** to loss or restricted access to fishing grounds.

As noted for displacement of fishing effort, the other developments with the greatest potential to result in a cumulative impact with the offshore Project are the SHET-L Caithness to Orkney HVAC Link and the PFOWF. As the PFOWF is a floating offshore wind farm, creelers may not resume fishing once construction is completed, representing a long-term loss of access over a small area of the available fishing grounds to this creel fleet. The construction timelines for the SHET-L Caithness to Orkney HVAC Link are not known and therefore it has been assumed that they have the potential to overlap with the offshore Project.

The Project are also aware of an offshore vivier crabber that operates beyond the 12 nm limit within the OAA, as well as some other larger creeling vessels over 15 m in length. These vessels have larger operational ranges and may be affected by other developments at a greater distance from the offshore Project, including the transmission connection to the Flotta Hydrogen Hub.

With the above in mind, there may be instances when vessels will be excluded from multiple areas of their fishing grounds. However, in line with standard best practice, it would be expected that where relocation of gear during construction is requested for other developments (e.g. SHET-L Caithness to Orkney HVAC Link and the transmission connection to the Flotta Hydrogen Hub), evidence-based mitigation following FLOWW guidelines would also be applied. In addition, considering that any loss of access associated with the PFOWF will be over a small extent of the available fishing grounds.

Creel fleets may also be affected by the launch exclusion zones established by Space Hub Sutherland, which will exclude vessels from entering within the zone for a short duration during launch events, anticipated to last a few hours (HIE, 2022). However, this is expected to affect the vessels only, rather than the actual static gear, which will be able to remain within the launch exclusion zone. As this is of a very short duration, the potential for a cumulative effect is negligible.

Considering the above, the impact remains as being of low magnitude for the offshore ECC and a high magnitude for the OAA. Therefore, the overall effect remains as minor and not significant within the offshore ECC and moderate and significant within the OAA. Secondary mitigation has been proposed to reduce the magnitude of impact on creelers within the OAA, as described for the Project-alone assessment in section 14.6.2.1.1. No additional mitigation measures are considered necessary as lower levels of activity by the creel fleets operational within the OAA are expected at the other developments considered within this cumulative effects assessment. Therefore, the residual consequence for the OAA is minor and not significant.

14.7.3.1.2 Demersal trawlers

As described for the offshore Project alone, demersal trawlers targeting whitefish or squid are considered to have a low sensitivity to loss or restricted access to fishing grounds.

Demersal trawlers typically have larger operational ranges than creelers, and other developments within 100 km of the offshore Project have the potential to result in cumulative impacts for this fleet. This includes the offshore developments within the Pentland Firth and the waters around, as well as those in the Moray Firth. It is also acknowledged that several fisheries management measures may be implemented for demersal trawlers throughout the UK, including within nature conservation sites to reduce seabed disturbance to sensitive benthic features / species and that more may be implemented in the future. This could also act cumulatively with any temporary loss of access resulting from the offshore Project during construction.

Except for the SHET-L Caithness to Orkney HVAC Link, the transmission connection to Flotta Hydrogen Hub and the Caledonia offshore wind farm, the cumulative developments listed in Table 14-13 are expected to be operational at the time of the construction of the offshore Project, reducing the spatial extent of any cumulative impact, as fishing should be able to resume along offshore export cables and the extent of any safety zones will be smaller. It should also be highlighted that this fleet has a wide operational range and demersal trawling within the offshore Project area and in the proposed wind farms in the cumulative development list is of relatively low effort and value. The main

exception to this is the Moray Firth windfarms, however, the effort is concentrated inshore along the export cables of these developments. The area of restricted access across any wind farms being constructed at the same time as the offshore Project will largely be limited to statutory and advisory safety zones, and therefore, the cumulative developments represent a small proportion of the grounds available to these vessels. Considering this, the impact remains as being of **medium magnitude.** Therefore, the overall effect remains as **minor** and **not significant** for both the OAA and offshore ECC.

14.7.3.1.3 Scallop dredgers

As described for the offshore Project alone, scallop dredgers are considered to have a **medium sensitivity** to loss or restricted access to fishing grounds.

Larger scallop dredgers are nomadic and fish opportunistically along the UK coastline. Effort is mainly concentrated around the west and east coast of Scotland, around the Isle of Man, along the west coast of Wales and Cornwall and within the English Channel. Therefore, cumulative impacts are most likely to arise with developments in these areas. As described for demersal trawlers, fisheries management measures may be implemented for dredging throughout the UK which could act cumulatively with any loss of access resulting from the offshore Project during construction.

As for demersal trawlers, any loss of access associated with developments being constructed at the same time as the offshore Project would be limited to the areas affected by statutory and advisory safety zones. Scallop dredgers may also refrain from fishing within operational floating offshore wind farms, such as the PFOWF, due to the potential safety risks.

There are a number of proposed restrictions and other plans and developments which could result in additional loss of access to scallop dredgers. However, considering the wide availability of grounds to this fleet, and the fact that the offshore Project is not considered to be located within a scallop ground associated with high effort or value, the impact is considered to remain as being of **low magnitude**. Therefore, the overall effect remains as **minor** and **not significant** for both the OAA and offshore ECC.

14.7.3.1.4 Non-UK fishing vessels

As described for the offshore Project alone, non-UK fishing vessels are considered to be of **negligible sensitivity** to loss or restricted access to fishing grounds.

Considering the wide availability of grounds for non-UK fishing vessels and the low value of the offshore Project for these vessels, the impact remains as being of **negligible magnitude.** Therefore, the overall effect to non-UK fishing vessels is considered to be **negligible** and **not significant** for both the OAA and offshore ECC.

14.7.3.2 Cumulative operation and maintenance effects

14.7.3.2.1 Creelers

As described for the offshore Project alone, creelers are considered to have a **medium sensitivity** to loss of access to fishing grounds.

Local creeling vessels are mainly operational within the 12 nm limit and may be affected by the SHET-L Caithness to Orkney HVAC Link and the PFOWF. It is expected that creeling along the offshore ECC for the offshore Project will be able to continue once operational, and this would also be the case for the export cables for PFOWF and for the SHET-L Caithness to Orkney HVAC Link. Any safety zones in place for major maintenance activities, or for the construction of the SHET-L Caithness to Orkney HVAC Link if this overlaps with the operation and maintenance stage of the offshore Project, would be short-term and temporary.

For creeling vessels that operate further offshore within the OAA, it is expected fishing will be able to resume, although some changes to operating practices may be required. VMS data for vessels operating static gear indicates that they are mostly active along the continental shelf and on the west coast of Scotland, with limited effort in the Moray Firth where the Moray East, Moray West and Caledonia wind farms are located. Therefore, there is considered to be low effort levels for larger creel vessels within the developments considered for the cumulative assessment.

Considering the above, the impact remains as being of a low magnitude. The overall effect is minor and not significant for both the OAA and the offshore ECC.

14.7.3.2.2 Demersal trawlers

As described for the offshore Project alone, demersal trawlers are considered to have a low sensitivity to loss of access to fishing grounds.

Fishing by larger vessels operating mobile gear within the OAA is unlikely to resume in operation, however, fishing by smaller vessels may be possible, subject to the risk perception of the skipper. Furthermore, fishing over the offshore export cables is expected to be possible, where the target burial is met. Fishing within other wind farms / developments may be possible, depending on the technology employed and the WTG layout. However, it is recognised that the area lost to demersal trawlers may increase when the cumulative developments are considered alongside the offshore Project, and that this could be a long-term impact. However, considering the lower value of the fishing grounds for demersal trawls within the area covered by the cumulative developments alongside the offshore Project, the impact remains as being of medium magnitude. Therefore, the overall effect to demersal trawlers is considered to be minor and not significant for both the OAA and offshore ECC.

14.7.3.2.3 Scallop dredgers

As described for the offshore Project alone, scallop dredgers are considered to have a medium sensitivity to loss of access to fishing grounds.

Scallop dredging is considered unlikely to resume within the OAA when operational and in the sections along the offshore export cables where cable protection is required. As described in section 14.7.3.1.3, larger scallop dredgers are nomadic and fish opportunistically along the UK coastline, mainly concentrated around the west and east coast of Scotland, around the Isle of Man, along the west coast of Wales and Cornwall and within the English Channel. Therefore, cumulative impacts are most likely to arise with developments in these areas. When considering the potential loss of access from offshore wind farms and interconnectors across the UK, in addition to any fisheries management measures that may be implemented, the potential for a cumulative effect increases. However, considering the wide availability of grounds to this fleet, and the fact that the offshore Project is not considered to be located within a scallop ground associated with high effort or value, the impact is considered to remain as being

of low magnitude. Therefore, the overall effect to scallop dredgers is considered to be minor and not significant for both the OAA and offshore ECC.

14.7.3.2.4 Non-UK fishing vessels

As described for the offshore Project alone, non-UK fishing vessels are considered to be of negligible sensitivity to loss of access to fishing grounds.

Considering the wide availability of grounds for non-UK fishing vessels and the low value of the offshore Project for these vessels, the impact remains as being of negligible magnitude. Therefore, the overall effect to non-UK fishing vessels is considered to be negligible and not significant for both the OAA and offshore ECC.

14.7.4 Interference with fishing activity as a result of increased vessel traffic

14.7.4.1 Cumulative construction effects

As described in section 14.6.2.2, all fleets have a low sensitivity to interference with fishing activity as a result of increased vessel traffic.

There is the potential that vessel movements associated with other developments, plans or activities could result in a cumulative impact associated with interference with fishing activity. However, it would be expected that all other developments would also consult with the fishing industry and local fishers to understand the locations of static gear and to ensure fishers are aware of the vessel transit routes. Furthermore, all other development vessels will also be subject to COLREGs. Considering this, but also recognising the potential severity of damaged gear, the potential impact remains as being of high magnitude. The overall effect is minor and not significant for both the OAA and offshore ECC.

14.7.4.2 Cumulative operation and maintenance effects

As described in section 14.6.2.2, all fleets have a low sensitivity to interference with fishing activity as a result of increased vessel traffic.

There is the potential that vessel movements associated with other developments, plans or activities could result in a cumulative impact associated with interference with fishing activity during the operation and maintenance stage of the offshore Project. However, as described for construction, it would be expected that all other developments would also consult with the fishing industry and local fishers to understand the locations of static gear and to ensure fishers are aware of the vessel transit routes. Furthermore, all other development vessels will also be subject to COLREGs. In addition, the vessel requirements during the operation and maintenance stage will be less than those required for construction. Considering this, but also recognising the potential severity of damaged gear, the potential the impact remains as being of high magnitude. The overall effect is minor and not significant for both the OAA and offshore ECC.

14.7.5 Increased steaming times

14.7.5.1 Cumulative construction effects

It is possible for the statutory and advisory safety zones applied during construction of the offshore Project to act together with those from other developments and result in an increased steaming time for fishing vessels.

14.7.5.1.1 Small local vessels

As described for the offshore Project alone, small local vessels are considered to have a low sensitivity to increased steaming times. Smaller local vessels have a smaller operational range and are likely to be operating from nearby ports. Therefore, the potential for increased steaming times from surface infrastructure, statutory and advisory safety zones or buoyed construction areas would be higher.

Small local vessels are most likely to be impacted by the installation of the offshore export cables, which may act cumulatively with other developments in the immediate vicinity of these works, including the SHET-L Caithness to Orkney HVAC Link and the PFOWF. However, vessels may be able to transit through PFOWF (subject to the risk perception of the skipper), as this development will already be constructed at the time of the offshore Project construction. Furthermore, any increases in steaming times associated with the SHET-L cable will be highly localised and temporary. Considering this, the impact remains as being of a low magnitude. Therefore, the overall effect is considered to be negligible and not significant for both the OAA and offshore ECC.

14.7.5.1.2 Other vessels

Other vessels with larger operational ranges are less sensitive to increased steaming times. As described for the offshore Project alone, other vessels have a low sensitivity to increased steaming times.

Considering the larger operational range of these vessels, in addition to the highly localised footprint of any statutory and advisory safety zones applied for the offshore Project and other developments, the impact is considered to remain as being of low magnitude for the offshore ECC and medium magnitude for the OAA. Therefore, the overall effect is considered to be negligible and not significant for the offshore ECC and minor and not significant for the OAA.

14.7.5.2 Cumulative operation and maintenance effects

The presence of installed infrastructure or statutory and advisory safety zones employed during major maintenance activities may result cumulative increases in steaming grounds with other developments.

14.7.5.2.1 Small local vessels

As described for the offshore Project alone, the small local vessels are considered to have a low sensitivity to increased steaming times. Smaller local vessels have a smaller operational range and are likely to be operating from nearby ports. Therefore, the potential for increased steaming times from surface infrastructure or statutory and advisory safety zones would be higher.

As described in chapter 15: Shipping and navigation, smaller vessels should be able to steam through the OAA once operational. Therefore, no increase in steaming times is anticipated and there is potential for a cumulative impact. As a result the impact remains as being of low magnitude. The overall effect is considered to be negligible and not significant.

14.7.5.2.2 Other vessels

Other vessels with larger operational ranges are less sensitive to increased steaming times. As described for the offshore Project alone, other vessels have a low sensitivity to increased steaming times.

As described above and in chapter 15: Shipping and navigation, larger vessels may not be able to steam through the OAA once operational. However, embedded mitigations, such as the marking of infrastructure on admiralty charts and the timely promulgation of information will ensure that vessels can plan passage well in advance. Considering that these larger vessels have wide operational ranges, the impact remains as being of medium magnitude. The overall effect is considered to be negligible and not significant for the offshore ECC and minor and not significant for the OAA.

14.7.6 Safety issues for fishing vessels

14.7.6.1 Cumulative construction effects

As described for the offshore Project alone, vessels operating static gear have a negligible sensitivity to safety issues and vessels operating mobile gear have a low sensitivity to safety issues.

Given the highly localised nature of safety issues for fishing vessels, and the fact that all other developments will be under the same safety obligations as the offshore Project, the potential for a cumulative impact to arise is considered to be low. Therefore, the impact remains as being of a high magnitude in EIA terms.

In terms of safety, for the reasons outlined above, the frequency of occurrence remains as unlikely for vessels operating static gear and remote for vessels operating mobile gear. The severity of consequence remains as serious. Therefore, the cumulative safety risk remains as tolerable and within acceptable limits.

14.7.6.2 Cumulative operation and maintenance effects

As described for the offshore Project alone, vessels operating static gear have a negligible sensitivity to safety issues and vessels operating mobile gear have a low sensitivity to safety issues.

For the same reasons described for construction, the potential for a cumulative impact in relation to safety issues is low, as other developments will be under the same safety obligations as the offshore Project. Therefore, the impact remains as being of a high magnitude in EIA terms.

In terms of safety, for the reasons outlined above, the frequency of occurrence remains as unlikely for vessels operating static gear and remote for vessels operating mobile gear. The severity of consequence remains as serious. Therefore, the cumulative safety risk remains as tolerable and within acceptable limits.

14.7.7 Socio-economic impacts to commercial fisheries

As described in section 14.6.7, no significant socio-economic impacts are predicted for the offshore Project alone during the construction, and operation and maintenance stages. As the assessment of cumulative effects for the construction, and operation and maintenance stages has not resulted in any increases in impact magnitude or overall consequence, no significant cumulative socio-economic impacts are anticipated, and the assessment for the offshore Project alone also applies for cumulative effects. Please see chapter 19: Socio-economics which assesses the indirect socio-economic impacts on onshore receptors associated with the fishing industry (e.g. onshore processing facilities).

14.7.8 Cumulative decommissioning effects

As there is limited information on the decommissioning of the offshore Project and that of other developments, it is not possible to provide a meaningful cumulative assessment. However, the cumulative effects are expected to be less than or equal to the construction stage, and decommissioning of multiple other developments would not be expected to occur at the same time as the decommissioning stage of the offshore Project.

A Decommissioning Programme will be developed, consulted on and approved pre-construction to address the principal decommissioning measures for the offshore Project and will be written in accordance with applicable guidance. The Decommissioning Programme will detail the environmental management, and schedule for decommissioning and will be reviewed and updated throughout the lifetime of the offshore Project to account for changing best practices.

14.7.9 Summary of cumulative effects

A summary of the outcomes of the assessment of cumulative effects for the construction, operation and maintenance and decommissioning stages of the offshore Project is provided in Table 14-14.

A significant cumulative effect on creelers was identified from temporary loss or restricted access to fishing grounds within the OAA. Therefore, additional mitigation measures have been proposed to reduce the significance of effect from moderate to minor.

Table 14-14 Summary of assessment of cumulative effects

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
Construction and decommissioning							
Displacement of fishing effort	Creelers	OAA	Medium	Medium	Moderate (significant)	With the implementation of secondary mitigation outlined in section 14.11, the magnitude is reduced from medium to low. Therefore, the residual consequence is minor and not significant.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Demersal trawlers	OAA	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Scallop dredgers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Non-UK fishing vessels	OAA	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Temporary loss or restricted access to fishing grounds	Creelers	OAA	Medium	High	Moderate (significant)	With the implementation of secondary mitigation outlined in section 14.11, the magnitude is reduced from high to low. Therefore, the residual consequence is minor and not significant.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Demersal trawlers	OAA	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
	Scallop dredgers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Non-UK fishing vessels	OAA	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Interference with fishing activities as a result of increased vessel traffic	All fleets	OAA	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
Increased steaming times	Small local vessels	OAA	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
	Other vessels	OAA	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Safety issues for fishing vessels	Vessels operating static gear	OAA	Negligible	High	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	High	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
	Vessels operating mobile gear	OAA	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
Operation and maintenance							
Displacement of fishing effort	Creelers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Demersal trawlers	OAA	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
	Scallop dredgers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Non-UK fishing vessels	OAA	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Loss of access to fishing grounds	Creelers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Demersal trawlers	OAA	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Scallop dredgers	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Non-UK fishing vessels	OAA	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Interference with fishing activities as a	All fleets	OAA	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
result of increased vessel traffic		Offshore ECC	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
Increased steaming times	Small local vessels	OAA	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
	Other vessels	OAA	Low	Medium	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Low	Negligible	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
Safety issues for fishing vessels	Vessels operating static gear	OAA	Negligible	High	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Negligible	High	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
	Vessels operating mobile gear	OAA	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)

POTENTIAL IMPACT	RECEPTOR	OFFSHORE PROJECT AREA	SENSITIVITY OF RECEPTOR	MAGNITUDE OF IMPACT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
		Offshore ECC	Low	High	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
Socio-economic impacts							
Socio-economic impacts to commercial fisheries	Small local vessels	OAA	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
		Offshore ECC	Medium	Low	Minor (not significant)	None required above embedded mitigation measures.	Minor (not significant)
	Other vessels	OAA	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)
		Offshore ECC	Low	Low	Negligible (not significant)	None required above embedded mitigation measures.	Negligible (not significant)

14.8 Inter-related effects

Inter-related effects are the potential effects of multiple impacts affecting one receptor or a group of receptors. Inter-related effects include interactions between the impacts of the different stages of the offshore Project (i.e. interaction of impacts across construction, operation and maintenance and decommissioning), as well as the interaction between impacts on a receptor within an offshore Project stage. The potential inter-related effects for commercial fisheries receptors are described below.

14.8.1 Inter-related effects between offshore Project stages

All stages have potential to impact various commercial fisheries receptors. As the offshore Project is constructed, the area of impact associated with temporary loss of access, displacement or increased steaming will increase as the offshore Project is built out. Once in operation, it is anticipated that the spatial extent of these impacts will diminish for some commercial fisheries receptors, with areas becoming available for some (likely smaller) fishing vessels. However, the number of vessels that may be unable to return will be negligible and therefore it is not expected to increase the magnitude of impact during any stage. Standard embedded mitigation measures will be in place to reduce the severity of effects on fishers, such as those implemented through the FMMS (see OP3: Outline Fisheries Management and Mitigation Strategy). Therefore, it is not anticipated that impacts relating to loss of access, displacement, or increased steaming will interact across the offshore Project stages and result in a greater effect on commercial fisheries receptors than when each stage is assessed in isolation.

Impacts relating to interference with fishing activity associated with increased vessel traffic are highly localised and temporary, managed through standard best practice and effective communication with fisheries stakeholders via standard communication channels. Considering this, there is no potential for effects from different offshore Project stages to interact.

Impacts associated with safety issues are also highly localised and managed through best practice measures to reduce any potential risks (e.g. adequate cable burial or protection and establishment of procedures for dropped objects). For the reasons, there is no potential for the safety issues between the offshore Project stages to interact and result in a greater effect on commercial fisheries receptors than when each stage is assessed in isolation.

14.8.2 Inter-related effects within an offshore Project stage

The key potential interaction between the effects assessed within an offshore Project stage is considered to be between loss or restricted access and displacement. Loss or restricted access to fishing grounds may result in displaced fishing effort, and associated impacts such as increased competition, conflict or pressure in alternative fishing grounds. However, this interaction between these two effects is an inherent part of the assessment of displaced fishing effort. Furthermore, measures in place to reduce potential effects of loss or restricted access (e.g. incorporation of evidence-based mitigations for vessels requested to relocate gear during construction or major maintenance activities) will also act to minimise displacement effects. Considering this, there is no additional potential interaction between impacts assessed within an offshore Project stage that could result in an effect of greater significance than when the impact is assessed in isolation.

14.9 Whole Project assessment

The onshore Project is summarised in chapter 5: Project description and a summary of the Onshore EIA Report is provided in chapter 21: Onshore EIA summary. These onshore aspects of the Project have been considered in relation to the impacts assessed in section 14.6. The findings are presented below.

The onshore Project will undertake Horizontal Directional Drilling (HDD) operations from above mean high water spring tide, with an HDD exit point occurring at a minimum of approximately 100 m offshore from 0m LAT. The impacts from the installation of the offshore export cables (including the landfall activities) have been assessed in full in section 14.6. It is not anticipated that there will be any additional impacts from the onshore Project on commercial fisheries receptors.

14.10 Transboundary effects

Transboundary effects arise when impacts from a development within one European Economic Area (EEA) state's territory affects the environment of another EEA state(s).

SS12: Commercial fisheries baseline report describes the non-UK fishing activity present in the commercial fisheries study area. As a result of the spatial restrictions on non-UK fishing effort, non- UK fishing effort will be largely confined to beyond the 12 nm limit. Impacts on non-UK fishing fleets have been included in section 14.6, and are therefore, integrated within the Project impact assessment. No significant effects on non-UK fishing fleets have been identified, and therefore, the potential impacts of the offshore Project on commercial fisheries receptors are not expected to affect other EEA states.

14.11 Summary of mitigation and monitoring

Two impacts have been identified as requiring secondary mitigation over and above the embedded mitigation measures proposed in section 14.5.4. This relates to displacement of fishing effort and temporary loss or restricted access to fishing grounds within the OAA for creelers during construction. OWPL will continue dialogue with the directly impacted fishers and develop cooperation agreements which may incorporate provisions such as new gear, adaptations to gear (e.g. escape hatches to reduce juvenile catch and improve overall productivity and sustainability of the stock), guard vessel offset etc. These discussions are ongoing and any cooperation agreement discussions will be held post-consent once the Project design is refined. Requirements will be detailed within the FMMS, required under Section 36 Consent and/or Marine Licence conditions. An outline FMMS is provided as part of the offshore application in OP3: Fisheries management and mitigation strategy. The outline FMMS includes details on the cooperation agreements that will be further developed post-consent.

OWPL intend to continue monitoring fisheries related issues in the same manner it has to date. Ongoing discussions around how the disruption to fishing vessels within operation offshore windfarms may affect the industry are being monitored in order to understand how the outcomes may be relevant to the offshore Project. OWPL has built a strong relationship with the local fishing industry through our FIRs, FLOs and the Fisheries Working Group (or equivalent post consent). Following engagement with the fishing industry as part of the EIA, it was concluded that it would be appropriate to put resources into research projects into commercially important fish and shellfish species (further detail included in chapter 11: Fish and shellfish ecology). This ensures that research / monitoring resources

are aligned with strategic initiatives, such as the Scottish Marine Energy Research (ScotMER) fish and fisheries evidence map.

ScotMER:

The ScotMER fish and fisheries receptor group[16] has identified a number of key research themes which this EIA can both inform and address as the Project moves forward to development. These include:

- Data and mapping; surveys trials and monitoring – the Project has undertaken an eDNA analysis of water samples collected throughout the offshore Project area, for fish and invertebrate communities. This is a novel approach to baseline characterisation for offshore wind projects.
- Stakeholder engagement – extensive stakeholder engagement with respect to fish and fisheries, including establishment of a Project specific Fisheries Working Group, which has provided essential input to the EIA and will be an important element of the monitoring of commercial fisheries impacts as the Project progresses.
- Surveys trials and monitoring – commitment to support strategic research initiatives to address data gaps identified by ScotMER.

[16] https://www.gov.scot/publications/fish-and-fisheries-specialist-receptor-group/.

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14.13 Abbreviations

ACRONYM	DEFINITION
AIS	Automatic Identification System
CBRA	Cable Burial Risk Assessment
COLREGs	Convention on the International Regulations for Preventing Collisions at Sea 1972
CPUE	Catch Per Unit Effort
CPS	Cable Protection Systems
DSLP	Development Specification and Layout Plan
EC	European Commission
ECC	Export Cable Corridor
EEA	European Economic Area
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
EU	European Union
FEPA	Food and Environment Protection Act 1985
FIR	Fisheries Industry Representative
FLO	Fisheries Liaison Officer
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables Group
FMMS	Fisheries Management and Mitigation Strategy

ACRONYM	DEFINITION
FOIA	Freedom of Information Act 2000
FSA	Formal Safety Assessment
GVA	Gross Value Added
GW	Gigawatt
HDD	Horizontal Directional Drilling
HPMA	Highly Protected Marine Area
HVAC	High Voltage Alternating Current
ICES	International Council of the Exploration of the Sea
IFG	Inshore Fisheries Group
IMO	International Maritime Organization
INTOG	Innovation and Targeted Oil and Gas
JNCC	Joint Nature Conservation Committee
km	kilometre
MD-LOT	Marine Directorate - Licensing Operations Team
MGN	Marine Guidance Note
MMC	Marine Monitoring Centre
MMO	Marine Management Organisation
MS-LOT	Marine Scotland - Licensing Operations Team
MSS	Marine Scotland Science

ACRONYM	DEFINITION
NAFC	North Atlantic Fisheries College
NCMPA	Nature Conservation Marine Protected Area
NECRIFG	North and East Coast Regional Inshore Fisheries Group
nm	nautical mile
NSVMP	Navigational Safety and Vessel Management Plan
NtMs	Notices to Mariners
OAA	Option Agreement Area
OFA	Orkney Fisheries Association
OFLO	Offshore Fisheries Liaison Officer
OFS	Orkney Fishermen's Society
OIC	Orkney Islands Council
OP	Outline Plan
OSF	Orkney Sustainable Fisheries
OSP	Offshore Substation Platform
OWPL	Offshore Wind Power Limited
PFOWF	Pentland Floating Offshore Wind Farm
PO	Plan Option
ScotMER	Scottish Marine Energy Research
SFF	Scottish Fishermen's Federation

ACRONYM	DEFINITION
SHET-L	Scottish Hydro Electric Transmission Limited
SNCB	Statutory Nature Conservation Body
SOLAS	Safety of Life at Sea
SS	Supporting Study
STECF	Scientific, Technical and Economic Committee for Fisheries
TAC	Total Allowable Catch
UK	United Kingdom
UKHO	UK Hydrographic Office
USB	Universal Serial Bus
UXO	Unexploded Ordnance
VMS	Vessel Monitoring System
WTG	Wind Turbine Generator
ZoI	Zone of Influence

14.14 Glossary

TERM	DEFINITION
Automatic Identification System (AIS)	A vessel tracking system which enables vessels to transmit and receive vessel position data via an AIS transponder.
Construction vessel	All Project vessels required for the construction of the offshore Project.
Creels	Pots and traps, generally used to catch crab and lobster.
Demersal fish	Fish that live on or near the seabed.
Demersal trawl	Cone shaped net towed along the seabed.
Displacement	The relocation of fishing activity (i.e. pressure or effort) into another area as a result of restricted access to or closure of an area.
Fish1 forms	In Scotland, under-10 m vessels submit Fish1 forms which are similar to logbooks.
Fisheries Industry Representative (FIR)	The FIR will support the FLO. This individual should be trusted by local fishermen and have an extensive knowledge of the local fishing industry. The FIR will communicate information from the developer to the fishing community and vice versa via the FLO.
Fisheries Liaison Officer (FLO)	An appointed individual nominated by a developer who is the main point of contact for the fishing industry when direct communication with the developer is needed. The FLO will liaise with and between the fishermen and the developer, with support from the FIR.
ICES rectangle	ICES rectangles are a spatial unit used for the collection and analysis of fisheries statistics by the European Commission (EC) Member States, and the UK.
Pelagic fish	Fish that live in the water column.
Scallop dredge	Rigid triangle-frame structure with 'teeth' which rake the seabed to collect scallops into a chain mail bag.
Seine net	A triangle shaped net with long weighted ropes attached on each side. The net is shot in a circular motion from a vessel and then towed to close the net and herd fish.
Vessel Monitoring System (VMS)	Vessel satellite tracking system, operated on vessels > 12 m in EU waters.