Cambois Connection – Marine Scheme

Environmental Statement – Volume 2

Chapter 12: Commercial Fisheries

sse Renewables

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Acronyms

Acronym	Description
BAS	Burial Assessment Study
BBWF	Berwick Bank Wind Farm
BBWFL	Berwick Bank Wind Farm Limited
CBRA	Cable Burial Risk Assessment
CEA	Cumulative Effects Assessment
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ES	Environmental Statement
FIR	Fisheries Industry Representative
FLCP	Fisheries Liaison and Co-existence Plan
FMMS	Fisheries Management and Mitigation Strategy
HRA	Habitats Regulations Appraisal / Assessment
HVDC	High Voltage Direct Current
ICES	International Council for the Exploration of the Sea
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
NECRIG	North and East Coast Regional Inshore Fisheries Group
NPS	National Policy Statement
NSIPs	Nationally Significant Infrastructure Project
MHWS	Mean High Water Springs
MLA	Marine Licence application(s)
MMO	Marine Management Organisation
MD-LOT	Marine Directorate Licensing and Operations Team
NCC	Northumberland County Council
NFFO	National Federation of Fishermen's Organisations
NIFCA	Northumberland Inshore Fisheries and Conservation Authority
NtMs	Notice to Mariners
OEMP	Outline Environmental Management Plan
PAC	Pre-Application Consultation

Acronym	Description
RIAA	Report to Inform Appropriate Assessment
RPL	Route Position List
SSER	SSE Renewables
SWFPA	Scottish White Fish Producers Association

Units

Acronym	Description
GW	Gigawatt
NM	Nautical miles
km	Kilometre
kWh	Kilo-watt hours

12. Commercial Fisheries

12.1 Introduction

1. This chapter presents the assessment of the potential significant effects (as per the "Environmental Impact Assessment (EIA) Regulations"[1]) on commercial fisheries arising from the Cambois Connection (hereafter referred to as "the Project") Marine Scheme. Specifically, this chapter of the Marine Scheme Environmental Statement (ES) considers the potential impact of the Marine Scheme, seaward of Mean High Water Springs (MHWS), during the construction, operation and maintenance, and decommissioning phases.

2. This assessment is informed by the following technical documents:

- Volume 2, Chapter 3: EIA Methodology;
- Volume 2, Chapter 4: Stakeholder Consultation and Engagement;
- Volume 2, Chapter 5: Project Description;
- Volume 2, Chapter 8: Benthic Subtidal and Intertidal Ecology;
- Volume 2, Chapter 9: Fish and Shellfish Ecology;
- Volume 2, Chapter 13: Shipping and Navigation;
- Volume 2, Chapter 15: Other Sea Users;
- Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report; and
- Volume 5, Appendix 12.2: Outline Fisheries Management and Mitigation Strategy (FMMS)/Outline Fisheries Liaison and Coexistence Plan (FLCP)[2].

12.2 Purpose of this Chapter

3. This commercial fisheries ES chapter:

- Presents the existing environmental baseline established from desk studies, site-specific surveys and feedback obtained during a detailed programme of pre-application engagement with fishers and fisheries organisations;
- Identifies any assumptions and limitations encountered in compiling the environmental information;
- Presents the potential impacts on commercial fisheries arising from the Marine Scheme and reaches a conclusion on the potential significant impacts on commercial fisheries, based on the information gathered and the analysis and assessments undertaken;
- Identifies where impacts are relevant to Scottish waters, English waters, or both. Where there is no separation of assessment, for example when an impact will affect both English and Scottish vessels in a similar manner, the assessment for the Marine Scheme (as a whole entity) applies to the Marine Scheme in each of Scottish waters and English waters separately; and
- Highlights any necessary monitoring and / or mitigation measures recommended to prevent, minimise, reduce, or offset the likely significant adverse effects of the Marine Scheme on commercial fisheries.

1 For the Marine Scheme, this is the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended).

2 As the Marine Scheme will overlap Scottish and English waters, there is a requirement for a fisheries management plan to be relevant to the requirements of both jurisdictions. Rather than two separate documents, one outline FMMS / FLCP has been developed which will cover the requirements of Scottish and English jurisdictions.

4. This chapter assesses potential impacts on commercial fishery receptors; an assessment of potential safety and navigation impacts is presented within Volume 2, Chapter 13: Shipping and Navigation, and Volume 3, Appendix 13.1: Navigation Risk Assessment.

12.3 Study Area

5. In the UK, fisheries data are collected and analysed based on the International Council for the Exploration of the Sea (ICES) statistical rectangles which are approximately 900 m^2 (30° latitude by 1° longitude). In accordance with best practice guidance[3], the commercial fisheries study area is shown in Volume 4, Figure 12.1 and is defined by the ICES rectangles that overlap the Marine Scheme in addition to those adjacent to the Marine Scheme for which there is potential for fishing effort to be relocated to as a result of the Marine Scheme (e.g., secondary displacement). Additionally, the inclusion of these ICES rectangles within the commercial fisheries study area will provide regional context.

6. Thus, the following ICES rectangles comprise the commercial fisheries study area:

   - ICES rectangles 39E8, 40E8, 40E9, 41E8 (coincide with the Marine Scheme); and
   - ICES rectangles 39E9, 41E9, and 42E8 (adjacent to the Marine Scheme).

7. Where the operational ranges of the commercial fisheries fleets identified extend beyond the boundary of the commercial fisheries study area, reference is also made to waters outside the commercial fisheries study area to provide regional context to describe the wider extent of activity for the fisheries included in the assessment.

[3] Good Practice Guidance for assessing fisheries displacement by other licensed marine activities (Marine Scotland and Xodus Group, 2022)

12.4 Policy and Legislative Context

8. Policy and legislation applicable to the Marine Scheme is outlined in Volume 2, Chapter 2: Policy and Legislative Context. A summary over legislation specific to commercial fisheries is provided in Table 12.1. A summary of the policy relevant to commercial fisheries in Scotland through Scotland's National Marine Plan and England through the North East Inshore and North East Offshore Marine Plans and National Policy Statements are provided in Table 12.2 below.

9. Various organisations are responsible for managing fisheries in the UK, depending on location. Those relevant to the Marine Scheme include:

- Marine Scotland - responsible for managing fisheries in the Scottish offshore waters (12 – 200 nm limit);
- The MMO - responsible for managing fisheries within English offshore waters and within the 6 – 12 nm limit; and
- Northumberland Inshore Fisheries Conservation Authority (NIFCA) – responsible for managing fisheries in English inshore waters between the Scottish border and the River Tyne out to the 6 nm limit. IFCAs are predominantly focussed on sustainable management of inshore fisheries through the implementation of fisheries management measures (potentially through the establishment of bye-laws) related to marine conservation and sustainable fishing practices.

Table 12.1 Summary of Legislation Relevant to Commercial Fisheries

Relevant Legislation	Summary of Relevant Legislation Framework	How and Where Considered in the ES
Scotland and England (UK)		
Fisheries Act 2020	The Fisheries Act 2020 contains eight fisheries objectives for fisheries management. Most objectives The Joint Fisheries Statement has been prepared in accordance with section 2 of the Fisheries Act 2020 and outlines the policies in place to achieve, or contribute to the achievement of, the eight objectives within the Fisheries Act 2020. The most relevant policy to the Marine Scheme is the Displacement Policy (reference: page 41): "the fisheries policy authorities recognise there are multiple users of the sea, which can result in displacement of fishing activity, and may have negative social, economic and environmental impacts. The fisheries policy authorities will work with sea users, including the fishing industry, to identify and seek to address displacement issues."	The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11). Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11. The outline FMMS / FLCP is based on SSE Renewables' Principles for Co-Existence with Commercial Fisheries (2022).

Table 12.2 Summary of Policy Relevant to Commercial Fisheries

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
Scotland		
Scottish National Marine plan (NMP) (Scottish Government, 2015)	Gen 4 Co-existence: Proposals which enable coexistence with other development sectors and activities within the Scottish marine area are encouraged in planning and decision-making processes, when consistent with policies and objectives of the Plan. **Reference**: page 17	The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11). Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11. The outline FMMS / FCLP is based on SSE Renewables' Principles for Co-Existence with Commercial Fisheries (2022) and is provided in Volume 5, Appendix 12.2.
	FISHERIES 1: Taking account of the European Union (EU)'s Common Fisheries Policy, Habitats Directive, Birds Directive and Marine Strategy Framework Directive, marine planners and decision makers should aim to ensure: • existing fishing opportunities and activities are safeguarded wherever possible; • an ecosystem-based approach to the management of fishing which ensures sustainable and resilient fish stocks and avoids damage to fragile habitats; • protection for vulnerable stocks (in particular for juvenile and spawning stocks through continuation of sea area closures where appropriate); • improved protection of the seabed and historical and archaeological remains requiring protection through effective identification of high-risk areas and management measures to mitigate the impacts of fishing, where appropriate; • that other sectors take into account the need to protect fish stocks and sustain healthy fisheries for both economic and conservation reasons; • delivery of Scotland's international commitments in fisheries, including the ban on discards; and • mechanisms for managing conflicts between fishermen and between the fishing sector and other users of the marine environment. **Reference**: page 38	The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11). Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11. The outline FMMS / FLCP is based on SSE Renewables' Principles for Co-Existence with Commercial Fisheries (2022) and is provided in Volume 5, Appendix 12. 2.. The Applicant has appointed a Company Fisheries Liaison Officer (CFLO) to undertake engagement with fishermen. Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. The Applicant is committed to follow Fisheries Liaison with Offshore Wind and Wet Renewables (FLOWW) Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison The potential impacts of the Marine Scheme on fish and shellfish stocks, including potential impacts on habitats, spawning and nursery grounds (including on species of commercial importance)

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
		have been assessed and are discussed in Volume 2, Chapter 9: Fish and Shellfish Ecology. Impacts on fish and shellfish species from an ecological perspective are assessed in Volume 2, Chapter 9: Fish and Shellfish Ecology. Potential effects on commercially important fish species were assessed as negligible to minor for all impacts and therefore are considered to be not significant in EIA terms (Volume 2, Chapter 9 Fish and Shellfish). Potential indirect effects on fisheries resulting from impacts on commercial important species are considered in sections 12.12 and 12.14.2 and area also considered to be not significant. Impacts on marine archaeology are assesses in Volume 2, Chapter 12: Marine Archaeology. Displacement impacts are assessed in section 12.12.1.
	FISHERIES 2: The following key factors should be taken into account when deciding on uses of the marine environment and the potential impact on fishing: • the cultural and economic importance of fishing, in particular to vulnerable coastal communities; • the potential impact (positive and negative) of marine developments on the sustainability of fish and shellfish stocks and resultant fishing opportunities in any given area; • the environmental impact on fishing grounds (such as nursery, spawning areas), commercially fished species, habitats and species more generally; and • the potential effect of displacement on: fish stocks; the wider environment; use of fuel; socio-economic costs to fishers and their communities and other marine users. **Reference**: page 38	The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11). Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11. The outline FMMS / FLCP is based on SSE Renewables' Principles for Co-Existence with Commercial Fisheries (2022), and is provided in Volume 5, Appendix 12.2.
	FISHERIES 3: Where existing fishing opportunities or activity cannot be safeguarded, a Fisheries Management and Mitigation Strategy (FMMS) should be prepared by the	The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11).

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
	Applicant of the development, involving full engagement with local fishing interests (and other interests as appropriate) in the development of the Strategy. All efforts should be made to agree the Strategy with those interests. Those interests should also undertake to engage with the Applicant and provide transparent and accurate information and data to help complete the Strategy. The Strategy should be drawn up as part of the discharge of conditions of permissions granted. The content of the Strategy should be relevant to the particular circumstances and could include: • an assessment of the potential impact of the development or use on the affected fishery or fisheries, both in socio-economic terms and in terms of environmental sustainability; • a recognition that the disruption to existing fishing opportunities / activity should be minimised as far as possible; • reasonable measures to mitigate any constraints which the proposed development or use may place on existing or proposed fishing activity; and • reasonable measures to mitigate any potential impacts on sustainability of fish stocks (e.g. impacts on spawning grounds or areas of fish or shellfish abundance) and any socio-economic impacts. Where it does not prove possible to agree the Strategy with all interests, the reasons for any divergence of views between the parties should be fully explained in the Strategy and dissenting views should be given a platform within the Strategy to make their case. • **Reference**: pages 38-39	Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11. The outline FMMS / FLCP is based on SSE Renewables' Principles for Co-Existence with Commercial Fisheries (2022), and is provided in Volume 5, Appendix 12.2.
	Section 6: Sea Fisheries on interactions with other users in Paragraph 6.22 states: "There are some key emerging issues concerning the interactions between the fishing industry and other interests which should be borne in mind in any proposed marine development and factored into marine planning processes". Energy developments may displace fishing. The cabling arrays associated with energy and telecoms developments, and other physical infrastructure associated with development, have the potential for short-term displacement of fishing activity during the installation phase.	Current maritime industry guidance is to avoid demersal trawling (and anchoring) in the immediate vicinity of cables (MGN 661, the Mariner's and all Admiralty charts). It is however acknowledged that fishing may still occur over the Offshore Export Cables either inadvertently, or at the discretion of fishing vessel operators. As such the Offshore Export Cables will be protected to minimise the risk of damage through interactions with fishing equipment as far as is practicable.

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
	There is also potential for damage to occur to both infrastructure and fishing equipment as a result of interactions, with potential safety implications. New developments should take into account the intensity of fishing activity in the proposed development area and any likely displacement which the development and associated activity could precipitate, with resultant increased pressure on remaining, often adjacent, fishing grounds. There may be potential for some infrastructure or development areas to act as nursery grounds for fish and, if appropriately protected, these may lead to an increase in fish stocks in the surrounding areas. This possibility should be considered on a case by case basis. Where relevant, Fisheries Liaison with Offshore Wind and Wet renewables (FLOWW) Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison should be followed." **Reference**: page 43	In areas where external protection is required, they will be designed to reduce potential snagging risk with fishing gear as far as is practicable, in line with industry best practice guidance and designed in mitigation measures (i.e. use of graded rocks and berms designed with 1:3 gradients). Furthermore, post-lay and burial inspections surveys will be undertaken, and assessments carried out to determine cable burial status (including cable protection) and to identify potential changes to seabed conditions. The post lay survey results, including the location, extent and nature of external cable protection measures used will be provided to the United Kingdom Hydrographic Office (UKHO) and Kingfisher for inclusion in Admiralty and Kingfisher Information Service – Offshore Renewable and Cable Awareness (KIS-ORCA) charts. This information will also be provided to relevant fishing industry stakeholders. The potential impact of loss of fishing grounds as a result of the Marine Scheme and associated displacement of activity is assessed within this chapter. Similarly, impacts associated with potential increased snagging risk and associated loss or damage to fishing gear are also assessed. An assessment of anchor interaction with subsea cables is presented within Volume 2, Chapter 13: Shipping and Navigation. Potential impacts on fish and shellfish species, including those of commercial importance, are assessed in Volume 2, Chapter 9: Fish and Shellfish Ecology. The Applicant is committed to follow FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison.
	Section 11: Offshore wind and marine renewable energy on the interaction with other users in Paragraph 11.26 states "Key marine sectors can be affected by marine renewable energy development. Physical competition for space, navigational	The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11). Provisions for these

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
	restrictions and the impact of physical structures in the sea may affect sectors such as fisheries and aquaculture, marine recreation and tourism, shipping and defence, especially where planned development spatially interacts with existing uses. Impacts can be avoided or minimised through an inclusive approach which identifies affected sectors, improves communication between developers and these sectors, identifies the impacts and seeks to address these through effective communication and mitigation strategies. The renewables industry is involved in several working groups with the various sectors to develop best practice for co-existence and mitigation. The FLOWW, set up in 2002 to foster good relations between the fishing and offshore renewable energy sectors, has delivered the publication of the Offshore Renewables and Fisheries Liaison Guidance." **Reference**: page 85	measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11. The outline FMMS / FLCP is based on SSE Renewables' Principles for Co-Existence with Commercial Fisheries (2022), and is provided in Volume 5, Appendix 12.2. Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. The Applicant is committed to follow FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison. The potential impacts of the Marine Scheme on fish and shellfish stocks, including potential impacts on habitats, spawning and nursery grounds (including on species of commercial importance) has been assessed and are discussed in Volume 2, Chapter 9: Fish and Shellfish Ecology.
	CABLES 2: The following factors will be taken into account on a case by case basis when reaching decisions regarding submarine cable development and activities: • Cables should be suitably routed to provide sufficient requirements for installation and cable protection. • New cables should implement methods to minimise impacts on the environment, seabed and other users, where operationally possible and in accordance with relevant industry practice. • Cables should be buried to maximise protection where there are safety or seabed stability risks and to reduce conflict with other marine users and to protect the assets and infrastructure. • Where burial is demonstrated not to be feasible, cables will be suitably protected through recognised and approved measures (such as rock or mattress placement or cable armouring) where practicable and cost-effective and as risk assessments direct. • Consideration of the need to reinstate the seabed, undertake post-lay surveys and monitoring and carry out remedial action where required.	As detailed within Volume 2, Chapter 5: Project Description, burial is the preferred method of cable installation with external cable protection used where burial cannot be achieved, and at third-party crossings. The Offshore Export Cables will be protected by burial to a minimum target depth of 0.5 m insofar as is practicable. Additional external cable protection (e.g. rock placement) will only be used where the minimum target burial depth cannot be achieved, for example in areas of hard ground or at third-party crossings. As described in Table 12.11, the location, extent and nature of the cable protection used will be communicated to the fishing industry. In addition, where rock placement is used for cable protection consideration will be given to designs that minimise potential gear snagging risk (i.e. use of graded rock and 1:3 profile berms). Furthermore, post lay and burial inspection surveys will be undertaken with remedial action taken as appropriate. In addition,

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
	Reference: page 110	an assessment to determine cable burial status (including cable protection) and identify potential changes to seabed conditions will be undertaken. Findings would be shared with the fishing industry where relevant). All Offshore Export Cables associated with the Marine Scheme will be marked on UKHO Admiralty Charts. To help inform the EIA, the Applicant has carried out an initial appraisal of cable burial. The outputs from this process have been used to help define locations where external cable protection may be required, thereby helping provide additional confidence to the fishing industry in both the assessment and the identification for any required mitigation measures. As described in Table 12.11, post lay and burial inspections surveys will be undertaken with remedial action taken as appropriate. In addition, an assessment to determine cable burial status (including cable protection) and identify potential changes to seabed conditions will be undertaken. Relevant findings would be shared with the fishing industry as necessary. All Offshore Export Cables associated with the Marine Scheme will be marked on UKHO Admiralty Charts. Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11. The outline FMMS / FLCP is based on SSE Renewables' Principles for Co-Existence with Commercial Fisheries (2022), and is provided in Volume 5, Appendix 12.2.
	Section 14: Submarine cables on the interaction with fishing activity in Paragraph 14.9 states "Fishing Activity: There is a risk of adverse interaction between seabed cables and fishing activity and this increases as activity levels rise. Submarine cables can cause localised obstruction to fishing practices in some circumstances, while fouling a cable can be extremely hazardous to fishing vessels and the cable itself. Damage to submarine cables is expensive to repair and can cause disruption to power distribution and international telecommunications at a national and international level. Submarine cables should be buried, where feasible, or suitably protected, to reduce conflict with other users and prevent damage to cables. Cable	As detailed within Volume 2, Chapter 5: Project Description, burial is the preferred method of cable installation with external cable protection used where burial cannot be achieved, and at third-party crossings. The Offshore Export Cables will be protected by burial to a minimum target depth of 0.5 m insofar as is practicable. Additional external cable protection (e.g. rock placement) will only be used where the minimum target burial depth cannot be achieved, for example in areas of hard ground or at third-party crossings.. As

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
	burial and protection is considered on a case-by-case basis due to the variables that influence it. Engagement with affected stakeholders is supported to ensure appropriate awareness of the risks and consequences. The fishing sector can gain access to accurate and comprehensive information held by Kingfisher under the KIS-ORCA (Kingfisher Information Service - Offshore Renewable & Cable Awareness) project on National Marine Plan Interactive (NMPi) on the majority of submarine cables within UK waters. The KIS-ORCA project provides free cable awareness charts, electronic route position lists and digital information for chart plotters to fishing vessels and legitimate marine stakeholders. Key fishing organisations and stakeholders are working with the sector to promote this project and assist with the local distribution of the data." **Reference**: Pages 112-113	described in Table 12.11, the location, extent and nature of the cable protection used will be communicated to the fishing industry. In addition, where rock placement is used for cable protection consideration will be given to designs that minimise potential gear snagging risk (i.e. use of graded rock and 1:3 profile berms). Furthermore, post lay and burial inspection surveys will be undertaken with remedial action taken as appropriate. In addition, an assessment to determine cable burial status (including cable protection) and identify potential changes to seabed conditions will be undertaken. Findings would be shared with the fishing industry where relevant. All Offshore Export Cables associated with the Marine Scheme will be marked on UKHO Admiralty Charts. To help inform the EIA, the Applicant has carried out an initial appraisal of cable burial. The outputs from this process have been used to help define locations where external cable protection may be required, thereby helping provide additional confidence to the fishing industry in both the assessment and the identification for any required mitigation measures.
England		
North East Inshore and North East Offshore Marine Plan (MMO, 2021)	NE-CO-1: Proposals that optimise the use of space and incorporate opportunities for co-existence and co-operation with existing activities will be supported. Proposals that may have significant adverse impacts on, or displace, existing activities must demonstrate that they will, in order of preference: A) Avoid; B) Minimise; or C) Mitigate	An outline FMMS/ FLCP has been provided in Volume 5, Appendix 12.2. The final Plan will be developed post consent. The outline FMMS / FLCP is based on SSE Renewables' Principles for Co-Existence with Commercial Fisheries (2022). Consultation with third parties has been undertaken and will continue through the lifetime of the Marine Scheme. The FMMS / FLCP will apply to both Scottish and English waters and will fulfil the requirements) for both jurisdictions. The FMMS / FLCP will consider relevant Marine Plan policies, including NE-CO-1.

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
	- adverse impacts so they are no longer significant. If it is not possible to mitigate significant adverse impacts, proposals must state the case for proceeding. **Reference**: Page 21	Consultation with third parties has been undertaken and will continue through the lifetime of the Marine Scheme as outlined in Volume 2, Chapter 4: Stakeholder Consultation and Engagement.
	NE-CAB-1: Preference should be given to proposals for cable installation where the method of protection is burial. Where burial is not achievable, decisions should take account of protection measures for the cable that may be proposed by the applicant. Where burial or protection measures are not appropriate, proposals should state the case for proceeding without those measures. **Reference**: Page 24	As detailed within Volume 2, Chapter 5: Project Description, burial is the preferred method of cable installation. The Offshore Export Cables will be protected by burial to a minimum target depth of 0.5 m insofar as is practicable. Additional external cable protection (e.g. rock placement) will only be used where the minimum target burial depth cannot be achieved, for example in areas of hard ground or at third-party crossings. The Offshore Export Cables will be protected by burial to a minimum target depth of 0.5 m insofar as is practicable. Additional external cable protection (e.g. rock placement) will only be used where the minimum target burial depth cannot be achieved, for example in areas of hard ground or at third-party crossings. As described in Table 12.11, the location, extent and nature of the cable protection used will be communicated to the fishing industry. In addition, where rock placement is used for cable protection consideration will be given to designs that minimise potential gear snagging risk (i.e. use of graded rock and 1:3 profile berms). Furthermore, post lay and burial inspection surveys will be undertaken with remedial action taken as appropriate. In addition, an assessment to determine cable burial status (including cable protection) and identify potential changes to seabed conditions will be undertaken. Findings would be shared with the fishing industry where relevant. All Offshore Export Cables associated with the Marine Scheme will be marked on UKHO Admiralty Charts. To help inform the EIA, the Applicant has carried out an inital appraisal of cable burial.. The outputs from this process have been used to help define locations where external cable protection may

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
		be required, thereby helping provide additional confidence to the fishing industry in both the assessment and the identification for any required mitigation measures.
	NE-FISH-2: Proposals that enhance access for fishing activities should be supported. Proposals that may have significant adverse impacts on access for fishing activities must demonstrate that they will, in order of preference: A) Avoid; B) Minimise; or C) Mitigate - adverse impacts so they are no longer significant. If it is not possible to mitigate significant adverse impacts, proposals must state the case for proceeding. **Reference**: Page 36	Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11). Provisions for these measures will be included in the FLCP.
National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3) 2011[4] [5]	Paragraph 2.6.127 states: Early consultation should be undertaken with statutory advisors and with representatives of the fishing industry which could include discussion of impact assessment methodologies. Where any part of a proposal involves a grid connection to shore, appropriate inshore fisheries groups should also be consulted.	Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11).

[4] Whilst it is acknowledged that neither BBWF nor the Marine Scheme comprise or form part of an NSIP (please see Volume 2: Chapter 2: Policy and Legislative Context) , NPSs are however a statement of government intention relating, in this case, to renewable energy projects, therefore can be taken into consideration during the preparation of the Marine Scheme ES

[5] A suite of draft revised Energy NPSs were published and consulted on by the UK Government in March 2023, and consultation closed on 23rd June. The consultation responses will be subject to consideration and the draft revised NPSs may now be revised before the NPSs are formally adopted. There is currently no date for the next stage of the review process and therefore this ES presents the current adopted NPSs which have been considered during the preparation of this ES. It is however noted by the Applicant that the new draft NPSs state that they may be material

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
	Reference: paragraph 2.6.127	Provisions for these measures will be included in the FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11.
	Paragraph 2.6.129130129 states: Where there is a possibility that safety zones will be sought around offshore infrastructure, potential effects should be included in the assessment on commercial fishing. Reference: paragraph 2.6.129	This has been assessed within this chapter; please refer to section 12.11.1 for further detail. 'Safety zones' are understood to be applicable only to 'offshore structures' per The Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007, and therefore not applicable to subsea cables. There will, however, be a 500 m advisory safe clearance zone around installation vessels. Cable repair vessels will also maintain a 500 m advisory clearance zone with third party vessels during periods of major maintenance (including reburial / protection of exposed cable).
	Paragraph 2.6.130131130 states: Where the precise extents of potential safety zones are unknown, a realistic worst case scenario should be assessed. Applicants should consult the Maritime and Coastguard Agency (MCA). Exclusion of certain types of fishing may make an area more productive for other types of fishing. The assessment by the applicant should include detailed surveys of the effects on fish stocks of commercial interest and the potential reduction or increase in such stocks that will result from the presence of the wind farm development and of any safety zones. **Reference:** paragraph 2.6.130	An assessment of the potential impacts on Fish and Shellfish Ecology receptors is provided in Volume 2, Chapter 9: Fish and Shellfish Ecology.
	Paragraph 2.6.132 states: The Infrastructure Planning Commission (IPC) should be satisfied that the site selection process has been undertaken in a way that reasonably minimises adverse effects on fish stocks, including during peak spawning periods and the activity of fishing itself. **Reference:** paragraph 2.6.132	A range of different environmental, commercial and technical factors have informed the selection of the preferred route for the Marine Scheme; this is discussed in further detail within Volume 2, Chapter 6: Route Appraisal and Consideration of Alternatives.

considerations in other applications which are not considered under the Planning Act (2008), this includes the Marine Scheme. Further detail on the consideration of the draft NPSs in this ES is provided in Volume 2 Chapter 2 Policy and Legislation.

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
	The IPC should consider the extent to which the proposed development occupies any recognised important fishing grounds and whether the project would prevent or significantly impede protection of sustainable commercial fisheries or fishing activities. **Reference:** paragraph 2.6.132	This has been assessed within this chapter; please refer to section 12.12.1 for further detail.
	Paragraph 2.6.133: The IPC should be satisfied that the applicant has sought to design the proposal having consulted representatives of the fishing industry with the intention of minimising the loss of fishing opportunity taking into account effects on other marine interests. **Reference:** paragraph 2.6.133	Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed Table 12.11). Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11. A range of different environmental, commercial and technical factors have informed the selection of the preferred route for the Marine Scheme; this is discussed in further detail within Volume 2, Chapter 6: Route Appraisal and Consideration of Alternatives.
	Paragraph 2.6.134 states: Any mitigation proposals should result from the applicant having detailed consultation with relevant representatives of the fishing industry. **Reference**: paragraph 2.6.134 Paragraph 2.6.135 states: Mitigation should be designed to enhance where reasonably possible any potential medium and long-term positive benefits to the fishing industry and commercial fish stocks. **Reference:** paragraph 2.6.135	The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11). Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme as detailed within Table 12.11.

12.5 Consultation and Technical Engagement

10. A summary of the key issues raised during consultation and technical engagement activities undertaken to date specific to Commercial Fisheries is presented in Table 12.3 below, together with how these issues have been considered in the production of this Commercial Fisheries chapter. Further detail is presented within Volume 2, Chapter 4: Stakeholder Consultation and Engagement.

11. Consultation has also been undertaken for the Marine Scheme specifically including drop-in sessions with local fishers using a questionnaire and meetings with local fisheries associations. Further detail on these events can be found in Volume 3, Appendix 12.1 Commercial Fisheries Engagement Report.

12. The Applicant is a member of the Forth and Tay Commercial Fisheries Working Group (CFWG). The CWFG forum (any successor groups) will facilitate commercial fisheries and renewables developers' dialogue, in order to define and finalise a FMMS / FLCP for approval by Scottish Ministers. In terms of discussions on the FMMS / FLCP for individual projects, the minutes from the CFWG should accurately record where there is agreement / disagreement on the content of the FMMS / FLCP. MD-LOT will ensure that, in determining whether or not to approve the FMMS / FLCP, Scottish Ministers will take into account the minutes of the CFWG. The forum provides a platform for meaningful discussion to promote communication and understanding for the mutual benefit of the fishing industry and offshore wind farm developers.

Table 12.3 Summary of Key Consultation and Technical Engagement Undertaken for the Marine Scheme Relevant to Commercial Fisheries

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and / or Where Considered in this Chapter
Relevant consultation and engagement undertaken to date			
17 May 2022	Forth and Tay Commercial Fisheries Working Group, Fishing Industry Representatives (FIR), individual fishermen and National organisations.	The Applicant carried out consultation with various fisheries stakeholders.	Advice from fisheries engagement was used to inform the route selection process, and the landfall selection as detailed in Volume 2, Chapter 6: Route Appraisal and Consideration of Alternatives. Queries and potential concerns relating to the Marine Scheme were recorded by the Applicant as detailed in Volume 2, Appendix 12.1: Commercial Fisheries Engagement Report.
21 July 2022	Blyth Harbour Authority, North-East Inshore Fisheries Conservation Authority (NEIFCA).	The Applicant introduced the Marine Scheme and provided information about the intended surveys which would be undertaken and how Notice to Mariners (NtMs) would be distributed. The approach to the Offshore Export Cable Corridor selection was discussed as was correspondence already received from commercial fishers through the FLO.	Advice from fisheries engagement was used to inform the route selection process, and the landfall selection as detailed in Volume 2, Chapter 6: Route Appraisal and Consideration of Alternatives. Queries and potential concerns relating to the Marine Scheme were recorded by the Applicant as detailed in Volume 2, Appendix 12.1: Commercial Fisheries Engagement Report. Engagement with commercial fisheries has continued throughout the refinement of the route options, the EIA and as the Marine Scheme has progressed.
14 April 2023	National Federation of Fishermen's Organisations (NFFO)	The Applicant introduced the Marine Scheme and provided information on the selection of the Offshore Export Cable Corridor, upcoming survey campaigns, the approach to the EIA, as well as engagement with fishermen.	Noted.
20 April 2023	SFF, SWFG	The Applicant introduced the Marine Scheme and provided information on the selection of the Offshore Export Cable Corridor, upcoming survey campaigns, the approach to the EIA, as well as engagement with fishermen.	Noted.
Consultation on the Marine Scheme: Scoping Opinion			
04 January 2023	Local MMO: Scoping comments	This work cuts across key inshore *Nephrops*-fishing grounds. This means that multiple vessels will repeatedly criss-cross over the cable area multiple	A range of different environmental, commercial and technical factors have informed the selection of the preferred route for the Marine Scheme; this is

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and / or Where Considered in this Chapter
		times per day. If the cable is not able to be buried. Past cable-laying works in this area tell us this is far more difficult than exploratory passes suggest, and far more rock armour is used than is projected.	discussed in further detail within Volume 2, Chapter 6: Route Appraisal and Consideration of Alternatives. To help inform the EIA, the Applicant has carried out an initial appraisal of cable burial. The outputs from this process have been used to help define locations where external cable protection may be required, thereby helping provide additional confidence to the fishing industry in both the assessment and the identification for any required mitigation measures. The Offshore Export Cables will be protected by burial to a minimum target depth of 0.5 m insofar as is practicable. Additional external cable protection (e.g. rock placement) will only be used where the minimum target burial depth cannot be achieved, for example in areas of hard ground or at third-party crossings. As described in Table 12.11, the location, extent and nature of the cable protection used will be communicated to the fishing industry. In addition, where rock placement is used for cable protection consideration will be given to designs that minimise potential gear snagging risk (i.e. use of graded rock and 1:3 profile berms). Furthermore, post lay and burial inspection surveys will be undertaken with remedial action taken as appropriate. In addition, an assessment to determine cable burial status (including cable protection) and identify potential changes to seabed conditions will be undertaken. Findings would be shared with the fishing industry where relevant. All Offshore Export Cables associated with the Marine Scheme will be marked on UKHO Admiralty Charts.
04 January 2023	Local MMO: Scoping comments	This has already caused multiple incidents of entire hauls being spoiled as an absolute best-case scenario. The worst case is, of course, vessels finding they are unable to lift the weight added by rocks they haul. This has already resulted in the need to cut away nets in order to safely resolve the situation.	Current maritime industry guidance is to avoid demersal trawling (and anchoring) in the immediate vicinity of cables (MGN 661, the Mariner's and all Admiralty charts). It is however acknowledged that fishing may still occur over the Offshore Export Cables either inadvertently, or at the discretion of fishing vessel operators. As such the Offshore Export Cables will be protected to minimise the risk of damage through interactions with fishing equipment as far as is practicable. In areas where external protection is required, they will be designed to reduce potential snagging risk with fishing gear as far as is practicable, in line with industry best practice guidance and designed in mitigation measures (i.e. use of graded rocks and berms designed with 1:3

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and / or Where Considered in this Chapter
			gradients).Furthermore, post-lay and burial inspections surveys will be undertaken, and assessments carried out to determine cable burial status (including cable protection) and to identify potential changes to seabed conditions. The post lay survey results, including the location, extent and nature of external cable protection measures used will be provided to the UKHO and Kingfisher for inclusion in Admiralty and KIS-ORCA charts. This information will also be provided to relevant fishing industry stakeholders.
04 January 2023	Local MMO: Scoping comments	Are the proposed activities likely to interfere with fishing operations or activities carried on by other legitimate users of the sea (static gear / traditional fishing grounds, navigation measures, recreational use etc.)? Please support your view with rationale. **YES**. Please see above in relation to the *Nephrop* fishery. Potters also use the area year-round, and it will be necessary for them to relocate or remove pots for the duration of the works.	Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed and relevant guidance will be followed (e.g. FLOWW) (Table 12.11). Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11. The FMMS / FLCP will apply to both Scottish and English waters and will fulfil the requirements of both jurisdictions.
04 January 2023	Local MMO: Scoping comments	The area is used by the *Nephrop* fishery from approx. October to May each year, and has recently also been used as a summer *Nephrop* fishery. Potters use the area year-round.	
04 January 2023	Local MMO: Scoping comments	In the past, Fisheries Liaison Officers have been employed to work with the local fleet, and should be considered and deployed at the earliest opportunity	The Applicant has appointed a CFLO for this pre-application stage and can confirm a CFLO will be in place throughout the construction, operation and maintenance and decommissioning phases of the Marine Scheme as required. The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11). Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11. The FMMS / FLCP will apply to both Scottish and English waters and will fulfil the requirements of both jurisdictions.
09 January 2023	Centre for Environment Fisheries and Aquaculture (CEFAS): Scoping comments	Cefas agrees with the potential impacts scoped in for commercial fisheries and the rationale for a desk-based review. However, Cefas also highlights the need to ensure that impacts to the inshore commercial fisheries fleet (within the 6nm limit) and	Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. Specific attention is paid to nearshore

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		small-scale fisheries are also accounted for and appropriately assessed, as these sectors are often more vulnerable to the effects of displacement from marine construction works in coastal waters. Furthermore, these sectors are often under-represented when compared to large-scale and industrial fisheries, because much of the fisheries spatial and temporal data (VMS, AIS tracking data) is under used and under studied for smaller and inshore fleets. Additionally, for vessels of 10m and under, there is no statutory requirement for fishermen to declare their catches, although their landings must be recorded on sales notes provided by the registered buyers. This can result in the spatial and temporal distribution/behaviour of small-scale fishers being under- and/or over-estimated, resulting in fishers being displaced from important fishing grounds (Chuenpagdee et al., 2012; Metcalfe et al., 2017; Birchenough et al., 2021; Behivoke *et al*., 2021). Cefas recommend the Applicant consults with the North-Eastern Inshore Fisheries and Conservation Authority (NE IFCA) regarding the project and gathers further information and data from them on inshore commercial fishing activity in north-east England.	fishing vessels, to account for the fact they are typically underrepresented in the publicly available data. Engagement which has been carried out to-date is detailed above, and reported on in further detail within Volume 2, Appendix 12.1: Commercial Fisheries Engagement Report. NIFCA have been contacted and they have provided anonymised sightings data from the period 2012 to 2021, which have informed the assessment. A wide range of data has been used to inform the assessment; this is discussed in full detail within section 12.6 and further detail within Volume 2, Appendix 12.1: Commercial Fisheries Engagement Report.
23 February 2023	MD-LOT: Scoping Opinion	The Scottish Ministers note the Applicant's intention to scope out risks of major accidents and/ or disasters from the EIA Report on the basis that the Proposed Works are unlikely to cause a major accident or disaster. The Scottish Ministers have reviewed the recent Institute of Environmental Management and Assessment ("IEMA") 'Major Accidents and Disasters in EIA: A Primer' and consider that assessment of the risks of major accidents and/or disasters will be adequately covered under the receptor chapters of Shipping and	Noted.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and / or Where Considered in this Chapter
		Navigation and Commercial Fisheries. As such, a specific chapter on risks of major accidents and/or disasters is not required to be included in the EIA Report.	
23 February 2023	MD-LOT: Scoping Opinion	In relation to the policy and guidance documents listed at section 12.2 of the Scoping Report, the Scottish Ministers would highlight the SFF representation in this regard and advise that the Applicant must ensure that all relevant up to date policy documents and guidance are used for further assessment within the EIA Report.	Policy and Legislation used to inform the EIA process and this chapter in relation to Commercial Fisheries is detailed in section 12.4.
23 February 2023	MD-LOT: Scoping Opinion	With regards to available information proposed by the Applicant to be used to inform the commercial fisheries baseline assessment, the Scottish Ministers advise that in order for a full assessment to be undertaken, the Applicant must detail the exact number of offshore export cables required within the EIA Report. In addition, the Scottish Ministers advise that the Applicant must provide a map indicating the Proposed Works which includes ICES rectangles and furthermore, the proportion of the Proposed Works that lies within the Farnes Deep fishing restricted area in order for this to be assessed appropriately. The Scottish Ministers refer the Applicant further to section 2.4 of this Scoping Opinion for further detail regarding this.	This has been provided by the Applicant within Volume 2, Chapter 5: Project Description. This chapter is supported by a number of different figures which provide information on commercial fishing activity (this includes the requested ICES rectangles, as provided in Volume 4, Figure 12.1). A range of different environmental, commercial and technical factors have informed the selection of the preferred route for the Marine Scheme; this is discussed in further detail within Volume 2, Chapter 6: Route Appraisal and Consideration of Alternatives. Volume 4, Figure 12.15 displays the overlap of the Marine Scheme with the Farnes Deep fishing restricted area.
23 February 2023	MD-LOT: Scoping Opinion	In relation to the key data sources detailed at section 12.4 of the Scoping Report, the Scottish Ministers highlight the NLB and SFF representations on the limitations of AIS and VMS data and advise that this is taken into consideration in the EIA Report.	Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. Engagement which has been carried out to-date is detailed above, and reported on in further detail within Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report. A wide range of data has been used to inform the assessment; this is discussed in full detail within section 12.6 and further detail within Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report.

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			Limitations of data sources are discussed in further detail within section 13.
23 February 2023	MD-LOT: Scoping Opinion	Within Table 12-1 of the Scoping Report the Applicant details the potential effects on commercial fisheries during the different phases of the Proposed Works which they propose to scope in for assessment within the EIA Report. The Scottish Ministers agree with the potential effects detailed and scoped in by the Applicant. In addition, the Scottish Ministers agree with the scoping in of cumulative and transboundary impacts. In addition to those projects detailed in Table 4-5 of the Scoping Report, the Scottish Ministers advise that cumulative impacts with neighbouring (consented) wind farms in the Forth and Tay area must be assessed, including all associated export cables.	Noted. The feedback provided has been used to inform the scope of the Cumulative Effects Assessment (CEA); this has been provided within section 12.14.2 below.
23 February 2023	MD-LOT: Scoping Opinion	The Scottish Ministers advise that a fisheries displacement assessment must be carried out to assess any permanent or temporary impacts on commercial fishing from the Proposed Works. This assessment within the EIA Report must include consideration of over trawl surveys in trialling the safe fishing over the Proposed Works and the Scottish Ministers highlight the MSS advice in this regard. The Scottish Ministers advise that the Applicant must adopt a clear position on whether they will be content for fishing to continue over the Proposed Works. This position must be adopted prior to the fisheries displacement assessment so the implications from this can be included in the assessment.	This has been assessed within this chapter; please refer to section 12.11 for further details. With regards to overtrawling, current maritime industry guidance is to avoid demersal trawling (and anchoring) in the immediate vicinity of cables (MGN 661, the Mariner's and all Admiralty charts). It is however acknowledged that fishing may still occur over the Offshore Export Cables either inadvertently, or at the discretion of fishing vessel operators. As such the Offshore Export Cables will be protected to minimise the risk of damage through interactions with fishing equipment as far as is practicable, in line with industry best practice guidance and designed in mitigation measures (i.e. use of graded rocks and berms designed with 1:3 gradients). Furthermore, post-lay and burial inspections surveys will be undertaken, and assessments carried out to determine cable burial status (including cable protection) and to identify potential changes to seabed conditions. The post lay survey results, including the location, extent and nature of external cable protection measures used will be provided to the UKHO and Kingfisher for inclusion in Admiralty and KIS-ORCA charts. This information will also be provided to relevant fishing industry stakeholders.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and / or Where Considered in this Chapter
23 February 2023	MD-LOT: Scoping Opinion	The Scottish Ministers advise that in identifying appropriate mitigation measures, the Applicant must consider the different types of fishing that take place within the Proposed Works and engage with the wider fishing industry to seek broad agreement on measures proposed. The Scottish Ministers advise that when detailing the mitigation measures the Applicant must clearly state commitments and explain any caveats to these commitments, such as EIA significance, so that stakeholders can easily understand the actual commitment(s) made. In addition, the Scottish Ministers emphasise the importance of engaging with the fishing industry throughout the application process.	The Applicant is committed to facilitating co-existence between the Marine Scheme and the fishing industry. To this end, a range of measures have been proposed (Table 12.11). Provisions for these measures will be included in the FMMS / FLCP which will be produced for the Marine Scheme, as detailed within Table 12.11.
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	The SFF would expect that the size of the 2 new export cables, from Peterhead and Torness, would register as an important part of 1.4 Detailed routing.	A range of different environmental, commercial and technical factors have informed the selection of the preferred route for the Marine Scheme; this is discussed in further detail within Volume 2, Chapter 6: Route Appraisal and Consideration of Alternatives. The Applicant is aware of both the cable projects outlined by the SFF (Eastern Green Link 1 and Eastern Green Link 2), two High Voltage Direct Current (HVDC) links between Scotland and England. As set out in Volume 2, Chapter 5: Project Description, a crossing will be required Eastern Green Link 1. In terms of potential interactions with these two projects, please refer to the CEA which has been provided within section 12.14.2 below.
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	2.5.3.1 is notable in that it ignores GP4 – Co-existence, GP13 – Noise, GP17 – Fairness and the Fishing Policies in general, which should be an important part of the scoping, in order to demonstrate that the project is attempting to live up to the high level objectives they do mention.	The Applicant apologies for this omission in error within the Scoping Report. Table 12.2 above provides a summary of how the Scottish National Marine Plan GEN 4 policy (Co-existence) has been considered by the Applicant.
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	3.4.2 and also Table 9.3, regarding pre-installation activities, whilst noting that boulders may have influence over the seabed route, needs to assess exactly what the impacts of moving/removing/shifting	Boulder clearance may be required as part of the site preparation activities to clear the Offshore Export Cable Corridor. Clearance techniques are anticipated to include subsea ploughing, pre-lay grapnel run, and boulder grab.

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		boulders will actually be for fishing. This is essential as recent projects have ended up with thousands of boulders being moved, with no mitigation planned.	If required, areas of boulder clearance will be recorded, with details shared with the fishing industry in order to facilitate co-existence and prevent potential damage to and from fishing gear and minimise potential safety risks. Where boulder grab is used to relocated boulders, before and after locations of each boulder will be recorded and shared with the fishing industry. As detailed in Volume 2, Chapter 5: Project Description, the corridor for the Marine Scheme is approximately 1 km in width. One of the key reasons for adopting this corridor is to provide flexibility for the installation contractor(s) to refine the route position list (RPL) for the Offshore Export Cables. This will help support the avoidance, as far as is practicable, significant boulder fields where they arise within the Marine Scheme route. Impacts from pre-installation activities, including boulder clearance, is assessed in section 12.11.
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	3.4.3 the bland statement "It is expected that the offshore export cables will be buried along the majority of the route" is simply not good enough, demonstrating a laissez faire approach to the matter. Given the possible impacts on other peoples incomes, this should be scoped out now, not six months before-hand.	A range of different environmental, commercial and technical factors have informed the selection of the preferred route for the Marine Scheme, with a key driver being maximising potential burial success so as to minimise the requirement for external rock protection; this is discussed in further detail within Volume 2, Chapter 6: Route Appraisal and Consideration of Alternatives. To help inform the EIA, the Applicant has carried out an initial appraisal of cable burial. The outputs from this process have been used to help define locations where external cable protection may be required, thereby helping provide additional confidence to the fishing industry in both the assessment and the identification for any required mitigation measures. The Offshore Export Cables will be protected by burial to a minimum target depth of 0.5 m insofar as is practicable. Additional external cable protection (e.g. rock placement) will only be used where the minimum target burial depth cannot be achieved, for example in areas of hard ground or at third-party crossings. As described in Table 12.11, the location, extent and nature of the cable protection used will be communicated to the fishing industry. In addition, where rock placement is used for cable protection consideration will be given to designs that minimise potential gear snagging risk (i.e. use of graded rock and 1:3 profile berms).

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23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	3.4.3.2 needs to scope in the different impacts of the different protection methods. The fishing industry is completely averse to the use of concrete mattresses in open grounds.	A range of cable protection techniques may be required, including rock, rock bags, concrete mattresses, cast iron cast and Cable Protection System (CPS) and this will be informed by a Cable Burial Risk Assessment (CBRA) / and Burial Assessment Study (BAS). Cable protection will be designed / graded to be a fish-friendly specification. Further details are available within Volume 2, Chapter 5: Project Description. These techniques have been assessed in full detail, as detailed within this chapter; please refer to section 12.11 for further details.
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	For 3.6, 4.6 and 9.2.5 the project needs to scope in the possibility of cumulative impacts if all the cables being laid in this timeframe, being left in situ/ abandoned at the time of decommissioning.	Please refer to the CEA which has been provided within section 12.14.2 below.
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	Looking further on, at 4.5, 9.2, 9.4 and 12.2.4 the SFF would expect that any documents being used are over 10 years old must be reviewed to ensure they remain relevant.	A wide range of data has been used to inform the assessment; this is discussed in full detail within Table 12.6. The data used is the best available data to date and complemented through consultation with fisheries stakeholders. Any limitations of data sources are discussed in further detail within section 80. The use of older data may also help to identify historic trends, particularly for fishing methods operated sporadically or in a cyclical nature (e.g. nomadic scallop dredging) which may be fallow in more recent years. Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. Engagement which has been carried out to-date is detailed above, and reported on in further detail within Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report.
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	Then, Table 8.1 and Table 9.3, the SFF would not accept that a Temporary Increase in Underwater Noise could be scoped out because of a lack of data. If the project wants to avoid doing the work, they should not be licenced. If they believe the reason, they should do the scientific analysis to prove/disprove their claim.	UXO is not within the scope of the Marine Scheme and will be subject to separate Marine Licence (as discussed in Volume 2, Chapter 5: Project Description). However impacts on underwater noise from pre-construction activities, and EMF impacts, on commercially important fish species are assessed in Volume 2, Chapter 9: Fish and Shellfish Ecology.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and / or Where Considered in this Chapter
		Further on in the same table, scoping out any impacts of EMF is not acceptable. There is little evidence available, so the project should do the work to back up their claims.	
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	[*With regards to the scoping of transboundary and cumulative impacts*] In light of recent studies which would appear to show spatial effects of projects could reach out to 60km plus, 8.8 and 12.8 are moot, the project needs to do the work and prove their point.	Transboundary and Cumulative Impacts have been considered and the findings are presented in section 12.14.2. The scale of transboundary and cumulative impacts is considered proportionate and appropriate for the potential impacts identified given the localised nature of impacts on commercial fisheries receptors.
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	The SFF would question why in 9.5 Baseline Environment for Fish and Shellfish Ecology is being defined by the value of landings from ICES squares, each of which is c900sq miles. This surely belongs in Commercial Fisheries, whilst habitats and populations should be defined here?	Noted. The fish and shellfish assessment (Volume 2, Chapter 9: Fish and Shellfish Ecology) assesses the ecological baseline and conditions, while the ICES data has been used to inform this Commercial Fisheries assessment.
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	[*With regards to Scotland's National Marine Plan*] 12.2.3.1, there are other Marine Scotland Fisheries plans which need to be considered.	A summary of the policy and legislative provisions relevant to commercial fisheries is provided in Table 12.2 below and all relevant legislation and policy has been considered. Information made available from the fishing industry has also been considered where relevant within this chapter.
23 February 2023	Scottish Fishermen's Federation (SFF): Scoping comments	12.4, many of the data sources have been superseded by the reality of modern fishing so need to be seriously considered as to their appropriate use in this work.	A wide range of data has been used to inform the assessment; this is discussed in full detail within Table 12.6. Limitations of data sources are discussed in further detail within section 80.
23 February 2023	Scottish Fishermen's Federation (SFF) – Scoping Opinion	Regarding 12.5.2 on VMS data, the shortcomings of this source are such that any conclusions reached using it should be ground-truthed with the fishing industry to ensure clarity.	A wide range of data has been used to inform the assessment; this is discussed in full detail within section 12.6. Limitations of data sources are discussed in further detail within section 80. There are various limitations associated with commercial fisheries data. This is one of the reasons why the Applicant has engaged extensively with the fishing industry.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and / or Where Considered in this Chapter
			Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. Engagement which has been carried out to-date is detailed above, and reported on in further detail within Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report.
23 February 2023	Scottish Fishermen's Federation (SFF) – Scoping Opinion	12.6 being described as Designed in Measures for mitigation are simply Health and Safety for the project, and in no way represent Mitigation to benefit the fishing industry. Furthermore if there is a need for a CEMP to cover Marine Pollution Contingency & Control Plan, surely that should also be scoped in?	Designed in (embedded) mitigation measures are detailed in Table 12.11. These measures include design, surveys and communications, to facilitate co-existence and reduce risk of impacts on fisheries equipment and operations. This list has been further refined since the publication of the Scoping Report An outline Environmental Management Plan (oEMP) will be provided and will include a Marine Pollution Contingency and Control Plan (MPCCP) (Volume 5, Appendix 5.1).
14 March 2023	MMO – Scoping Opinion	You have scoped in a series of impacts to the assessment that have potential to cause adverse effects to commercial fisheries within the area. Impacts are as follows: • Temporary loss, displacement or restricted access to fishing grounds due to presence of vessels and safety zones during route preparation activities. • Temporary loss, displacement or restricted access to fishing grounds due to presence of vessels and safety zones during construction. • Interference with fishing activity as a result of increased vessel traffic, including potential increases to steaming times. • Potential for fishing gear to become entangled with cable (i.e.. snagging), resulting in damage or loss of fishing gear. • Long-term habitat loss and disturbance. • Long-term reduced access to key fishing grounds and resultant displacement.	Noted.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and / or Where Considered in this Chapter
14 March 2023	MMO – Scoping Opinion	The MMO recommend you ensure that impacts to the inshore commercial fisheries fleet (within the 6nm limit) and small-scale fisheries are also accounted for and appropriately assessed, as these sectors are often more vulnerable to the effects of displacement from marine construction works in coastal waters. Furthermore, these sectors are often under-represented when compared to largescale and industrial fisheries, because much of the fisheries spatial and temporal data (VMS, AIS tracking data) is under used and under studied for smaller and inshore fleets. Additionally, for vessels of 10m and under, there is no statutory requirement for fishermen to declare their catches, although their landings must be recorded on sales notes provided by the registered buyers. This can result in the spatial and temporal distribution/behaviour of small-scale fishers being under and/or over-estimated, resulting in fishers being displaced from important fishing grounds (Chuenpagdee et al., 2012; Metcalfe et al., 2017; Birchenough et al., 2021; Behivoke et al., 2021). You should consult with the North-Eastern Inshore Fisheries and Conservation Authority (NE IFCA) regarding the project and gathers further information and data from them on inshore commercial fishing activity in north-east England.	Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. Specific attention is paid to nearshore fishing vessels, to account for the fact they are typically underrepresented in the publicly available data. Engagement which has been carried out to-date is detailed above, and reported on in further detail within Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report. NIFCA have been contacted and they have provided anonymised sightings data from the period 2012 to 2021, which have informed the assessment. A face-to-face meeting was also held with Northumberland IFCA. A wide range of data has been used to inform the assessment; this is discussed in full detail within section 12.6 and further detail within Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report.
14 March 2023	MMO – Scoping Opinion	No concerns were raised for Shellfisheries. The MMO conclude that the project will have no likely significant effect on Shellfisheries.	Noted.
14 March 2023	MMO – Scoping Opinion	This work cuts across key inshore *Nephrop*-fishing grounds. This means that multiple vessels will repeatedly criss-cross over the cable area multiple times per day. If the cable is not able to be buried. Past cable-laying works in this area tell us this is far more difficult than exploratory passes suggest, and far more rock armour is used than is projected. This	A range of different environmental, commercial and technical factors have informed the selection of the preferred route for the Marine Scheme; this is discussed in further detail within Volume 2, Chapter 6: Route Appraisal and Consideration of Alternatives. To help inform the EIA, the Applicant has carried out an appraisal of cable burial. The outputs from this process have been used to help define locations

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and / or Where Considered in this Chapter
		has already caused multiple incidents of entire hauls being spoiled as an absolute best-case scenario. The worst case is, of course, vessels finding they are unable to lift the weight added by rocks they haul. This has already resulted in the need to cut away nets in order to safely resolve the situation.	where external cable protection may be required, thereby helping provide additional confidence to the fishing industry in both the assessment and the identification for any required mitigation measures. The Offshore Export Cables will be protected by burial to a minimum target depth of 0.5 m insofar as is practicable. Additional external cable protection (e.g. rock placement) will only be used where the minimum target burial depth cannot be achieved, for example in areas of hard ground or at third-party crossings. As described in Table 12.11, the location, extent and nature of the cable protection used will be communicated to the fishing industry. In addition, where rock placement is used for cable protection consideration will be given to designs that minimise potential gear snagging risk (i.e. use of graded rock and 1:3 profile berms). Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. It is acknowledged that static gear (including *Nephrops* creels) clearances may be required. If so these will be negotiated with individual vessel operators on a case-by-case basis. Further detail is provided in section 12.12.1. The Applicant is committed to follow FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison.
14 March 2023	MMO – Scoping Opinion	Potters also use the area year-round, and it will be necessary for them to relocate or remove pots for the duration of the works	
14 March 2023	MMO – Scoping Opinion	The MMO suggest that extensive, ongoing consultation with fishers is required and significant compensation is factored into plans. The best way to minimise this would be to carry out the work in May when the *Nephrop* fishery largely (but not always completely) closes down. The *Nephrop* season runs roughly October to April, but recent years have also provided an overnight summer fishery, so the grounds are effectively in constant use.	Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required. Engagement which has been carried out to-date is detailed above, and reported on in further detail within Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report. Typically cable installation activities are undertaken during summer months in order to reduce weather risk. However, activities during the months of October to April cannot be ruled out at this stage.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and / or Where Considered in this Chapter
			It is acknowledged that static gear (including *Nephrops* creels) clearances may be required. If so these will be negotiated with individual vessel operators on a case-by-case basis. Further detail is provided in section 12.12.1. The Applicant is committed to follow FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison.

13. As noted in Volume 2, Chapter 4: Stakeholder Consultation and Engagement and Volume 2, Chapter 5: Project Description, whilst the Berwick Bank Wind Farm (BBWF) is subject to a separate consenting process[6], there is considerable overlap in terms of the consultation and engagement undertaken for both projects due to their inherent link. On this basis, some of the outputs from the consultation and engagement process undertaken for the BBWF[7] have been used to help inform this chapter and the development of the Marine Scheme. A brief summary of BBWF consultation with fisheries consultees is provided in Table 12.4 below.

Table 12.4 Summary of Consultation Undertaken for BBWF with Fisheries Consultees that has been used to Inform the Marine Scheme

Date	Consultees / Reason for Consultation
16 November 2021	Consultation meeting with Scottish Fishermen Federation (SFF), the North and East Coast Regional Inshore Fisheries Group (NECRIFG), Under 10 m Association and Firth of Forth Fishing Industry Representatives (FIRs). Meeting aimed at providing an update on the BBWF development and discussed the planned consultation with local fisheries stakeholders to help inform the baseline.
15 December 2021	Consultation meeting with SFF, NECRIFG, Scottish White Fish Produces Association (SWFPA) and Firth of Forth local FIRs to provide a BBWF project update.
28 January 2022	Consultation meeting with SFF, NECRIFG, SWFPA and Firth of Forth local FIRs to provide BBWF project update.
31 January 2022	Consultation meeting with Dunbar FIR and local fishermen to discuss project updates and the baseline consultation.
04 February 2022	Northumberland Inshore Fisheries and Conservation Authority (NIFCA) Scoping Representation.
24 February 2022	Consultation meeting with Eyemouth FIR and local fishermen to discuss project updates and the baseline consultation.
17 March 2022	Consultation meeting in Berwick-upon-Tweed with Berwickshire Shellfish Co to discuss potential impacts on their business.
Ongoing	SSER hold regular monthly project update call with SFF and associated industry FIR's.

12.6 Methodology to Inform Baseline

14. Consultation with local fisheries stakeholders active in the commercial fisheries study area has been carried out to inform the baseline, as detailed in section 12.5 and described below. Liaison and engagement with the fishing industry is ongoing and will continue post-consent, throughout the construction, operation and maintenance and decommissioning phases as required.

15. During the course of engagement with commercial fisheries organisations as detailed in Table 12.3 above, a number of data limitations were identified (and indeed recognised by the Applicant in the Marine Scheme Scoping Report (BBWFL, 2022b)). In order to help address data limitations, the

[6] An application for consent under Section 36 of the Electricity Act 1989 (as amended) was submitted to MD-LOT and accepted in December 2022.

[7] Please refer to the separate BBWF consent application for further details (Berwick Bank Wind Farm Limited (BBWFL), 2022a).

Applicant carried out a comprehensive programme of engagement with fishers, as further detailed within Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report.

16. The CFLO, Brown and May Marine Ltd. undertook consultation on behalf of the Applicant with local fisheries stakeholders between to identify the key concerns of the fishing industry in relation to the Marine Scheme and to gather additional information on fishing activities within the commercial fisheries study area to inform the commercial fisheries baseline.

17. The consultation involved face-to-face meetings at local ports using a questionnaire, or for those unable to meet via email / phone and electronic submission of the questionnaire. National fisheries associations were contacted via meetings on Microsoft Teams. The following local fisheries stakeholders were contacted:

- NFFO;
- NIFCA;
- SFF;
- Local fishers based in Amble;
- Local fishers based in Blyth;
- Local fishers based in Eyemouth;
- Local fishers based in Holy Island; and
- Local fishers based in Seahouses.

18. The completed questionnaires provided information on the fishing activity of 63 vessels within the commercial fisheries study area, as summarised in Table 12.5 below.

19. The commercial fisheries baseline has also been informed through the review and analysis of available fisheries data and information from relevant publications which are detailed in Table 12.6.

Table 12.5 A Summary of the Fishing Activity within the Commercial Fisheries Study Area Used to Inform the Commercial Fisheries Baseline, as Provided Through Consultation Undertaken with Local Fisheries Stakeholders (Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report)

Parameter	Trawling	Potting / Creeling	Netting	Dredging	Longlining
Response – No. of Vessels	40	36	12	3	3
Primary / Secondary Activity	25 – Primary 13 – Secondary 2 – Visiting vessels	Both	Secondary	-	Secondary
Base Location	North Shields, Blyth, Amble, Seahouses, Eyemouth and Holy Island as well as two visiting vessels for the *Nephrops* fishery from Kirkwall in Scotland	North Shields, Blyth, Amble, Seahouses, Eyemouth, Holy Island	North Shields, Eyemouth, and Blyth	Blyth	Amble, Newbiggin-by-the sea and Eyemouth
Distribution of activity	Activity occurring both offshore and inshore	Activity is concentrated in the nearshore from North Shields up to Holy Island during the summer months, then moves further offshore during the winter. The majority of potting / creeling activity takes place from the nearshore out to the 12 nm limit, with the exception of a small number of the larger potting vessels that fish further offshore.	Activity concentrated between North Shields and Newbiggin-by-the-sea in the nearshore area.	No scallop dredging grounds were provided for the distribution of activity	Activity concentrated to the North of Blyth from the inshore area up to the 12nm limit, with some overlap of the Marine Scheme between the 6 and 12 nm limit.

Parameter	Trawling	Potting / Creeling	Netting	Dredging	Longlining
Target Species	*Nephrops*, cod, haddock, whiting, monkfish, and flatfish	*Nephrops*, lobster, brown crab, velvet crab, whelks	Turbot, halibut, trout, codling, pollack and mackerel	Scallop	Cod, codling, mackerel, and pollack
Vessel Length	9 m – 18 m	7 m – 12 m	6.4 m – 13.95 m	9.9 m	5.85 m – 7.3 m
Trip Duration	12 hours – 7 days	8 hours – 2 days	12 hours – 2 days	1 day	4 hours – 1 day
Steaming Distance	2 m – 150 nm	1 – 60 nm	7 – 50 nm	0 – 20 nm	0 – 25 nm
Average no. days fishing per year	4 – 300 days	100 – 365 days	60 – 300 days	200+ days	100 – 270 days
Seasonal variation	Year-round, but Winter activity focused on *Nephrops*. The majority of trawlers indicated this is a prime *Nephrops* fishing ground in the UK and supports a high level of activity in the winter months by visiting fishing vessels exploiting the peak *Nephrops* season.	All year fishing activity; although noted main fishing season is April to October for crab and lobster, and *Nephrops* are targeted in the winter months.	Year-round dependent on weather conditions. One vessel that nets for trout identified the main season for fishing as April and May, with the official trout fishing season running from 21st March - 3rd June each year.	Summer	April to October
Additional information provided	Local restrictions on trawling by vessel size within the 6 nm limit in the NIFCA region. Estimated 10 – 19 nomadic vessel utilise *Nephrops* fishing ground during peak season.	The larger potting / creel vessels typically concentrate their fishing outside the 6 nm due to the commercial potting limit for vessels under 12 m within the 6 nm of 800 pots by the NIFCA. 300 – 3,500 pots / creels operated per vessel.	-	-	-

Table 12.6 Summary of Key Desktop Studies & Datasets

Title	Source	Description	Year	Author
Datasets				
Information from Brown and May fisheries assessment for the Marine Scheme (Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report)	Volume 3, Appendix 12.1	Georeferenced data from Fisheries engagement undertaken by Brown and May on behalf of the Applicant as part of their fisheries engagement assessment. A total of 63 completed questionnaires were received by the Applicant for the Marine Scheme (Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report); responses included information on the activities of vessels engaged in potting/creeling (36), demersal trawling (40), netting (12), longlining (3), and dredging (3), noting that the number of vessels includes multipurpose vessels. The spatial information provided by fishermen was georeferenced where possible and amalgamated separately by fishing method for Scottish and English vessels.	2023	Brown and May
BBWF Offshore Environmental Impact Assessment – Appendix 12.1: Commercial Fisheries Technical Report, and Fisheries Industries Report (SSE-BLYTH-CF-01)	https://marine.gov.scot/sites/default/files/berwic1_6.pdf	Information on fishing rounds collected during consultation with local fisheries stakeholders as part of the EIA for BBWF, undertaken by Brown and May. A total of 53 completed questionnaires were received by the Applicant for the BBWF (BMM, 2022); responses included information on the activities of vessels engaged in creeling (43) and demersal trawling (10). The spatial information provided by fishermen was georeferenced where possible and amalgamated separately by fishing method for Scottish and English vessels. Charts compiled using these data generally provide information on areas targeted by fishermen in the proximity of the Marine Scheme but in some cases may not be representative of the full extent of grounds targeted by a given vessel.	2022	Brown and May
MMO Fisheries Statistics	https://www.gov.uk/government/collections/uk-sea-fisheries-annual-statistics	Landings statistics data for UK-registered vessels including landing year; landing month; vessel length category; ICES rectangle; vessel / gear type; species; live weight (tonnes); and value (£). Landings data by ICES rectangle are available for areas of relevance to the Marine Scheme from both the MMO and Marine Scotland. As the format in which the dataset is provided by the MMO allows a more detailed analysis of information it has been used in the assessment (data can be filtered for a given method by species, etc).	2015 – 2019 / 2010 - 2019	MMO, 2020

Title	Source	Description	Year	Author
		Landings data has been analysed by value (£) and presented as an annual average for the period 2015-2019. In the case of scallops, to provide an indication of the cyclical nature of the fishery, data for a longer period (2010 to 2019) has been analysed. It should be noted that fishing is normally not equally distributed across the area of an ICES rectangle and therefore overall activities identified for a given rectangle may not be necessarily representative of the activity that the specific area where the Marine Scheme is located supports.		
MMO VMS	https://environment.data.gov.uk/arcgis/rest/services/MMO/FishingActivityForOver15mUnitedKingdomVessels2020_ms/FeatureServer	Satellite tracking data (Vessel Monitoring System (VMS) recorded in 0.05° by 0.05° grids from UK vessels in UK and European waters. VMS data is combined with log book data with values assigned to each cell in the grid in terms of effort and value (£). This dataset is only available for vessels over 15 m in length and therefore is not representative of fishing activity undertaken by smaller local vessels which normally operate in inshore waters. The under-representation of desk-top data on the distribution of fishing activity by inshore, smaller vessels is addressed within the baseline where applicable, and has been a primary focus of consultation with the local fishing industry to help address this data gap (Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report). Fishing gear categories used in the dataset do not allow to distinguish activity between some fisheries. As for landings data, VMS data is provided by broad gear category regardless of target species.	2017 – 2020	MMO, 2021
Marine Scotland VMS	https://marine.gov.scot/maps/1832	VMS - Average intensity (hours) - *Nephrops* and crustaceans with bottom trawls: 2010-2020. The data is specifically focused on vessels engaged in demersal trawling for *Nephrops*. Only vessels over 15 m and over (up to 2012) 12 m and over (after 2012) are included in the dataset.	2010 - 2020	Marine Scotland, 2022

Title	Source	Description	Year	Author
MMO Surveillance Sightings	https://www.gov.uk/government/organisations/marine-management-organisation/about/statistics / https://www.gov.scot/publications/scottish-sea-fisheries-statistics-2020/	Dataset available for all UK waters from the MMO up to 2018. From 2018 onwards, data within Scottish waters is held by Marine Scotland. The data provides a good indication of key methods and nationalities potentially active in a given area. It is noted that surveillance patrols are not carried out at regular time intervals and therefore the level of surveillance effort may vary significantly between years.	2011 - 2020	MMO and Marine Scotland, 2020
Automatic Identification System (AIS) data (Marine Traffic)	Commercially procured AIS data (Marine Traffic)	AIS records include the following parameters: longitude, latitude, vessel Maritime Mobile Service Identity (MMSI) number, status, speed, course, heading and timestamp, deadweight tonnage, vessel length, vessel draught and vessel type. AIS point-based data has been converted into vessel tracks, clipped to the commercial fisheries study area. Vessel density grids for the wider should be produced by overlaying square kilometres (km^2) hexagonal grids and determining the density of tracks within each cell. All European Union registered fishing vessels of 15 m in length and above are required to carry AIS equipment. Smaller fishing vessels below 15 m in length are not required to carry AIS, although a small proportion do on a voluntary basis. Smaller fishing vessels are therefore likely to be underrepresented in the AIS data.	2015 - 2019	MMO, 2020
Northumberland Inshore Fisheries and Conservation Authority (NIFCA) Vessel Sightings	Procured from NIFCA	Data collected by NIFCA sea patrol officers of sighted vessels in and in proximity to the NIFCA district. Fishing density data from 2012– 2021 provided by gear type using a 1 km^2 grid. The NIFCA district extends out to the 6 nm limit and observations of fishing vessels by NIFCA patrol vessels are predominantly concentrated within the boundaries of the district. The lack of records in offshore areas is not indicative of a lack of fishing activity.	2012 - 2021	NIFCA, 2023
National Marine Plan Interactive (NMPi)	https://marinescotland.atkinsgeospatial.com/nmpi/	The interactive map details aspects of the National Marine Plan. Used to explore Commercial Fisheries interests around the Marine Scheme.	2023	Marine Scotland
Seafish fishing restriction map	https://kingfisherrestrictions.org/fishing-restriction-map	The Kingfisher Information Service Seafish fishing restriction map has been used to examine the current fishing restrictions in place within the commercial fisheries study area	2023	Seafish
Mapping fisheries and habitats in the North and	https://pureadmin.uhi.ac.uk/ws/portalfiles/portal/16637549/Shelmerdi	Report produced for the NECRIFG aimed at compiling available information on fishing activity (location, landings, and value) and important habitat information	2009 - 2019	Shelmerdine and Mouat, 2021

Title	Source	Description	Year	Author
East Coast RIFG area (NECRIFG)	ne_and_Mouat_2021_Mapping_fisheries_and_habitats.pdf	for key species to create a series of maps for integration in the NECRIFG management plan. The study reviews a number of available fisheries data sources of relevance to the NECRIFG (landings data, Automatic Identification System (AIS) data, VMS, ScotMap data, Creel Fishing Effort Study data, etc). Fishing activity charts presented in Shelmerdine and Mouat (2021) have been included for fisheries of relevance to the commercial fisheries study area, namely, demersal trawling, creeling and scallop dredging (2009 – 2019). Key fisheries datasets used in the report include: VMS, AIS, ScotMap data (Kafas *et al,* 2014), Creel effort study (Marine Scotland, 2017).		
Creel Fishing Effort Study	https://marine.gov.scot/information/creel-fishing-effort-study	The data presented in the study were obtained from two sources, interviews with static creel fishers and feedback from stakeholder workshops. The interviews with creel fishers were undertaken on the west coast in October to November 2015 and, after requests by industry, extended to the east coast in June to September 2016. The maps produced as part of the study provide information on the average number of crab and lobster hauls per day per 4 km^2. Only a sample of fisheries stakeholders participated in the commercial fisheries study area therefore the data outputs are not necessarily representative of the views of all fisheries stakeholders. In addition, the data was collected between 2015 and 2017 and may therefore not be fully representative of current activities.	2015 - 2017	Marine Scotland Science, 2017
Desktop studies				
Scotland England Green Link 1 / Eastern Link 1 – Marine Scheme	https://marine.gov.scot/sites/default/files/d12_environmental_appraisal_report_-_commercial_fisheries.pdf	A review of the Commercial Fisheries Chapter of the Scotland England Green Link 1 Environmental Appraisal was carried out to help inform the Commercial Fisheries impact assessment for the Marine Scheme.	2022	National Grid Electricity Transmission and Scottish Power Transmission

Title	Source	Description	Year	Author
Eastern Green Link 2 – Marine Scheme	https://marine.gov.scot/sites/default/files/c14_environmental_appraisal_report_-_commercial_fisheries.pdf	A review of the Commercial Fisheries Chapter of the Eastern Green Link 2 Environmental Appraisal was carried out to help inform the Commercial Fisheries impact assessment for the Marine Scheme.	2022	National Grid Electricity Transmission and Scottish Power Transmission
BBWF	https://berwickbank-eia.com/offshore-eia/vol2-ch12-Commercial-Fisheries/	A review of the Commercial Fisheries Chapter of the BBWF EIA Report was carried out to help inform the Commercial Fisheries impact assessment for the Marine Scheme.	2023	SSE
SeaGreen Alpha and Bravo	https://marine.gov.scot/sites/default/files/chapter_11_commercial_fisheries.pdf	A review of the Commercial Fisheries Chapter of the Seagreen Alpha and Bravo EIA Report was carried out to inform the Commercial Fisheries impact assessment for the Marine Scheme.	2012	SSE
NnG Wind Farm	https://marine.gov.scot/data/neart-na-gaoithe-offshore-windfarm-revised-design-eia-report-volume-1-main-text	A review of the Commercial Fisheries Chapter of the NNG EIA Report was carried out to inform the Commercial Fisheries impact assessment for the Marine Scheme.	2018	NnG Wind Farm
Inch Cape Wind Farm	https://marine.gov.scot/data/inch-cape-offshore-windfarm-revised-design-eia-report	A review of the Commercial Fisheries Chapter of the Inch Cape EIA Report was carried out to inform the Commercial Fisheries impact assessment for the Marine Scheme.	2018	Red Rock Power Limited, ESB
Blyth Demonstrator Offshore Wind Farm Phase 1 and Phase 2	MMO Case ref: MLA/2012/00122/10	A review of the Commercial Fisheries Chapter of the Blyth Demonstrator Offshore Wind Farm Phase 1 and Phase 2 ES was carried out to inform the Commercial Fisheries impact assessment for the Marine Scheme.	2012 / 2020	Blyth Offshore Demonstrator Limited
North Sea Link	https://www.northsealink.com/media/1196/p1568_rn3057-norway-uk-environmental-statement.pdf	A review of the Commercial Fisheries Chapter of the North Sea Link ES was carried out to inform the Commercial Fisheries impact assessment for the Marine Scheme.	2014	National Grid

12.7 Baseline Environment

12.7.1 Overview of Baseline Environment

20. A desktop review of the surveillance sightings (2011 – 2020; MMO and Marine Scotland) and average landings value (£) by fishing method, species and vessel length (m) (average 2015 – 2019; MMO, 2020) suggests commercial fisheries within the commercial fisheries study area (Volume 4, Figure 12.3) consist of the following:

- **Scotland**: predominantly dredges targeting scallops, followed by creeling targeting lobsters and crabs, and some demersal trawling (Volume 4, Figure 12.2, Volume 4, Figure 12.3); and
- **England**: predominantly demersal trawls targeting *Nephrops,* followed by potting targeting lobsters and crabs, and some dredging for scallops (Volume 4, Figure 12.2, Volume 4, Figure 12.3).

21. In Scottish waters, surveillance sightings have been recorded in relatively low numbers. Surveillance sightings are mainly for scallop dredges, pair trawlers and to a lesser extent potters / whelkers (Volume 4, Figure 12.2). Scallop dredge sightings are concentrated to the north of the Marine Scheme in ICES rectangle 42E8, and to a lesser extent in the west of ICES rectangle 41E8, overlapping the BBWF Array Area. The annual average landings (£, 2015 - 2019) per ICES rectangle illustrates that the majority of landings values (91%) recorded in ICES rectangle 42E8 were associated with dredges targeting scallops, followed by a small proportion of landings values from demersal trawling targeting squid and creeling/ potting for lobsters and crabs (Volume 4, Figure 12.3). This aligns with the surveillance sightings data in which the primary vessel type observed in ICES rectangle 42E8 was scallop dredger, followed by potter / whelker (Volume 4, Figure 12.2). In contrast, landings values for scallop dredges in ICES rectangle 41E8 are comparably lower, with the highest proportion of landings values being associated with creeling/potting for lobsters and crabs (Volume 4, Figure 12.3).

22. In English waters, surveillance sightings are generally more frequent than in Scottish waters to the north. Sightings are generally concentrated further inshore of the Marine Scheme boundary, with the exception of ICES rectangle 39E8 where sightings in the vicinity of the Marine Scheme are frequent. Sightings are dominated by potters / whelkers in the nearshore areas of ICES rectangles 40E8 and 39E8, with sightings of trawler (all), demersal stern trawler and bottom seiners being more frequent in the south and east of ICES rectangle 39E8 and the west of ICES rectangle 39E9 (Volume 4, Figure 12.2). As shown in Volume 3, Figure 12.3, ICES rectangles 40E8 and 39E8 are associated with the highest landings values within the commercial fisheries study Study rea, mostly attributed to vessels over 10 m in length. In ICES rectangle 40E8, creeling/ potting for lobsters, and to a lesser extent crab, make up the majority of the average annual landings values. In contrast, within ICES rectangle 39E8 and 39E9 to the south, landings values for creels / pots and traps are lower and demersal trawling for *Nephrops* make up the highest proportion of landings values. This aligns with the surveillance sightings data in which demersal stern trawlers, trawlers (all) and bottom seiner vessel types were sighted more frequently in ICES rectangle 39E8 compared with ICES rectangle 40E8. Lower landings values for scallop dredges are recorded in English waters, when compared with ICES rectangle 42E8 and 41E8 to the north in Scottish waters, and this is also reflected in the surveillance sightings.

23. Further offshore in English offshore waters, the values from landings recorded in ICES rectangles 41E9, and 40E9 are comparably lower than in their neighbouring ICES rectangles closer to shore. Within ICES rectangle 40E9, demersal trawling for *Nephrops* make up the highest proportion of landings values, and in ICES rectangle 41E9, the average landings in were roughly equally distributed between creels and demersal trawling (Volume 4, Figure 12.3).

24. The NIFCA vessel sightings data (2012 – 2021; NIFCA, 2023) provides supplemental context for the fishing activity in the commercial fisheries study area within English waters in Volume 4, Figure 12.4, showing a similar concentration of sightings as Volume 4, Figure 12.3. The greatest concentration of NIFCA vessel sightings were within the 12 nm limit and include potting, trawling, dredging, netting, and some angling throughout ICES rectangles 40E8 and 39E8 (Volume 4, Figure 12.4). The trawling sightings are more concentrated in the south of ICES rectangle 39E8, consistent with the MMO surveillance sightings.

25. Surveillance sightings data provided detail on vessel nationality within the commercial fisheries study area. The majority were UK vessels, with only 12 sightings of non-UK vessels from Denmark in Scottish waters and one sighting of a Dutch vessel in English waters (Volume 4, Figure 12.2). Danish vessels correspond to sandeel trawlers in 2012 and 2015 and it is important to highlight the prohibition of trawling with under 32 mm cod-end mesh size for sandeel that has since been implemented across ICES rectangles 42E8, 41E8 and 40E8 in the commercial fisheries study area. Therefore, Danish vessels engaged in the sandeel fishery would not be expected to be active in the commercial fisheries study area. Considering this, only negligible levels of non-UK fishing activity are anticipated in the commercial fisheries study area.

26. Based on the information provided above, the following have been identified as key fisheries within the commercial fisheries study area and the baseline for each are summarised within the following sections:

- Demersal trawling – *Nephrops* fisheries (section 12.7.2);
- Potting / Creeling[8] - Lobster and crab fisheries (section 12.7.3); and
- Dredging – Scallop fishery (section 12.7.4).

27. Additional detail on other non-UK and other UK fisheries present in the commercial fisheries study area is included in section 12.7.6.

[8] The use of static fishing gear (i.e., pots and traps) targeting lobsters and crabs is referred to as potting in England and creeling in Scotland.

12.7.2 Demersal Trawling

28. As described in section 12.7.1, demersal trawls account for a high proportion of surveillance sightings and landings values in the commercial fisheries study area, particularly in ICES rectangles 39E8 and 39E9. According to the consultation with local fisheries stakeholders, the commercial fisheries study area overlaps with a prime fishing ground for *Nephrops* and there is a high level of demersal fishing activity associated with *Nephrops* in the winter months. An indication of the seasonality of *Nephrops*, the key species targeted by demersal trawlers is provided in Plate 12.1 .

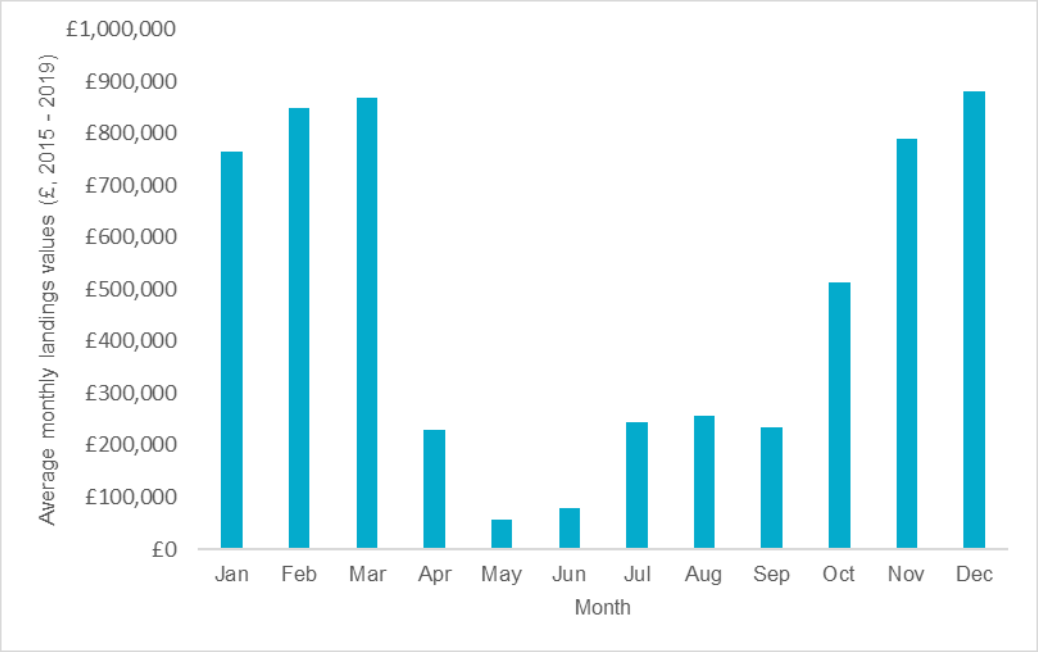

Plate 12.1 Monthly *Nephrops* Landings (£) in the Commercial Fisheries Study Area (Annual Average 2015 – 2019) (Source: MMO)

29. In addition to *Nephrops*, the demersal trawling activity in the commercial fisheries study area also targets whitefish, such as cod, haddock, whiting, monkfish, and also flatfish year-round (Table 12.5). A seasonal fishery for squid is also present on the east coast of Scotland, reflected in the landings values for squid in ICES rectangles 42E8 and 41E8 (Volume 4, Figure 12.3). Landings for these species are low compared with *Nephrops.*

30. The average annual landings values (Volume 4, Figure 12.3) and information gained through consultation (Volume 3, Appendix 12.1) indicates that vessels engaged in demersal trawling for *Nephrops* typically range from 10 – 18 m in length, and steam out to 150 nm. Most vessels reported a degree of versatility in terms of target species, with an ability to fish *Nephrops* and whitefish. It was also highlighted the commercial fisheries study area represents prime *Nephrops* grounds that support a high level of activity from visiting nomadic vessels during winter months in the peak *Nephrops* season (see Volume 3, Appendix 12.1).

31. To characterise the distribution of demersal trawling activity within the commercial fisheries study area, a desk-based review of the following data sources was undertaken:

- Surveillance sightings by vessel type (demersal trawling) (Volume 4, Figure 12.2);
- Average Landings Value (£) by Fishing Method (demersal trawling), Species *(Nephrops*) and Vessel Length (m) (Volume 4, Figure 12.3);
- Average VMS value (£) and effort (kWh) of UK vessels operating demersal trawls and seines (2017 – 2020) (Volume 4, Figure 12.5);

- Average intensity (hours) of fishing for *Nephrops* and crustaceans with bottom trawls (2010 – 2020) (Volume 4, Figure 12.6);
- Trawling grounds identified during consultation (2023) (Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report);
- Monthly *Nephrops* landings (£) in the commercial fisheries study area (average 2015 – 2019) Plate 12.1 ; and
- *Nephrops* functional units and *Nephrops* suitable habitat (Volume 4, Figure 12.7).

32. It is acknowledged that the VMS data is limited to vessels > 12 m or 15 m in length (depending on the dataset). As noted above, during consultation, local fisheries stakeholders indicated that trawling activity is being undertaken in the commercial fisheries study area by vessels between 9 m to 18 m in length. Therefore, not all trawling vessels will be captured by this dataset.

33. For Scottish waters, the above datasets have also been compared with the combined gear and species maps presented in 'Mapping fisheries and habitats in the North and East Coast RIFG area' (Shelmerdine and Mouat, 2021). The combined gear and species maps utilise a range of datasets to indicate the likely locations of trawling.

34. An analysis of these data sources is provided in section 12.7.2.1 for the commercial fisheries study area within Scottish waters, and 12.7.2.2 for within English waters. Additionally, the prime fishing grounds for *Nephrops*, as brought to attention during consultation, is further discussed in section 12.7.2.2.1.

12.7.2.1 SCOTLAND

35. Surveillance sightings data (Volume 4, Figure 12.2) reports minimal sightings of trawling vessels in the Scottish waters of the commercial fishing study area. This is also reflected in the low proportion of landings values attributed to demersal trawls and seines in ICES rectangles 42E8, 41E8 and 41E9.

36. The average VMS value (£) and effort (kWh) of UK vessels operating demersal trawls and seines (MMO, 2020; Volume 4, Figure 12.5) in the Scottish region demonstrates that the greatest value and effort is within the inshore waters of the Forth and Tay region, outwith the commercial fisheries study area, and this is also reflected by the average intensity (hours) of fishing for *Nephrops* and crustaceans with bottom trawls between 2010 and 2020 (Marine Scotland, 2023) (Volume 4, Figure 12.6). Within the northwest of ICES rectangle 40E8 which overlaps with the commercial fisheries study area in Scottish waters, VMS value and effort are slightly elevated, associated with the *Nephrops* grounds in the Forth and Tay. However, there is no overlap with the Marine Scheme boundary (Volume 4, Figure 12.5; Volume 4, Figure 12.6). This distribution of activity is also reflected in the information presented in Shelmerdine and Mouat (2021).

37. The distribution of trawling activity identified during consultation also suggests a lower density of vessels operating in Scottish offshore waters, with most of the depicted fishing grounds overlapping within the Firth of Forth and further south in English waters, as described below (Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report).

12.7.2.2 ENGLAND

38. Surveillance sightings data (Volume 4, Figure 12.2) reports minimal sightings of trawling vessels in ICES rectangles 40E8 and 40E9 within the English offshore waters of the commercial fisheries study area. Further south, there is a relatively high number of sightings of demersal trawl vessels in ICES rectangles 39E8 and 39E9, with an overlap with the Marine Scheme in ICES rectangle 39E9. As described in section 12.7.1, a high proportion of the average annual landings values in ICES rectangles 39E8 and 39E9 are attributed to demersal trawling for *Nephrops*, which is a valuable fishery for this area.

39. The average VMS value (£) and effort (kWh) of UK vessels operating demersal trawls and seines (MMO, 2020; Volume 4, Figure 12.5) in the English region of the commercial fisheries study area demonstrates that demersal trawling is concentrated in ICES rectangles 39E8 and 39E9, with the greatest effort concentrated in ICES rectangle 39E8, and this aligns with the surveillance sightings and average annual landings values. The concentration of effort and value in this region is notably within close proximity to and just beyond the 12 nm limit in the eastern half of ICES rectangle 39E8, which may be a result of the restrictions associated with vessel size within 6 nm limit of the NIFCA region (see section 12.7.6).

40. The distribution of trawling activity identified during consultation also reflects the high landings values and VMS value and effort in the east of ICES rectangle 39E8 and the west of ICES rectangle 39E9 (Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report). This area of fishing effort is associated with the Farnes Deeps *Nephrops* grounds, as detailed below.

12.7.2.2.1 *NEPHROPS* SUITABLE HABITAT

41. *Nephrops* are managed based on ICES functional units (FUs) which correspond to areas of suitable habitat, i.e., patches of mud in which they are known to burrow. The commercial fisheries study are overlaps with the Farnes Deeps FU (FU6) which spans across ICES rectangles 40E8, 40E9, 39E8, 39E9, 38E8, and 38E9 in England (Volume 4, Figure 12.7). An area of suitable *Nephrops* habitat spans across the eastern edge of ICES rectangle 39E8 through to ICES rectangle 39E9 which corresponds with the higher levels of VMS value and effort for demersal trawls in this area and the trawling grounds identified through consultation.

12.7.3 Creeling/ Potting

42. As described in section 12.7.1, creeling/ potting accounts for a high proportion of surveillance sightings and landings values in the nearshore areas of the commercial fisheries study area in ICES rectangle 41E8, 40E8 and 39E8. According to the consultation with local fisheries stakeholders, the creeling/ potting activity within the commercial fisheries study area is concentrated in the nearshore area from North Shields up to Holy Island during the summer months, then moves further offshore during the winter for *Nephrops* (Volume 3, Appendix 12.1). Key species include lobster, brown crab and *Nephrops* in addition to velvet crab and whelks. Creeling/ potting activity is present year-round in the commercial fisheries study area, although it was noted by local consultees that the main fishing season is between April to October, aside from the previously mentioned *Nephrops* activity in the winter months (Table 12.5). An indication of the seasonality of the brown crab and lobster, the key target species for creeling/ potting is shown in Plate 12.2. As outlined in section 12.7.1, creeling/ potting accounts for a high proportion of landings values in ICES rectangles 41E8 and 40E8.

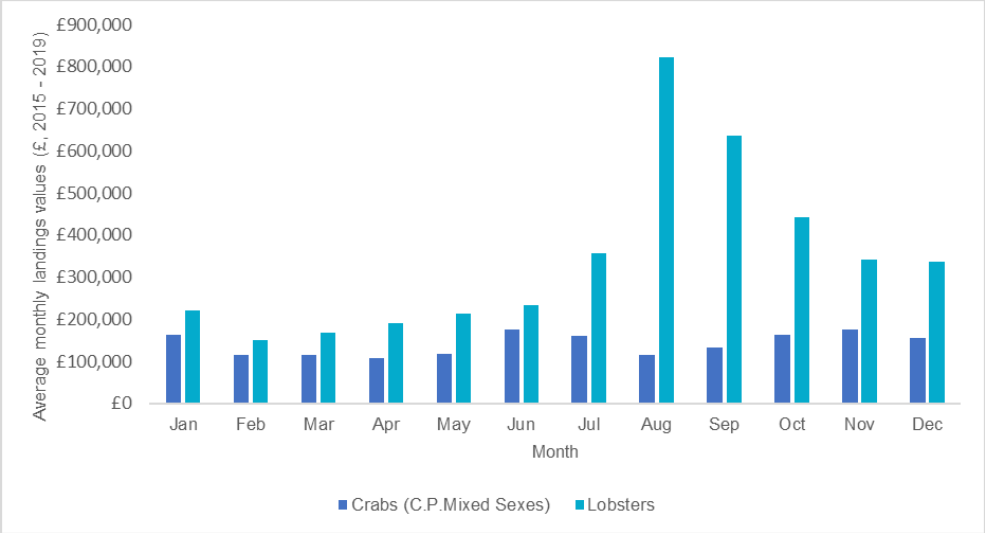

Plate 12.2 Monthly crab and lobster landings (£) in the Commercial Fisheries Study Area (Annual Average 2015 – 2019) (Source: MMO)

43. The average landings values (Volume 4, Figure 12.3) for creeling/ potting in the commercial fisheries study area are equally distributed across over and under 10 m vessels. Consultation with the local fishing industry indicates that vessels typically range from 7 to 12 m with an operational range up to 60 nm (Volume 3, Appendix 12.1).

44. To characterise the distribution of creeling/ potting activity within the commercial fisheries study area, a desk-based review of the following data sources was undertaken:

- Surveillance sightings by vessel type (creeling) (Volume 4, Figure 12.2);
- Average Landings Value (£) by Fishing Method (creeling/ potting), Species (lobster and crabs) and Vessel Length (m) (Volume 4, Figure 12.3);
- Average VMS Value (£) and Effort (kWh) of UK Vessels Using Pots and Traps (2017 – 2020) (Volume 4, Figure 12.8);
- Creeling/ potting grounds identified during consultation (2023) (Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report);
- Creel fishing effort study (2017) (*Scotland only*) (Volume 4, Figure 12.9);
- Creel positions (2021 – 2022) (*Scotland only*) (Volume 4, Figure 12.10); and
- Monthly lobster and crab landings in the commercial fisheries study area (average 2015 – 2019) (Plate 12.2).

45. It is acknowledged that the VMS data is limited to vessels > 12 or 15 m in length (depending on the dataset), and that the majority of creelers/ potters are expected to be below this length. Information gained through consultation and the creel fishing effort study is relevant for vessels < 12 m and helps to fill this data gap.

46. For Scottish waters, the above datasets have also been compared with the combined gear and species maps presented in 'Mapping fisheries and habitats in the North and East Coast RIFG area' (Shelmerdine and Mouat, 2021). The combined gear and species maps utilise a range of datasets to indicate the likely locations of creeling.

47. An analysis of these data sources is provided in section 12.7.2.1 for the commercial fisheries study area within Scottish waters, and 12.7.2.2 for within English waters.

12.7.3.1 SCOTLAND

48. Surveillance sightings (Volume 4, Figure 12.2) for Scottish waters in the commercial fisheries study area and the Marine Scheme are very few in ICES rectangle 41E9 and 41E8. A small number of sightings are recorded in the south-west corner of ICES rectangle 42E8, within the commercial fisheries study area but outwith the Marine Scheme. Landings values for creeling/ potting account for the majority of landings values in ICES rectangles 41E8 and 40E8 that overlap with Scottish waters. However, surveillance sightings indicate that effort is likely to be low within the Marine Scheme.

49. VMS value and effort for creeling in the Scottish waters of the Martine Scheme are shown in Volume 4, Figure 12.8. Within the north-west tip of the BBWF Array Area there is an area recorded as low value and low effort for creel fishing. There is no other VMS data (for creeling activity) recorded within the Scottish waters of the commercial fisheries study area. This is attributed to the majority of creeling activity occurring from vessels of under 12 m, which are underrepresented in the VMS dataset.

50. Information gained through consultation indicates that creeling/ potting grounds extend out to offshore waters in Scotland, potentially overlapping the Marine Scheme boundary. However, this is at the limit of the fishing grounds for most vessels (Volume 3, Appendix, 12.1: Commercial Fisheries Engagement Report).

51. The creel fishing effort study provided an average number of crab / lobster hauls per day in the Scottish region of the commercial fisheries study area (Volume 4, Figure 12.9). The greatest effort was recorded close to the coastline outwith the commercial fisheries study area. Within the commercial fisheries study area the greatest concentration of effort was within the nearshore waters of ICES rectangle 40E8, close to the Scotland / England border (between 5 hauls and 40 hauls per day). ICES rectangle 42E8 followed in next highest effort at 0 to 24 hauls per day, with comparably lower hauls in ICES rectangle 41E8 overlapping the BBWF Array Area (Volume 4, Figure 12.9). This distribution of fishing activity is also reflected in Shelmerdine and Mouat (2021) which indicates a concentration of effort in nearshore areas outwith the Marine Scheme.

12.7.3.2 ENGLAND

52. Surveillance sightings data (Volume 4, Figure 12.2) for English waters in the commercial fisheries study area, show a concentration of potter/ whelker sightings in the coastal waters within ICES rectangle 39E8, with a high number within the Marine Scheme. There are very few sightings in ICES rectangle 41E9 and 41E8. The landings values for creeling/ potting also show the highest average annual landings values in ICES rectangles 40E8 and 49E8.

53. With the exception of a small area in ICES rectangle 39E9, there is no VMS value and effort for creeling recorded in the English waters of the commercial fisheries study area, as shown in Volume 4, Figure 12.8. This is attributed to the majority of creeling activity occurring from vessels of under 12 m.

54. The creel fishing effort study was prepared by Marine Scotland Science (2017) and covers Scottish inshore waters only[9]. Therefore, this dataset has no coverage of the English waters of the commercial fisheries study area; however, information derived from consultation with local fishers, as detailed in **Table 12.1** and Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report has been used as the main source of information for small local creel / potter vessels. Additional

[9] The creel fishing effort study was produced to inform future fisheries management proposals in Scottish inshore waters and therefore does not cover English waters.

sources include surveillance sightings data and fisheries statistics It is acknowledged that there are limitations within this data from inaccurate reporting. However, at this time, this is the best available data for the baseline characterisation and it is considered sufficient for the requirements of this assessment.

55. Based on information gained through consultation, most creeling/ potting in English waters occurs in the area from North Shields up to Holy Island and beyond the 6 nm limit, most likely due to a NIFCA commercial potting limit of 800 pots for vessels under 12 m within the 6 nm limit (see Volume 3, Appendix 12.1).

12.7.4 Dredging

56. As outlined in section 12.7.1, dredging for scallops accounts for a high proportion of the surveillance sightings and landings values in the north of the Marine Scheme in Scottish waters. The majority (99%) of landings are associated with vessels over 10 m in length. Scallop dredgers of relevance to the Marine Scheme are mostly large nomadic vessels over 15 m in length that operate over a range of scallop grounds distributed throughout UK waters. An indication of the seasonality of scallops is provided in Plate 12.3. The scallop fishery is cyclical in nature on an approximate seven to eight year cycle. An indication of the annual variation in scallop landings values is provided in Plate 12.4 which shows a peak in landings values in 2015 to 2017.

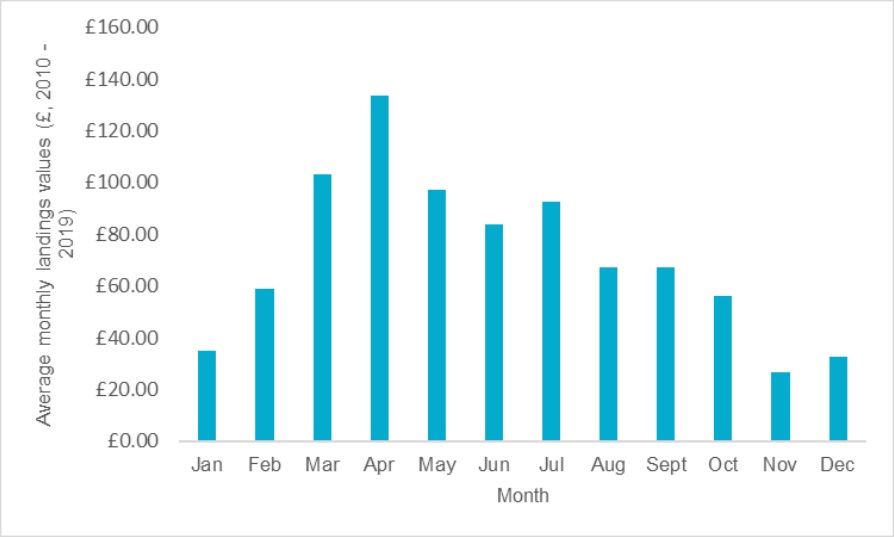

Plate 12.3 Monthly Scallop Landings (£) in the Commercial Fisheries Study Area (Annual Average 2010 – 2019) (Source: MMO)

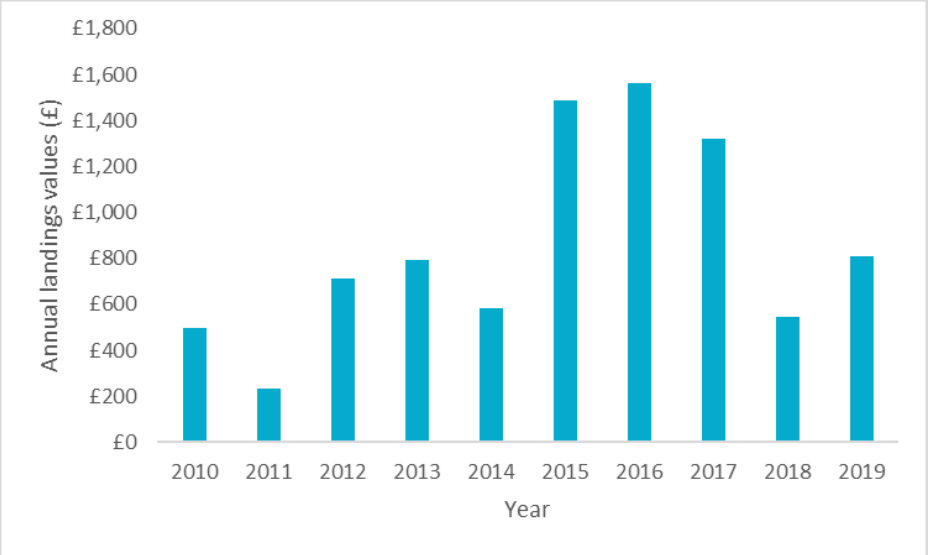

Plate 12.4 Annual Scallop Landings (£) in the Commercial Fisheries Study Area (2010 – 2019) (Source: MMO)

57. According to the consultation with local fisheries stakeholders, there are three local vessels under 10 m in length targeting scallops, and the activity is primarily during the summer months with an operational range of up to 20 nm (Volume 3, Appendix 12.1).

58. During consultation no scallop grounds were provided to illustrate the distribution of this commercial fishing activity within the commercial fisheries study area. Thus, the distribution of dredging has been established through the analysis of the following data:

- Surveillance sightings by vessel type (dredging) (Volume 4, Figure 12.2);
- Average Landings Value (£) by Fishing Method (dredge), Species (scallops) and Vessel Length (m) (Volume 4, Figure 12.3);
- Average VMS Value (£) and Effort (kWh) of UK Vessels Operating Dredges (2017 – 2020) (Volume 4, Figure 12.10);
- Monthly landings of scallop dredgers in the commercial fisheries study area (average 2015 – 2019) (Plate 2.3); and
- Annual variation in the landings of scallops in the commercial fisheries study area (2010 – 2019) (Plate 2.4).

59. For Scottish waters, the above datasets have also been compared with the combined gear and species maps presented in 'Mapping fisheries and habitats in the North and East Coast RIFG area' (Shelmerdine and Mouat, 2021). The combined gear and species maps utilise a range of datasets to indicate the likely locations of scallop dredging.

12.7.4.1 SCOTLAND

60. Surveillance sightings (Volume 4, Figure 12.2) in the Scottish waters of the commercial fisheries study area are concentrated in ICES rectangle 42E8 which is outwith the Marine Scheme. A low number of sightings are recorded within ICES rectangle 41E8, some of which are within the Marine Scheme. Average landings values for scallop dredges account for a high proportion of the annual average landings values for ICES rectangle 42E8, and to a lesser extent in ICES rectangle 41E8.

61. VMS value and effort for scallop dredgers in the Scottish waters of the Marine Scheme are shown in Volume 4, Figure 12.10. In offshore Scottish waters of the commercial fisheries study area, value

and effort within the Marine Scheme can be generally described as medium. An area of high effort occurs in ICES Rectangle 42E8, consistent with the high proportion of scallop dredge landings values in this ICES rectangle, however, this is outwith the Marine Scheme (Volume 4, Figure 12.10). This is consistent with the information presented within Shelmerdine and Mouat (2021) which indicates the presence of scallop grounds to the north west of the Marine Scheme in the west of ICES rectangle 42E8.

62. It should be noted that this VMS data accounts for larger nomadic scallop dredging vessels and therefore does not include smaller local dredging vessels. The information derived from consultation with local fishers indicates that scallop dredges based in Blyth can steam out to 20 nm, and therefore, only a minimal overlap with Scottish waters is anticipated.

12.7.4.2 ENGLAND

63. Surveillance sightings for scallop dredgers (Volume 4, Figure 12.2) in English waters of the commercial fisheries study area are concentrated in inshore waters in ICES rectangle 39E8, approximately 15 km north of the Marine Scheme. As outlined in section 12.7.1, only a small proportion of the average annual landings values are attributed to scallops in ICES rectangles 40E8, 39E8, 40E9 and 39E9.

64. VMS value and effort for scallop dredgers in the English waters of the Martine Scheme are shown in Volume 4, Figure 12.10. As the Marine Scheme traverses from Scottish waters into offshore English waters value and effort within the commercial fisheries study area is medium. Towards inshore waters, the majority of the commercial fisheries study area and the Marine Scheme occur within an area of no to low effort and value for UK vessels utilising dredging gear. It should be noted that this VMS data accounts for larger nomadic scallop dredging vessels and therefore does not report smaller local dredging vessels, as noted above for Scottish waters.

12.7.5 AIS Fishing Vessel Tracks

65. AIS data has been used to illustrate fishing vessel tracks throughout the commercial fisheries study area giving insight into the distribution of fishing vessels throughout the region; however, the data is not indicative of fishing activity or effort (Volume 4, Figure 12.11). As AIS is not required for fishing vessels under 15 m in length, these vessels may not be represented in this dataset. To address this data gap, information on the distribution of fishing activity by local, smaller vessels has been informed by consultation with the local fishing industry, as outlined in section 12.5 and 12.6.

66. Within the commercial fisheries study area, fishing vessel tracks are denser within the inshore waters for both Scotland and England. The greatest density of vessel tracks is located in English waters in ICES rectangle 39E8 (Volume 4, Figure 12.11), with considerable fishing vessel tracks present through ICES rectangle 39E9 near the 12 nm limit, and ICES rectangles 40E8, 41E8, and 42E8. Vessel track density is less prominent further offshore in ICES rectangles 41E9 and 40E9.

12.7.5.1 OTHER UK FISHERIES

67. This assessment focusses on the principal fisheries identified for the Marine Scheme. However, other fisheries are present, associated with lower landings values or effort or operated as secondary fishing methods. Considering the negligible activity by these fisheries within the Marine Scheme, for the purposes of this assessment, it is considered that the effects on these fisheries will be the same as or less than those included within the assessment. Please note that fisheries mitigation (including the implementation of the FMMS / FLCP) will apply to all fisheries active in the vicinity of the offshore Project (unless otherwise specified), even if they are not considered a principal fishery for the Marine Scheme.

68. Herring is a high value species targeted by mostly large, pelagic vessels. The average landings by species (Volume 4, Figure 12.3) shows high landings value of herring in ICES rectangle 40E9 to the east of the Marine Scheme, associated with demersal trawls and seines. No landings caught by pelagic trawls were recorded for the ICES rectangles and no VMS value or effort was recorded for this fishing method in the commercial fisheries study area.

69. Volume 3, Appendix 12.1 a total of 12 vessels engage in netting as an alternative fishing method in the commercial fishing study area and two vessels reported longlining as their secondary fishing activity. Netting occurs throughout the year but is dependent on weather conditions and one vessel reported the main months for activity were April and May, whereas the longlining season was reported to mainly run from April to October.

12.7.5.2 NON-UK FISHERIES

70. Most surveillance sightings as shown in Volume 4, Figure 12.2 recorded in the Marine Scheme are of UK vessels, noting that a small selection of Danish sightings in Scottish waters and a limited number of Dutch vessels in the English waters. It is understood that Denmark, Netherlands, France and Belgium have historic fishing rights to fish for herring between the UK's 6 and 12 nm limit in the commercial fisheries study area, although the surveillance sightings data indicates that this is likely to be at negligible effort levels. Considering this, there is considered to be no potential for transboundary effects on commercial fisheries from the Marine Scheme as detailed in section 12.16.

12.7.6 Restrictions

71. During consultation with local fisheries stakeholders, it was indicated that there are fishing activity restrictions within 6 nm of the NIFCA region associated with vessel size, such as with a limit for trawling activity based on vessel size, and with a limit for potting of 800 pots for vessels under 12 m length. To further understand the commercial gear fishing restrictions within the commercial fisheries study area, a review of the Kingfisher Information Service Seafish map was undertaken. The following commercial fishing gear restrictions apply within the commercial fisheries study area (Seafish, 2023; Volume 4, Figure 12.12):

72. NIFCA District:

- Crustacean and Molluscs Permitting and Pot Limitation Byelaw (Ref: 1698), limiting potting permit holders in the area to 800 pots;
- Dredges Byelaw (Ref: 2166), restricting dredging activity in the area;
- Mobile fishing gear prohibition: Berwick and North Northumberland Coast Special Area of Conservation (SAC) (Ref: 1700), restricting fishing vessels operating mobile fishing gear within the Berwick and North Northumberland Coast SAC;
- Trawling Byelaw (0 – 3 nm) (Ref: 1654), restricting pair or simultaneous trawling / towing, and prohibiting purse seine (or similar net), limiting activity to vessels less than 12 m in length utilising single trawls fitted with single cod-end and one pair of otter boards; and
- Trawling Byelaw (entire NIFCA district) (Ref: 1655), applying the same restrictions as the trawling byelaw (0 – 3 nm), except vessels must be less than 18.3 m in length.

73. Legislative restrictions (MMO):

- Farnes Deeps (0 – 12 nm) (Ref: 2136), prohibiting fishing by demersal trawls and seines (excluding beam trawls), but not applying to vessels with an engine power of < 350 kW deploying single-rig demersal trawl or seine.

12.7.6.1 FISHERIES MANAGEMENT IN MARINE PROTECTED AREAS

12.7.6.1.1 FIRTH OF FORTH BANKS COMPLEX NCMPA

74. The Marine Scheme boundary overlaps with the Firth of Forth Banks Complex Marine Protected Area (MPA) in Scottish waters (Volume 4, Figure 12.12). In this MPA, a Possible Marine Conservation Order (MCO) which includes fisheries related management measures has been proposed. In the areas identified by the Possible MCO for implementation of fisheries management measures, fishing activity by demersal trawls and scallop dredgers would be restricted / prohibited.

75. The Possible MCO management measures are currently undergoing consultation. Therefore, the fisheries management measures associated with it are yet to be finalised and formally implemented and may be subject to change.

12.7.6.1.2 NORTH EAST OF FARNES DEEP HIGHLY PROTECTED MARINE AREA

76. In England, Highly Protected Marine Areas (HPMAs) are areas of the sea including the shoreline that allow the protection and full recovery of marine ecosystems. HPMAs will protect all species and habitats and associated ecosystem processes within the site boundary, including the seabed and water column (DEFRA, 2023). The first three HMPAs are intended for designation before 6 July 2023, North East of Farnes Deep is one of the sites, and as shown in Volume 4, Figure 12.18, occurs within the commercial fisheries study area and the Marine Scheme in English waters, approximately 14 km to the east.

77. Management measures will be in place to support the conservation objectives of HMPAs. Pilot HMPAs will be designated as Marine Conservation Zones (MCZs) under the Marine and Coastal Access Act 2009. In line with advice from Natural England and JNCC, it is anticipated that extractive, destructive and depositional activities will be prohibited within each site. This would include activities such as:

- Commercial and recreational fishing;
- Dredging;
- Construction; and
- Anchoring.

12.7.7 Future Baseline Scenario

78. The commercial fisheries study area supports a range of established commercial fishing activity, especially demersal trawling for *Nephrops*, creeling/ potting for lobsters and crabs, and dredging for scallops as identified as key fisheries in section 12.7.1. Additionally, located within the commercial fisheries study area is a prime fishing ground for *Nephrops*, Farnes Deeps FU (FU6), as identified through consultation. Given the presence of these established fishing grounds, and the *Nephrops* fishing ground, it can be expected that commercial fisheries would continue to operate at a similar capacity throughout the region in the future.

79. It is acknowledged that global climate change may result in changes to the distribution and abundance of commercial fish species, thus resulting in changes to the distribution and effort of commercial fishing activity within the commercial fisheries study area. Additionally, given that there are currently legislative and NIFCA district restrictions present in the commercial fisheries study area, it can be assumed that these legislative requirements and restrictions could evolve over time or result in additional restrictions coming in place; however, at the time of writing this Commercial Fisheries Chapter it is not possible to predict what these changes may look like. The implementation of fisheries management measures within the Firth of Forth Banks Complex ncMPA and the East of Farnes Deep HMPA, such as spatial closures for certain fishing methods may also affect the future distribution and levels of fishing activity in the commercial fisheries study area.

80. The distribution and / or level of fishing activity is expected to adapt around future restrictions. Any changes that may occur during the design life span of the Marine Scheme should be considered in the context of both greater variability and sustained trends occurring on national and international scales in the marine environment. At this stage, it is not possible however to predict what these changes (e.g. climate change, changes in the fishing industry, UK exit from the EU etc) may entail and how they may affect activities within the commercial fisheries study area therefore it has been assumed that the current baseline assessment presented reflects the future baseline scenario also.

12.7.8 Data Assumptions and Limitations

81. Fisheries activity including landing weight and value fluctuate noticeably over time (MMO, 2021). One of the key factors to impact fisheries landings in recent years has been Brexit. There is a transition period up to 2026, where there will be a reduction of EU quota shares within UK waters, the transfer of 25% of EU's fishing rights in UK waters to UK fleets and changes to Total Allowable Catch (TAC) by licenced EU vessels.

82. Another of the key factors to impact fisheries landings in recent years has been the COVID-19 pandemic, which started impacting the Commercial Fisheries sector from March 2020. Varying levels of impacts were noted throughout the differing sectors of the Commercial Fisheries industry. Especially sectors depending on the hospitality industry, where demand both in the UK and in European markets fell dramatically as social distancing and lockdown rules prevented access to the hospitality industry. This is particularly true for the shellfish fishery.

83. Due to the significant alterations in fishing practices for 2020 and 2021, landings data available for these years are not considered to provide an accurate representation of normal fishing activities in the Marine Scheme and wider commercial fisheries study area and this is noted for consideration when assessing impacts. The datasets for the period up to 2019 represent a consistent and accessible format of data. Conversely, the most recent 2021 data provided by the MMO adopts a different – inconsistent – format, meaning it is challenging to delineate trends in isolation from what may be simply due to the aforementioned format changes. It is understood that the MMO is currently reviewing this inconsistency with a view to a consistent five-year dataset being provided in the next annual report; however, at the time of submission, this is not available.

84. Table 12.6 details key data sources used to inform the commercial fisheries baseline. It also provides details on the limitations and gaps associated with these sources. These include the potential for some historic datasets to not be fully representative of current activities, issues with the classification of fishing methods used in the statistical datasets and variation in the frequency over which some data are collected.

85. The inshore fisheries baseline data is very limited, as most published data sources (including but not limited to VMS and AIS) do not include vessels under 15 meters of length. To help address this issue, consultation with fisheries stakeholders, including federations, associations and local fishermen, has been undertaken to help inform the baseline characterisation. A summary of the consultation undertaken can be found in Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report.

86. The potential limitations noted above are presented for completeness however the Applicant has mitigated this as far as practicable by carrying out detailed engagement with the fishing industry which is summarised in section 13 above (please refer to Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report for further details).

12.8 Scope of Assessment

12.8.1 Impacts Scoped into the Assessment

87. The following impact pathways have been scoped into the assessment, as agreed through the Scoping process and follow up consultation with stakeholders and consultees[10]:

- Temporary loss, displacement or restricted access to fishing grounds (C & D);
- The presence of Marine Scheme vessel traffic, leading to the potential for increases to steaming times (C & D);
- Snagging risk during installation, resulting from sections of exposed cable prior to burial / protection (C & D);
- Long-term reduced access to key fishing grounds and resultant displacement (O & M); Potential for fishing gear to become entangled with cable (i.e., snagging), resulting in damage or loss of fishing gear (O & M); and
- Indirect impacts resulting from changes in abundance and distribution of target species (C, O & M, D).

12.8.2 Impacts Scoped Out of the Assessment

88. Impacts scoped out of the assessment were agreed with key stakeholders through consultation following receipt of Scoping Opinion from MD-LOT and MMO in February and March 2023 respectively. Based on the Scoping Opinion, no impacts are scoped out of the assessment for Commercial Fisheries.

[10] C & D = Construction and Decommissioning, O & M = Operation and Maintenance

12.9 Key Parameters for Assessment

12.9.1 Maximum Design Scenario

89. The maximum design scenario(s) (MDS) summarised here have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the details provided in the Volume 2, Chapter 5: Project Description. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Description (e.g., different infrastructure layout), to that assessed here, be taken forward in the final design scheme.

90. Given that the MDS is based on the design option (or combination of options) that represents the greatest potential for change, confidence can be held that development of any alternative options within the design parameters will give rise to no worse effects than assessed in this impact assessment. Table 12.7 presents the maximum design scenario for potential impacts on commercial fisheries during construction, operation and maintenance and decommissioning.

91. Site preparation works, in advance of construction, are predicted to commence in Q4 of 2026 and will continue until all installation activities have ceased. Landfall construction is expected to occur between Q4 of 2027 until Q4 of 2028. Export cable installation is expected to begin in Q3 2028 and is expected to last until Q4 of 2029. All activities associated with the Marine Scheme are predicted to conclude by the end of 2029. Until detailed design of the Marine Scheme is progressed and further refined pre-construction, this programme for the Marine Scheme as a whole is indicative and is subject to further refinement, but is used to inform assessment of construction phase impacts for the Marine Scheme.

Table 12.7 Maximum Design Scenario Specific to Commercial Fisheries Impact Assessment

Potential Impact	Maximum Design Scenario	Maximum Design Scenario – Scottish water and English waters	Justification
Construction (including site preparation)			
Temporary loss, displacement or restricted access to fishing grounds	• Installation of a maximum of four Offshore Export Cables in separate trenches, within the Marine Scheme which is up to 180 km long; • Pre-installation activities including pre-lay grapnel run, boulder clearance, route preparation at sandwaves, sea trials, and pre-installation trenching through harder sediment as required. A maximum clearance swathe of approximately 25 m (the worst-case swathe associated with subsea ploughing); • Advisory 500 m clearance zones around construction vessels and along vulnerable sections of cable awaiting burial or protection, suitably promulgated to maximise awareness of construction activities; and • Construction of the Marine Scheme is expected to take up to 39 months.	**Scottish waters:** • Installation of a maximum of four Offshore Export Cables in separate trenches, within the Marine Scheme which is up to 40 km long in Scottish waters; • Pre-installation activities including pre-lay grapnel run, boulder clearance, route preparation at sandwaves, sea trials, and pre-installation trenching through harder sediment as required. A maximum clearance swathe of approximately 25 m (the worst-case swathe associated with subsea ploughing); • Advisory 500 m clearance zones around construction vessels and along vulnerable sections of cable awaiting burial or protection, suitably promulgated to maximise awareness of construction activities. **English waters:** • Installation of a maximum of four Offshore Export Cables in separate trenches, within the Marine Scheme which is up to 140 km long in English waters; • Pre-installation activities including pre-lay grapnel run, boulder clearance, route preparation at sandwaves, sea trials, and pre-installation trenching through harder sediment as required. A maximum clearance swathe of approximately 25 m (the worst-case swathe associated with subsea ploughing); and	This represents the maximum duration and extent of construction, activities, and hence the greatest potential to restrict access to fishing grounds.

Potential Impact	Maximum Design Scenario	Maximum Design Scenario – Scottish water and English waters	Justification
		• Advisory 500 m clearance zones around construction vessels and along vulnerable sections of cable awaiting burial or protection, suitably promulgated to maximise awareness of construction activities.	
The presence of Marine Scheme vessel traffic, leading to the potential for increases to steaming times	• Installation of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 180 km long; • Advisory 500 m clearance zones around construction vessels and along vulnerable sections of cable awaiting burial or protection, suitably promulgated to maximise awareness of construction activities; and • Construction of the Marine Scheme is expected to take up to 39 months.	**Scottish waters:** • Installation of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 40 km long in Scottish waters; and • Advisory 500 m clearance zones around construction vessels and along vulnerable sections of cable awaiting burial or protection, suitably promulgated to maximise awareness of construction activities. **English waters:** • Installation of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 140 km long in English waters; and • Advisory 500 m clearance zones around construction vessels and along vulnerable sections of cable awaiting burial or protection, suitably promulgated to maximise awareness of construction activities.	Represents the maximum potential for disruption of established steaming routes
Snagging risk during installation, resulting from sections of exposed cable prior to burial/protection	• Installation of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 180 km long; • Assumes cable will be surface laid before being buried or protected; • Potential for obstacles on the seabed which may present a snagging risk (e.g. dropped objects); and	**Scottish waters:** • Installation of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 40 km long in Scottish waters; • Assumes cable will be surface laid before being buried or protected; and • Potential for obstacles on the seabed which may present a snagging risk (e.g. dropped objects).	Represents the maximum potential for gear snagging as a result of section of exposed cable. The snagging risk associated with cable protection is assessed as part of the operation and maintenance

Potential Impact	Maximum Design Scenario	Maximum Design Scenario – Scottish water and English waters	Justification
	• Construction of the Offshore Export Cable Corridor is expected to take up to 39 months.	**English waters:** • Installation of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 140 km long in English waters; • Assumes cable will be surface laid before being buried or protected; and • Potential for obstacles on the seabed which may present a snagging risk (e.g. dropped objects).	impact: "Potential for fishing gear to become entangled with cable (i.e., snagging), resulting in damage or loss of fishing gear".
Indirect impacts resulting from changes in abundance and distribution of target species	Please refer to Chapter 9: Fish and Shellfish Ecology, Table 9.10. This details all MDS relevant for potential impacts to fish and shellfish species as a result of the Marine Scheme.	Maximum design scenario applicable to both Scottish and English waters.	The maximum potential for effects on commercially exploited species as described in section 12.7.
Operation and Maintenance			
Long-term reduced access to key fishing grounds and resultant displacement	• Presence of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 180 km long; • Minimum target burial depth of 0.5 m where burial can be achieved, excluding crossing points where burial reduces to 0 m (with protection); • If burial is not able to achieved due to ground conditions, then surface lay and protection techniques will be employed (0 m minimum with protection), expected across up to a maximum of 148 km of cable; • Cable protection at five crossing points (English waters only); and • Advisory 500 m clearance zones around maintenance vessels for major maintenance activities, including in the event of cable exposures being identified; and • Operation and maintenance phase of up to 35 years.	**Scottish waters:** • Presence of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 40 km long in Scottish waters; • Minimum target burial depth of 0.5 m where burial can be achieved, excluding crossing points where burial reduces to 0 m (with protection); • If burial is not able to achieved due to ground conditions, then surface lay and protection techniques will be employed (0 m minimum with protection), expected across up to a maximum of 24 km of cable; • Advisory 500 m clearance zones around maintenance vessels for major maintenance activities and along vulnerable sections of cable in the event of cable exposures being identified; and • Operation and maintenance phase of up to 35 years.	This represents the maximum duration and extent of operation and maintenance activities, and hence the greatest potential to restrict access to fishing grounds.

Potential Impact	Maximum Design Scenario	Maximum Design Scenario – Scottish water and English waters	Justification
		English waters: • Presence of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 140 km long in English waters; • Minimum target burial depth of 0.5 m where burial can be achieved, excluding crossing points where burial reduces to 0 m (with protection); • If burial is not able to achieved due to ground conditions, then surface lay and protection techniques will be employed (0 m minimum with protection), expected across up to a maximum of 124 km of cable; • Cable protection at five crossing points; and • Advisory 500 m clearance zones around maintenance vessels for major maintenance activities and along vulnerable sections of cable in the event of cable exposures being identified; and • Operation and maintenance phase of up to 35 years.	
Potential for fishing gear to become entangled with cable (i.e., snagging), resulting in damage or loss of fishing gear	• Presence of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 180 km long; and; • Minimum target burial depth of 0.5 m where burial can be achieved, excluding crossing points where burial reduces to 0 m (with protection); • If burial is not able to achieved due to ground conditions, then surface lay and protection techniques will be employed (0 m minimum	**Scottish waters:** • Presence of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 40 km long in Scottish waters; • Minimum target minimal burial depth of 0.5 m where burial can be achieved, excluding crossing points where burial reduces to 0 m (with protection); • If burial is not able to achieved due to ground conditions, then surface lay and protection techniques will be employed (0 m minimum	This represents the maximum number of Offshore Export Cables and associated cable protection installed and therefore the maximum potential for gear snagging and associated loss or damage to fishing gear.

Potential Impact	Maximum Design Scenario	Maximum Design Scenario – Scottish water and English waters	Justification
	with protection), expected across up to a maximum of 148 km of cable; • Cable protection at five crossing points (English waters only); and • Advisory 500 m clearance zones around maintenance vessels for major maintenance activities, including in the event of cable exposures being identified; and • Operation and maintenance phase of up to 35 years.	with protection), expected across up to a maximum of 24 km of cable; • Advisory 500 m clearance zones around maintenance vessels for major maintenance activities, including in the event of cable exposures being identified; and • Operation and maintenance phase of up to 35 years. **English waters:** • Presence of a maximum of four Offshore Export Cables in separate trenches within the Marine Scheme which is up to 140 km long in English waters; • Minimum target burial depth of 0.5 m where burial can be achieved, excluding crossing points where burial reduces to 0 m (with protection); • If burial is not able to achieved due to ground conditions, then surface lay and protection techniques will be employed (0 m minimum with protection), expected across up to a maximum of 124 km of cable; • Cable protection at four crossing points; and • Advisory 500 m clearance zones around maintenance vessels for major maintenance activities, including in the event of cable exposures being identified; and • Operation and maintenance phase of up to 35 years.	
Indirect impacts from changes in abundance and distribution from target species	Please refer to Chapter 9: Fish and Shellfish Ecology, Table 9.10. This details all MDS relevant for potential impacts to fish and shellfish species as a result of the Marine Scheme.	Maximum design scenario applicable to both Scottish and English waters.	The maximum potential for effects on commercially exploited species as described in section 12.7.
Decommissioning			
Temporary loss, displacement or restricted access to fishing grounds due to presence of vessels and	The decommissioning sequence for the Marine Scheme will generally be the reverse of the	Maximum design scenario applicable to both Scottish and English waters.	This represents the maximum duration and extent of construction, activities, and

Potential Impact	Maximum Design Scenario	Maximum Design Scenario – Scottish water and English waters	Justification
clearance zones during route preparation and construction activities	construction sequence and involve similar types and numbers of vessels and equipment. Please refer to MDS for the construction phase.		hence the greatest potential to restrict access to fishing grounds.
The presence of Marine Scheme vessel traffic, leading to the potential for increases to steaming times	The decommissioning sequence for the Marine Scheme will generally be the reverse of the construction sequence and involve similar types and number of vessels and equipment. As such, the MDS for the decommissioning phase is assumed to be as described for the construction phase.	Maximum design scenario applicable to both Scottish and English waters.	Represents the maximum potential for disruption of established steaming routes.
Snagging risk during installation, resulting from sections of exposed cable prior to burial/protection	The maximum design scenario for the decommissioning phase assumes all subsea cables and cable protection will be left in situ. With regard to infrastructure which may be left in situ, the MDS would be as described for the operation and maintenance phase.	Maximum design scenario applicable to both Scottish and English waters.	This represents the maximum number of Offshore Export Cables and associated cable protection installed and therefore the maximum potential for gear snagging and associated loss or damage to fishing gear.
Indirect impacts resulting from changes in abundance and distribution of target species	Please refer to Chapter 9: Fish and Shellfish Ecology, Table 9.10. This details all MDS relevant for potential impacts to fish and shellfish species as a result of the Marine Scheme.	Maximum design scenario applicable to both Scottish and English waters.	The maximum potential for effects on commercially exploited species as described in section 12.7.

12.10 Methodology for Assessment of Effects

12.10.1 Overview

92. The assessment of effects has followed the methodology set out in Volume 2, Chapter 3: EIA Methodology. Specific to the assessment of commercial fisheries, the following guidance documents have also been considered:

- Sea Fish Industry Authority and UK Fisheries Economic Network (UKFEN) (2012) Best practice guidance for fishing industry financial and economic impact assessments;
- Guidance on commercial fisheries mitigation and opportunities from offshore wind commissioned by Collaborative Offshore Wind Research into the Environment (COWRIE), (Blyth-Skyrme, 2010);
- Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW) Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison: FLOWW (2014);
- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds. FLOWW (2015);
- International Cable Protection Committee (2009) Fishing and Submarine Cables – Working Together;
- Centre for Environment, Fisheries and Aquaculture Science (Cefas) (2012) Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Contract report: ME5403, May 2012; and
- Cefas, Marine Consents and Environment Unit (MCEU), Department for Environment, Food and Rural Affairs (Defra) and Department of Trade and Industry (DTI) (2004) Offshore Wind Farms – Guidance note for Environmental Impact Assessment In respect of the Food and Environmental Protection Act (FEPA) and Coastal Protection Act (CPA) requirements, Version 2;
- MGN 661 (M+F) Navigation – safe and responsible anchoring and fishing practices. Maritime and Coastguard Agency (2021); and
- Good Practice Guidance for Assessing Fisheries Displacement by Other Licensed Marine Activities (and associated Literature Review) (Scottish Government and Xodus Group Limited (2022)).

12.10.2 Impact Assessment Criteria

93. Information about the Marine Scheme and the proposed activities with all stages of the Marine Scheme life cycle (construction, operation and maintenance, and decommissioning) has been combined with information about the environmental baseline to identify the potential interactions between the Marine Scheme and the environment.

94. Determining the significance of effects is a two-stage process that involves defining the magnitude of the potential impacts and the sensitivity of the receptors.

95. The criteria for defining magnitude for commercial fisheries are outlined in Table 12.8 below. This generally follows the methodology outlined in Volume 2, Chapter 3: EIA Methodology, with topic-specific definitions relating to defining impact magnitude with regards to commercial fisheries.

Table 12.8 Definition of Terms relating to the Magnitude of an Impact

Magnitude of Impact	Description
High	The area affected by the impact sustains very high levels of fishing activity and / or represents a critical fishing ground for a given fishery / fleet; and / or the effect is permanent / very long term; and / or limited fisheries liaison or management measures can be implemented.
Medium	The area affected by the impact sustains high / moderate levels of fishing activity and represents a significant extent of the grounds available to a given fishery / fleet; and / or the effect is long term; and / or some suitable fisheries liaison or management measures can be implemented.
Low	The area affected by the impact sustains low / moderate levels of fishing activity and represents a relatively small extent of the grounds available to a given fishery/fleet; and / or the effect is short to medium term; and / or a range of suitable liaison or management measures can be implemented.
Negligible	The area affected by the impact sustains low / negligible levels of fishing activity and / or affects a small / negligible extent of grounds; and / or the effect is very short term.

96. The criteria for defining sensitivity in this chapter are outlined in Table 12.9 below. This generally follows the methodology outlined in Volume 2, Chapter 3: EIA Methodology, with topic-specific definitions relating to defining receptor sensitivity with regards to commercial fisheries.

97. The significance of the effect upon commercial fisheries is determined by correlating the magnitude of the impact and the sensitivity of the receptor, as outlined in Table 12.9 below.

Table 12.9 Definition of Terms Relating to the Sensitivity of the Receptor

Value (Sensitivity of the Receptor)	Description
Very High	Fully dependent on fishing grounds that overlap with the Marine Scheme, lack of versatility and no ability to adapt to the potential impact.
High	Very limited operational range and lack of operational versatility (ability to deploy only one gear type and limited range of target species); and / or high dependence on a single fishing ground; and / or no or very limited ability to adapt to the potential impact.
Medium	Limited operational range and / or some versatility with regards to fishing gear / target species; and / or dependence upon a limited number of grounds; and / or limited ability to adapt to the potential impact.
Low	Extensive operational range and / or versatility with regards to fishing gear/target species; and / or ability to exploit a varied range of fishing grounds; and / or high adaptability to the potential impact.
Negligible	Highly extensive operational range and / or versatility with regards to fishing gear/target species: and / or ability to exploit numerous and extensive fishing grounds; and / or fully adaptable to the potential impact

Table 12.10 Matrix Used for the Assessment of the Significance of the Effect

		Magnitude of Impact			
		Negligible	**Low**	**Medium**	**High**
Sensitivity of Receptor	**Negligible**	Negligible	Negligible to Minor	Negligible to Minor	Minor
	Low	Negligible to Minor	Negligible to Minor	Minor	Minor to Moderate
	Medium	Negligible to Minor	Minor	Moderate	Moderate to Major
	High	Minor	Minor to Moderate	Moderate to Major	Major
	Very High	Minor	Moderate to Major	Major	Major

98. In line with the request from MD-LOT through Scoping, the Assessment of Impacts identifies where impacts are relevant to Scottish waters, English waters, or both. Where there is no separation of assessment of impacts, the assessment for the Marine Scheme (as a whole entity) applies to the Marine Scheme in each of Scottish waters and English waters separately.

12.11 Measures Adopted as Part of the Marine Scheme

99. As part of the project design process, a number of measures have been proposed to reduce the potential for impacts on commercial fisheries (see Table 12.11). These include measures which have been incorporated as part of the Marine Scheme design (referred to as 'designed in measures') and measures which will be implemented regardless of the impact assessment (referred to as 'tertiary mitigation'). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Marine Scheme and have therefore been considered in the assessment presented in section 12.12 below (i.e. the determination of magnitude and therefore significance assumes implementation of these measures). These measures are considered standard industry practice for this type of development.

Table 12.11 Measures Adopted as Part of the Marine Scheme (Designed in Measures & Tertiary Mitigation)

Mitigation Measure	Justification	Applicable Jurisdication
Route Selection and Avoidance	The Marine Scheme has been specifically refined to avoid interactions with key designations, environmental sensitivities, and notable inshore fishing grounds as far as reasonably practicable. On the approach to the Landfall at Cambois, the route has been selected to minimise the footprint within European Sites. Nearshore routes with greater levels of interactivity with European Sites along the English and Scottish coast have been de-selected. Further detail on this is provided in Volume 2, Chapter 6: Route Appraisal and Consideration of Alternatives	Scottish and English waters
Appointment of a Company Fisheries Liaison Officer (CFLO)	An CFLO is already in place and will continue to act as a specific point of contact to engage with and liaise with the fishing industry. A CFLO will be in place throughout the lifespan of the Marine Scheme.	Scottish and English waters
Use of Offshore Fisheries Liaison Officers (OFLOs) where required and appropriate.	The use of OFLOs facilitates engagement with fisheries stakeholders during specific Project works and minimises potential for conflict between the Marine Scheme and fishing activities.	Scottish and English waters
Development of an FMMS / FLCP for MD-LOT and MMO approval, and in consultation with fisheries stakeholders.	The FMMS/ FLCP details the Applicant's proposed approach to fisheries liaison and to facilitating co-existence, including details on the measures which are proposed to be implemented to reduce impacts on commercial fishing as far as practicable. An outline FMMS / FLCP has been provided as part of this application (Volume 5, Appendix 12.2) and will be updated for submission to MMO and MD-LOT prior to construction.	Scottish and English waters
Participation in the Forth and Tay Commercial Fisheries Working Group (FTCFWG).	The FTCFWG provides a forum for information sharing and discussion of key issues with fisheries stakeholders and other developers in the region. Participation in similar groups in England will be explored.	Scottish and English waters
Cable Plan (CaP)	Suitable implementation and monitoring of cable protection through the Marine Scheme and adherence to a CaP. This will be produced and consulted on (in line with consent conditions) prior to installation and will include a detailed cable laying plan including geotechnical data, cable laying techniques and informed by a Cable Burial Risk Assessment (CBRA) which will include details on minimum target burial depths.	Scottish and English waters

Mitigation Measure	Justification	Applicable Jurisdication
Cable burial depth	Cables will be buried to a minimum target depth of 0.5 m and only protected using external protection (e.g., rock berms) where minimum target burial depth is not achieved or at third-party crossings. Application of target cable burial depth will reduce the potential for cable exposure from interactions between metocean regimes (e.g. wave, sand, and currents) and will reduce interaction with fishing gear. Cable burial also reduces risk of interference with magnetic position fixing equipment.	Scottish and English waters
Monitoring of cable burial and protection	Infrastructure will be monitored through post lay and burial inspection surveys to identify exposures and any requirements for repair and reburial, with remedial action taken as appropriate and as soon as practicable. Findings will be shared with the fishing industry in order to facilitate co-existence, prevent potential damage to and from fishing gear, and minimise potential safety risks.	Scottish and English waters
Development of a Code of Good Practice for contracted vessels.	Facilitates co-existence between vessels undertaking works for the Marine Scheme and fishing vessels and helps minimise potential adverse interactions.	Scottish and English waters
Undertaking of assessments to determine cable burial status.	Post lay and burial inspection surveys will be undertaken with remedial action taken as appropriate. In addition, an assessment to determine cable burial status (including cable protection) and identify potential changes to seabed conditions will be undertaken. Findings would be shared with the fishing industry where relevant.	Scottish and English waters
Promulgation of information (such as, position and nature of works, vessel routes, Safety Zones, advisory safe passing distances, navigational warnings) as required via Kingfisher Bulletins.	The construction of infrastructure and implementation of safety distances around construction vessels may displace recreation vessels. Likewise, maintenance and decommissioning activities may also displace recreation vessels. Circulation of information via Notices to Mariners (NtM), Kingfisher, Radio Navigational Warnings, Navigational Telex (NAVTEX), and/or broadcast warnings as soon as reasonably practicable in advance of and during the offshore works to inform the commercial fishing industry of vessels routes, timing and locations of construction works, and relevant details the construction activities. These will be augmented with NAVTEX and Radio Navigation Warning broadcasts as appropriate. Maximises awareness of the Marine Scheme allowing vessels to passage plan in advance, in the interests of safety to infrastructure and other users receptors.	Scottish and English waters
Adherence to appropriate guidance, with regards to fisheries liaison and mitigation (i.e. Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW) guidance, as far as is applicable for a subsea cable).	Adherence to appropriate guidance, with regards to fisheries liaison and mitigation to facilitate the establishment of productive relationships with fisheries stakeholders and the implementation of an evidence-based approach to mitigation.	Scottish and English waters
Guard vessels and clearance distances.	Project vessels will implement a 500 m advisory safe passing distances with third party vessels during periods of construction or major repair or maintenance. During operation, where cable exposures exist that would result in significant risk, guard vessels will be used where appropriate until the risk has been mitigated by burial and/or other protection methods. Guard vessels will use Automatic RADAR Plotting Aid (ARPA) to monitor vessel	Scottish and English waters

Mitigation Measure	Justification	Applicable Jurisdication
	activity and predict possible interactions whilst alongside the construction vessel(s). This facilitates engagement with fisheries stakeholders during specific project works, reduces potential for interactions between the Marine Scheme and fishing activities, as well as maximising awareness of temporary hazards	
Development of suitable procedures to allow claims for loss or damage to gear.	Facilitates co-existence and minimises potential adverse interactions between Marine Scheme vessels and fishing activities.	Scottish and English waters
As-Built Information	The location, extent and nature of the cable protection measures used will be communicated to the relevant stakeholders including the UK Hydrographic Office (UKHO), relevant fishing industry representatives and Kingfisher Information Service. Provides information so all other legitimate users of the sea are aware of the location, extent and nature of cable protection..	Scottish and English waters
Cable protection.	The use of cable protection will be minimised as far as practicable, and only used where required. Additional external cable protection (e.g. rock placement) will only be used where the minimum target burial depth cannot be achieved, for example in areas of hard ground or at third-party crossings. This will be informed by outputs from the Cable Burial Risk Assessment completed by the installation contractor(s) prior to the commencement of installation. Rock utilised in berms will be clean with low fines. Use of graded rock and 1:3 profile berms at areas of rock protection will reduce potential fishing gear snagging risk.	Scottish and English waters

12.12 Assessment of Impacts

100. The potential impact pathways arising from the construction, operation and maintenance and decommissioning phases of the Marine Scheme are detailed in section 12.1.5 along with the maximum design scenario against which each impact has been assessed.

101. An assessment of the likely significance of the effects of the Marine Scheme on commercial fisheries receptors caused by each identified impact pathway is given below.

12.12.1 Potential Effects During Construction

12.12.1.1 TEMPORARY LOSS, DISPLACEMENT OR RESTRICTED ACCESS TO FISHING GROUNDS

102. There may be temporary loss of access to fishing grounds during route preparation activities and construction, resulting in the displacement of fishing activities to alternative areas. For vessels that deploy static gear in the Marine Scheme, there could be potential for conflicts associated with displacement effects to arise whereby gear that has to be temporarily removed (primary displacement), is relocated into grounds where other static gear vessels or mobile gear vessels operate (secondary displacement). Similarly, vessels which operate mobile gears may be displaced to grounds where other static or mobile gear vessels operate, thus increasing competition for fishing grounds.

103. 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 assumed that vessels will focus displaced effort in established fishing grounds for the same fishing method and target species and that fishing vessels with a greater operational range and a wider availability of alternative grounds will be less sensitive to displacement impacts.

104. Based on the MDS (Table 12.7), temporary loss, displacement or restricted access to fishing grounds during the route preparation and construction period would be up to a total of 39 months.

12.12.1.1.1 MAGNITUDE OF IMPACT

Demersal trawling – *Nephrops*

105. *Nephrops* are the main target species of demersal trawlers in the commercial fisheries study area. Comparably lower landings values are associated other demersal species such as whitefish and squid.

106. Trawling within Scottish waters in the northern part of the Marine Scheme is of low to moderate value and effort with seemingly no suitable *Nephrops* grounds overlapping the Marine Scheme boundary, as these are primarily located further inshore in the Forth and Tay region (Volume 4, Figure 12.5; Volume 4, Figure 12.6).

107. The majority of suitable *Nephrops* grounds can be found south of the Marine Scheme in English waters, concentrated in the eastern half of ICES rectangle 39E8, and to a lesser extent in ICES rectangle 39E9, where the Marine Scheme overlaps the Farnes Deep *Nephrops* FU (Volume 4, Figure 12.5; Figure 12.6). The Marine Scheme intersects an area of high landings values in this area of English waters corresponding to suitable *Nephrops* habitat (Volume 4, Figure 12.7). The restrictions on demersal trawling and seining for certain gear specifications within Farnes Deeps (excluding beam trawls) reduces the availability of grounds for these vessels. However, the Marine Scheme will overlap with a small proportion of the Farnes Deeps restricted area, as shown in

Volume 4, Figure 12.7, with alternative *Nephrops* grounds available in the wider area (e.g. Forth and Tay region).

108. Temporary loss of access and displacement of demersal trawlers during construction will be limited to 500 m advisory clearance zones around installation vessels and vulnerable (unburied or unprotected) sections of Offshore Export Cables, as described above (Table 12.6) and discussed further in Volume 2, Chapter 5: Project Description. This will be short-term over discrete areas of the Marine Scheme boundary and over a period of up to 39 months.

109. Displaced vessels may be subject to increased competition or conflict, and secondary displacement impacts on demersal trawlers may also occur from other fleets being displaced from the Marine Scheme, particularly for those operating static gear. However, as noted above, considering the availability of alternative high value *Nephrops* grounds in the wider area and the localised spatial extent of any displaced effort, the potential for increased competition or conflict is limited. Potential competition or conflict with other demersal trawlers and other types of mobile gear (e.g. scallop dredges) will also be reduced as a result of the wide operational ranges of these vessels.

110. Overall, only small discrete areas of temporary loss or restricted access and subsequent displacement are expected at any given time during construction. Given the wider 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. A range of fisheries liaison and management measures will be implemented to minimise loss of access and associated displacement effects, as outlined in section 12.11.

111. Taking the low levels of activity for demersal trawling for *Nephrops* within Scottish waters, the impact in Scottish waters is defined as being of negligible magnitude.

112. In English waters, where higher levels of activity by demersal trawlers for *Nephrops* are recorded (as discussed in 12.7.2.2.1) within the Marine Scheme boundary, the impact is defined as being of low magnitude.

Creeling/ Potting – Lobster and crabs

113. Creeling/ potting activity is prevalent across the full length of the Marine Scheme boundary, with the highest landings values off the coast of Northumberland in ICES rectangle 40E8 and 39E8.

114. Within Scottish waters, in ICES rectangles 42E8, 41E8 and 41E9 the value of landings associated with this fishing method is considered to be low to moderate. Consultation has identified that the Marine Scheme is at the offshore limit of the fishing grounds for most creelers/ potters operating out of Scottish and English ports (Volume 3, Appendix 12.1: Commercial Fisheries Engagement Report).

115. In English waters, landings values by creels / pots are highest in ICES rectangles 40E8 and 39E8 and based on information gained through consultation, activity is mainly concentrated in the nearshore area of the Marine Scheme from North Shields up to Holy Island during the summer months, however, vessels may move offshore at times.

116. Temporary access restrictions and associated displacement will be short-term and limited to the discrete locations of 500 m advisory clearance zones around installation vessels and vulnerable (unburied or unprotected) sections of cable. In certain areas of the Marine Scheme, creelers and potters may be requested to relocate or remove static gear from the Marine Scheme boundary during construction, and this will be negotiated with individual operators on a case-by-case basis and in line with FLOWW best practice guidance.

117. Creels / pots displaced due the Marine Scheme construction activities may be at risk of increased competition and conflict with other vessels operation static or mobile gear. For instance, creels /

pots displaced from the Marine Scheme in ICES rectangle 39E8 may be displaced to the areas traditionally fished by demersal trawlers targeting *Nephrops* within this ICES rectangle. However, it is considered that alternative areas are available in the wider region to accommodate the levels of displaced effort associated with the temporary and highly localised areas of loss or restricted access with minimal potential for increased competition or conflict to arise.

118. Taking the low to moderate levels of activity for creels and pots within Scottish waters, whilst acknowledging the potential requirements for gear removal or relocation from the Marine Scheme boundary, the impact in Scottish waters is defined as being of low magnitude.

119. Taking the moderate to high levels of activity for creels and pots within English waters and acknowledging the potential requirements for gear removal or relocation from the Marine Scheme boundary, the impact in English waters is defined as being of medium magnitude.

Dredging – Scallops

120. Scallop dredging within the Marine Scheme is predominantly concentrated within Scottish waters. The highest landings values are in ICES rectangle 42E8, located outwith the Marine Scheme boundary. Comparably lower landings values are recorded in the ICES rectangles that overlap the Marine Scheme boundary.

121. Within Scottish waters, the highest levels of activity in the Marine Scheme, based on VMS value and effort, occurs in the north west of the Marine Scheme which overlaps with the BBWF array area in ICES rectangle 41E8 (Volume 4, Figure 12.10). In this area, scallop dredging is considered to be at low to moderate levels of activity.

122. Within English waters, there is some overlap between the Marine Scheme boundary and discrete areas fished by scallop dredges, however, landings values are relatively low when compared with other fishing methods (e.g. demersal trawls for *Nephrops* and creels and pots) (see section 12.7.1).

123. Any temporary loss of access and displacement to scallop dredgers during construction will be limited to 500 m advisory clearance zones around installation vessels and vulnerable (unburied or unprotected) sections of Offshore Export Cables. This will be short-term over discrete areas of the Marine Scheme boundary period of up to 39 months.

124. Scallop dredgers of relevance to the Marine Scheme are mostly large nomadic vessels over 15 m in length that operate over a range of scallop grounds distributed throughout UK waters, with only three local vessels identified. Therefore, for the most part, temporary loss and restricted access (and associated displacement) during construction will affect a very small proportion of the fishing grounds available to this fleet. Considering the Marine Scheme sustains low to moderate levels of scallop dredge fishing, the wide operational range of these vessels, as well as the temporary and localised nature of displacement during construction, displacement impacts are considered to be minimal.

125. Taking the low to moderate levels of activity for scallop dredging within Scottish and English waters, the impact for the whole Marine Scheme is defined as being of low magnitude.

Summary

126. The magnitude of impact for temporary loss, displacement of restricted access to fishing grounds due to the presence of vessels and safety zones as described above is as follows:

- Demersal trawling – *Nephrops*:
  - Scottish waters – negligible
  - English waters – low
- Creeling/ potting – Lobster and crabs:

- Scottish waters – low
- English waters – medium

- Dredging – scallops:
  - Scottish waters – low
  - English waters – low

12.12.1.1.2 SENSITIVITY OF THE RECEPTOR

127. The following accounts of sensitivity are considered relevant for the described receptors in both Scottish and English waters.

Demersal trawling – *Nephrops*

128. It is acknowledged that the Marine Scheme crosses an important fishing ground for *Nephrops* and that there are existing restrictions in place at Farnes Deeps that reduce the available fishing opportunities for certain vessels. A range of vessels fish the *Nephrops* grounds that overlap the Marine Scheme, from local vessels to larger nomadic vessels that visit the area in peak season (winter). The landings values for demersal trawling within the commercial fisheries study area are mainly associated with demersal trawlers over 10 m in length; therefore, the operational range of these vessels is expected to be moderate to high. A smaller proportion of *Nephrop*s landings values are associated with smaller vessels of 10 m and under in length. Consultation with the local fishing industry also indicated that local vessels undertaking demersal trawling for *Nephrops* are typically between 10 and 20 m in length with reported operational ranges of up to 80 nm (see Volume 3, Appendix 12.1). The smaller vessels within this length range will have more limited operational ranges. However, it is important to note that information gathered through consultation identified that demersal trawls targeting *Nephrops* have a degree of adaptability in terms of target species, with some vessels targeting *Nephrops* and whitefish. Squid makes a notable contribution to demersal landings values, it is possible that squid is targeted at certain times of the year by *Nephrops* trawlers and it is also anticipated to be caught as bi-catch.

129. Demersal trawlers targeting *Nephrops* are dependent on suitable muddy seabed habitats and may be dependent on the quotas allocated to the vessel. There are alternative areas that sustain similar or higher levels of activity than the Marine Scheme boundary, including in the Forth and Tay region and in areas to the south of the Marine Scheme within the Farnes Deeps FU. Considering the limited availability of grounds for this fleet, whilst acknowledging the versatility and adaptability in terms of target species, the sensitivity of demersal trawlers is considered to be medium.

Creeling/ Potting – Lobster and crabs

130. The landings values for creels / pots within the commercial fisheries study area are equally split over and under 10 m vessels. Consultation with the local fishing industry indicates that vessels typically range from 7 to 12 m with an operation range up to 60 nm (see Volume 3, Appendix 12.1). Considering the smaller size and operational range of this fishing method, creels and pots are considered to have a lower flexibility in terms of the availability of fishing grounds and a greater reliance on the local area. Furthermore, due to the nature of creels and pots being on the seabed, this fishing method is potentially vulnerable to gear conflict, either from other creels and pots or mobile fishing methods (e.g. demersal trawlers and scallop dredges). However, it is important to note that there are alternative areas available to this fleet within the commercial fisheries study area, for example in the regions inshore of the Marine Scheme boundary, where the highest levels of activity for the commercial fisheries study area are anticipated. Therefore, the sensitivity is considered to be medium.

Dredging – Scallops

131. Vessels operational in the Marine Scheme are mostly large nomadic vessels of over 15 m in length that operate across a range of scallop grounds in UK waters. It is acknowledged that the availability of scallop grounds has decreased in recent years due to the increasing implementation of fisheries management measures in UK waters. However, productive scallop grounds are still available to this fleet, due to their wide operational ranges. Although local scallop dredges may be more vulnerable to temporary loss of access and displacement impacts due to their smaller operational ranges, only very low levels of activity by these vessel types are anticipated (see Volume 3, Appendix 12.1).

132. Considering the wide operational range and the range of fishing opportunities available to scallop dredges, the sensitivity is considered to be low.

Summary

133. The sensitivity of receptors to temporary loss, displacement of restricted access to fishing grounds due to the presence of vessels and safety zones as described above is as follows:

- Demersal trawling – *Nephrops*: medium
- Creeling/ potting – Lobster and crabs: medium
- Dredging – scallops: low

12.12.1.1.3 SIGNIFICANCE OF THE EFFECT

Demersal trawling – *Nephrops*

134. Overall, the magnitude of the impact in Scottish waters is deemed to be negligible and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **negligible to minor significance** for the Marine Scheme in Scottish waters and not significant in EIA terms.

135. Overall, the magnitude of the impact in English waters is deemed to be low and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor adverse significance** for the Marine Scheme in English waters which is not significant in EIA terms.

Creeling/ potting – Lobster and crabs

136. Overall, the magnitude of the impact in Scottish waters is deemed to be low and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor adverse significance** for the Marine Scheme in Scottish waters which is not significant in EIA terms.

137. Overall, the magnitude of impact in English waters is deemed to be medium and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **moderate adverse significance** for the Marine Scheme in English waters which is significant in EIA terms.

Dredging – scallops

138. Overall, the magnitude of the impact in Scottish and English waters is deemed to be low and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **negligible to minor adverse significance** for the Marine Scheme as a whole which is not significant in EIA terms.

12.12.1.1.4 SECONDARY MITIGATION AND RESIDUAL EFFECT

139. Overall, following designed-in mitigation, the magnitude of impact is deemed to be medium in English waters for creeling/ potting – lobsters and crabs and the sensitivity if considered to be

medium. The effect will, therefore, be of moderate adverse significance which is significant in EIA terms. This is mainly in relation to the high activity by creelers/ potters along the Northumberland coast and the potential requirement for the removal or relocation of gear during the construction phase. Where this is the case, mitigation will be implemented for affected vessels in the form of an evidence-based approach, in accordance with FLOWW guidance, through the establishment of co-operation agreements. With the implementation of this, the magnitude of the impact would be reduced to low and the residual significance of the effect reduced to **minor adverse significance** which is not significant in EIA terms.

12.12.1.2 THE PRESENCE OF MARINE SCHEME VESSEL TRAFFIC, LEADING TO THE POTENTIAL FOR INCREASES TO STEAMING TIMES

140. The implementation 500 m advisory clearance zones during construction may result in fishing vessels being required to use alternative routes to access fishing grounds, potentially increasing steaming times with associated increases in fuel costs.

141. Increased vessel traffic associated with the Marine Scheme also has the potential to result in interference with fishing activities. In this instance, interference relates to a change in normal fishing patterns, and in addition, for creelers and potters, this relates to potential fouling of static gear.

12.12.1.2.1 MAGNITUDE OF IMPACT

All mobile fisheries

142. During construction, seabed preparations and the construction of up to 720 km of cable across four trenches will occur over a period of 39 months, as outlined in section 12.9.1.

143. Fishing vessels will be able to transit through the Marine Scheme boundary during construction and would only be affected by highly localised areas where advisory clearance zones are recommended. Appropriate liaison would be undertaken with fisheries stakeholders via an appointed FLO and other appropriate channels (e.g. Kingfisher Information Service, NtM, etc) to ensure that they are informed of the nature, timing and location of Marine Scheme construction activities. In addition, transiting construction vessels will fully comply as required under the COLREGS, and such compliance would negate the requirement for active fishing vessels engaged in fishing to alter course or pose any risk to gear being towed. Details of relevant measures to be implemented will be included within the FMMS / FLCP which will apply to both English and Scottish waters.

144. The impact is predicted to be a local spatial extent, short-term duration and intermittent and high reversibility. The impact is not considered to differ between English and Scottish waters, and therefore, the magnitude for the whole Marine Scheme is considered to be low.

Creeling/ potting – Lobster and crabs

145. As creels and pots are left unattended on the seabed, there is a risk of fouling by transiting construction vessels. However, as noted above for mobile fisheries, appropriate liaison would be undertaken with fisheries stakeholders via an appointed FLO and other appropriate channels (e.g. Kingfisher Information Service, NtM, etc) to ensure that they are informed of the nature, timing and location of Marine Scheme construction activities. Procedures for the claim of loss or damage to fishing gear will also be in place. Details of relevant measures to be implemented will be included within the FMMS / FLCP which will apply to both English and Scottish waters.

146. The impact is predicted to be a local spatial extent, short-term duration and intermittent and high reversibility. The impact is not considered to differ between English and Scottish waters, and therefore, the magnitude for the whole Marine Scheme is considered to be low.

12.12.1.2.2 SENSITIVITY OF THE RECEPTOR

147. The following accounts of sensitivity are considered relevant for the described receptors in both Scottish and English waters.

All mobile fisheries

148. Demersal trawlers targeting *Nephrops* and scallop dredges are mostly associated with vessel over 10 m in length. Given their size and the wider availability of fishing grounds for these fleets, they have some capability to adapt to small changes in steaming routes to / from fishing grounds as a result of the presence of Marine Scheme construction vessels and advisory clearance zones. Furthermore, given their mobility, demersal trawlers targeting *Nephrops* and scallop dredges are able to avoid conflict with construction vessels. Therefore, the sensitivity of all mobile fisheries is considered to be low.

Creeling/ potting – Lobster and crabs

149. A large proportion of creelers and potters in the commercial fisheries study area are expected to be under 10 m in length with activities concentrated along the Northumberland coast. Smaller vessels which operate in nearshore areas would have a limited adaptability to changes in steaming routes to/from fishing grounds, whilst vessels that operate in offshore areas would be more adaptable. Furthermore, as creels and pots are left unattended on the seabed, the ability to avoid interactions between gear and construction vessels is also limited.

150. Overall, considering the above, the sensitivity of creels / pots is considered to be medium.

12.12.1.2.3 SIGNIFICANCE OF THE EFFECT

All mobile fisheries

151. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **negligible to minor adverse significance** for the Marine Scheme as a whole which is not significant in EIA terms.

Creeling/ potting – Lobster and crabs

152. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor adverse significance** for the Marine Scheme as a whole which is not significant in EIA terms.

12.12.1.2.4 SECONDARY MITIGATION AND RESIDUAL EFFECT

153. Given that there are no likely significant effects in EIA terms, secondary mitigation is not required.

12.12.1.3 SNAGGING RISK DURING INSTALLATION RESULTING FROM SECTIONS OF EXPOSED CABLE PRIOR TO BURIAL / PROTECTION

154. There is the potential for sections of unburied or unprotected cable during construction to present a potential snagging risk during the construction phase. In addition, any obstacles on the seabed (e.g., dropped objects and sediment berms) may also pose a potential snagging risk.

155. Please note that safety risks associated with navigation (including for fishing vessels) are assessed in Volume 2, Chapter 13.

12.12.1.3.1 MAGNITUDE OF IMPACT

All fisheries

156. As detailed in Section 12.9.1, up to 720 km of cable across four trenches will be constructed over a period of up to 39 months, as outlined in section 12.9.1. As a worst-case, it has been assumed that Offshore Export Cables are laid first before being buried / protected as this will result in the greatest potential for snagging and it has also been assumed that there is the potential for seabed obstacles which could act as additional snagging points.

157. Several designed-in measures are in place to minimise and mitigate potential snagging risks, including timely promulgation of information regarding the construction works, including the location of advisory clearance zones. In addition, guard vessels and OFLOs will also be present during construction, as appropriate, and a dropped objects procedure will be in place. All contractors involved in construction activities will be contractually obliged to adhere to such policies. Furthermore, in the event of fishing gear becoming snagged or fast with infrastructure or seabed obstacles associated with the Marine Scheme, vessel's skippers would be expected to follow standard safety guidance and emergency procedures. As described in KIS-ORCA (KIS-ORCA, 2022) if a fishing vessel snags a cable or finds itself in difficulty within a wind farm, the skipper must not endanger the vessel and crew by attempting to recover gear. Further details on the procedures to minimise the potential for snagging and for gear retrieval in the event of fishing gear being snagged or fasted to Marine Scheme infrastructure will be included within the FMMS / FLCP which will apply to both English and Scottish waters.

158. The impact is predicted to be a very local spatial extent (localised around the footprint of the Marine Scheme infrastructure), short-term duration and intermittent and high reversibility. The impact is not considered to differ between English and Scottish waters, and therefore, the magnitude for the whole Marine Scheme is considered to be low.

12.12.1.3.2 SENSITIVITY OF THE RECEPTOR

159. The following accounts of sensitivity are considered relevant for the described receptors in both Scottish and English waters.

All fisheries

160. Vessels operating mobile gear, including demersal trawlers scallop dredgers are potentially vulnerable to snagging due to the action of these gear types being towed from the vessel along the seabed. Creels / pots are considered to be potentially less vulnerable to snagging as this gear is not towed along the seabed, although this is still a possibility. As snagging of cables or seabed obstacles may result in damaged or lost gear, all fisheries are considered potentially vulnerable to this impact and the sensitivity of the receptor is considered to be medium.

12.12.1.3.3 SIGNIFICANCE OF THE EFFECT

All fisheries

161. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor adverse significance** for the Marine Scheme as a whole which is not significant in EIA terms.

12.12.1.3.4 SECONDARY MITIGATION AND RESIDUAL EFFECT

162. Given that there are no likely significant effects in EIA terms, secondary mitigation is not required.

12.12.1.4 INDIRECT IMPACTS RESULTING FROM CHANGES IN ABUNDANCE AND DISTRIBUTION OF TARGET SPECIES

163. There is the potential for the Marine Scheme construction phase to impact commercially important fish and shellfish species with indirect impacts on the commercial fisheries receptors that target these species.

164. The potential impacts of the Marine Scheme construction phase on fish and shellfish species, including those of commercial importance, are assessed in Volume 2, Chapter 9, Fish and Shellfish Ecology, and includes:

- Temporary habitat and species loss or disturbance;
- Temporary increases in suspended sediment concentrations (SSC) and associated sediment deposition and potential release of contaminants; and
- Underwater noise.

165. The assessment presented in Volume 2, Chapter 9 did not identify any impacts above minor adverse significance on fish and shellfish species of commercial importance. Consequently, any impacts associated with this on the commercial fisheries that target them are also expected to not exceed **minor adverse significance** for the Marine Scheme as a whole which is not significant in EIA terms.

12.12.2 Potential Effects During Operation and Maintenance

12.12.2.1 LONG-TERM REDUCED ACCESS TO KEY FISHING GROUNDS AND RESULTANT DISPLACEMENT

166. During the operation and maintenance phase, the presence of Offshore Export Cables may result in loss or restricted access to traditional fishing grounds with associated displacement.

167. Current maritime industry guidance is to avoid demersal trawling (and anchoring) in the immediate vicinity of cables (MGN 661, the Mariner's and all Admiralty charts). It is however acknowledged that fishing may still occur over the Offshore Export Cables either inadvertently, or at the discretion of fishing vessel operators. As such the Offshore Export Cables will be protected to minimise the risk of damage through interactions with fishing equipment as far as is practicable.. In areas where external protection is required, they will be designed to reduce potential snagging risk with fishing gear as far as is practicable, in line with industry best practice guidance and designed in mitigation measures (i.e. use of graded rocks and berms designed with 1:3 gradients). Furthermore, post-lay and burial inspection surveys will be undertaken, and assessments carried out to determine cable burial status (including cable protection) and to identify potential changes to seabed conditions. The post lay survey results, including the location, extent and nature of external cable protection measures used will be provided to the UKHO and Kingfisher for inclusion in Admiralty and KIS-ORCA charts. This information will also be provided to relevant fishing industry stakeholders.

168. During operation and maintenance works, 500 m advisory clearance zones may also be implemented which may result in temporary and short-term loss of or restricted access to fishing grounds and associated displacement.

12.12.2.1.1 MAGNITUDE OF IMPACT

Demersal trawling – *Nephrops*

169. As described in section 12.12.1.1.1, the Marine Scheme boundary overlaps with valuable areas of *Nephrops* fishing grounds in English waters and there are negligible levels of demersal trawling for

Nephrops expected in Scottish waters. However, areas of alternative *Nephrops* grounds are available within the wider commercial fisheries study area outwith the Marine Scheme boundary, including within the Forth and Tay region and in areas to the south of the Marine Scheme. The Marine Scheme will affect a small proportion of the grounds available to this fleet and only a minimal overlap with the Farnes Deeps FU (and associated restricted area) will occur.

170. Long-term reduced access to key fishing grounds and resultant displacement of demersal trawlers during operation and maintenance will be associated with discrete areas of cable protection and at cable crossings, and this represents a highly localised impact. Fishing may still occur over the Offshore Export Cables either inadvertently, or at the discretion of fishing vessel operators, however, as noted above Current maritime industry guidance is to avoid demersal trawling (and anchoring) in the immediate vicinity of cables (MGN 661, the Mariner's and all Admiralty charts). Therefore, as a worst-case it is assumed that long-term loss of access could occur over the full length of the Marine Scheme Offshore Export Cable Corridor (140 km in English waters most relevant to demersal trawling for *Nephrops*). This impact will be long-term and continuous over the 35-year operation and maintenance phase, but in a relatively small area in the context of the alternative valuable grounds available to demersal trawlers targeting *Nephrops* in the commercial fisheries study area. A range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation, including various measures to facilitate co-existence with mobile fisheries (as noted above and in section 12.11).

171. Long-term displacement impacts (e.g increased competition or conflict) may also arise during operation and maintenance as a result of the reduced access to fishing grounds. However, considering the availability of high value *Nephrops* grounds in the wider area and the localised spatial extent of any displaced effort, the potential for increased competition or conflict is limited. Potential competition or conflict with other demersal trawlers and other types of mobile gear (e.g. scallop dredges) will also be reduced due to the typically wide operational ranges of these vessels.

172. Temporary loss of access and resultant displacement as a result of advisory clearance zones around vessels undertaking maintenance work or around vulnerable sections of cable would be short-term and highly localised to discrete locations. Once again, designed-in mitigations, including fisheries liaison and management, such as the timely promulgation of information via appropriate channels, will support in minimising disturbance to fishing during the operational phase.

173. Taking the low levels of activity for demersal trawling for *Nephrops* within Scottish waters, the impact in Scottish waters is defined as being of negligible magnitude.

174. In English waters, where higher levels of activity by demersal trawlers for *Nephrops* are recorded within the Marine Scheme boundary, the impact is defined as being of low magnitude.

Creeling/ potting – Lobster and crabs

175. As described in section 12.12.1.1.1, creeling/ potting occurs along the full length of the Marine Scheme with a concentration of effort in English waters around the coast of Northumberland between North Shields and Holy Island.

176. Due to the static nature of this gear, it is assumed that fishing over cables will continue through the operation and maintenance phase without a material loss of grounds. Therefore, the main pathway for restricted access and associated displacement would be the temporary establishment of advisory clearance zones around vessels undertaking maintenance work. A range of designed-in measures are proposed to reduce disruption to creelers/ potters during these temporary maintenance periods, as outlined in section 12.11. Additionally, creelers and potters may be requested to temporarily relocate or remove static gear from the Marine Scheme for short periods during operation and maintenance. This will be negotiated with individual operators on a case-by-case basis and in line with FLOWW best practice guidance.

177. Any displacement of creelers/ potters will be limited during the operation and maintenance phase due to the highly localised and temporary nature of any reduced access. It is possible for the displacement of demersal trawling effort from the Marine Scheme into alternative grounds traditionally fished by creelers/ potters to increase the potential for gear conflict and competition for creelers/ potters. However, there are considered to be a wide availability of alternative grounds for these mobile fishing methods due to the large operational ranges for the majority of the vessels within these fleets. Consequently, the potential for increased competition or gear conflict will be minimal.

178. Taking the low to moderate levels of activity for creels and pots within Scottish waters, and the temporary and highly localised nature of any reduced access and associated displacement during operation and maintenance, the impact in Scottish waters is defined as being of negligible magnitude.

179. Taking the moderate to high levels of activity for creels and pots within English waters and the temporary and highly localised nature of any reduced access and associated displacement during operation and maintenance, the impact in English waters is defined as being of low magnitude.

Dredging – Scallops

180. As described in section 12.12.1.1.1, scallop dredging within the Marine Scheme boundary is concentrated in Scottish waters in the northwest of the BBWF Array Area, with lower levels of activity in English waters.

181. As for demersal trawlers, long-term reduced access to key fishing grounds and resultant displacement of scallop dredges may occur in areas of cable protection, at cable crossings and across the full 180 km length of the Marine Scheme. Although some fishing may occur over Offshore Export Cables inadvertently or at the discretion of the skipper, as a worst-case it has been assumed that long-term loss of access could occur over the full length of the Marine Scheme. Designed-in measures are in place to facilitate co-existence where possible (e.g. e.g. consideration of rock placement designs that minimise gear snagging risk and undertaking of post-lay and burial inspections as well as assessments to determine cable burial status and to identify potential changes to seabed conditions).

182. The loss of access and associated displacement impacts for scallop dredges will affect a small area of the grounds available to this fishery due the nature of this fleet having a wide operational range and fishing nomadically throughout UK waters. Only low levels of effort are predicted by local scallop dredgers.

183. Taking the low to moderate levels of activity for scallop dredging within Scottish and English waters, combined with the highly localised nature of any reduced access across a small proportion of the grounds for this fleet, the impact for the whole Marine Scheme is defined as being of low magnitude.

Summary

184. The magnitude of impact for temporary loss, displacement of restricted access to fishing grounds due to the presence of vessels and safety zones as described above is as follows:

- Demersal trawling – *Nephrops*:
  - Scottish waters – negligible
  - English waters – low
- Creeling/ potting – Lobster and crabs:
  - Scottish waters – negligible
  - English waters – low
- Dredging – scallops:

- Scottish waters – low
- English waters – low

12.12.2.1.2 SENSITIVITY OF THE RECEPTOR

185. The sensitivity of the receptors to reduced access to fishing grounds and resultant displacement during the operation and maintenance phase is as previously described as construction phase and apply to both Scottish and English waters:

- Demersal trawling – *Nephrops*: medium
- Creeling/ potting – Lobster and crabs: medium
- Dredging – scallops: low

12.12.2.1.3 SIGNIFICANCE OF THE EFFECT

Demersal trawling – *Nephrops*

186. Overall, the magnitude of the impact in Scottish waters is deemed to be negligible and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **negligible to minor significance** for the Marine Scheme in Scottish waters and not significant in EIA terms.

187. Overall, the magnitude of the impact in English waters is deemed to be low and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor adverse significance** for the Marine Scheme in English waters which is not significant in EIA terms.

Creeling/ potting – Lobster and crabs

188. Overall, the magnitude of the impact in Scottish waters is deemed to be negligible and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **negligible to minor adverse significance** for the Marine Scheme in Scottish waters which is not significant in EIA terms.

189. Overall, the magnitude of impact in English waters is deemed to be low and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor adverse significance** for the Marine Scheme in English waters which is not significant in EIA terms.

Dredging – scallops

190. Overall, the magnitude of the impact in Scottish and English waters is deemed to be low and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **negligible to minor adverse significance** for the Marine Scheme as a whole which is not significant in EIA terms.

12.12.2.1.4 SECONDARY MITIGATION AND RESIDUAL EFFECT

191. Given that there are no likely significant effects in EIA terms, secondary mitigation is not required.

12.12.2.2 POTENTIAL FOR FISHING GEAR TO BECOME ENTANGLED WITH CABLE (I.E., SNAGGING), RESULTING IN DAMAGE OR LOSS OF FISHING GEAR

192. During the operation and maintenance phase, the presence of cable protection, where required, and vulnerable sections of cable (i.e. discrete areas that become exposed during the operation and maintenance phase) pose a potential snagging risk for commercial fisheries receptors.

12.12.2.2.1 MAGNITUDE OF IMPACT

All fisheries

193. As detailed in Section 12.9.1, the maximum design scenario for snagging risk during the operation and maintenance phase is represented by the presence of up to 720 km of cable, across four separate trenches, buried to a minimum depth of 0.5 m, where practicable. It is assumed that up to a maximum of 154.8 km of cable will require cable protection and up to four cable crossings has been assumed (with cable crossings only in English waters).

194. Several designed-in measures are in place to minimise and mitigate potential snagging risks. In areas where external protection is required, they will be designed to reduce potential snagging risk with fishing gear as far as is practicable, in line with industry best practice guidance and designed in mitigation measures (i.e. use of graded rocks and berms designed with 1:3 gradients). Furthermore, post-lay and burial inspections surveys will be undertaken, and assessments carried out to determine cable burial status (including cable protection) and to identify potential changes to seabed conditions. The post lay survey results, including the location, extent and nature of external cable protection measures used will be provided to the UKHO and Kingfisher for inclusion in Admiralty and KIS-ORCA charts. In the event that any cable exposures are identified during operation, the location of these will be shared with fisheries stakeholders and additional temporary measures will be in place (e.g. marker buoys). This information will also be provided to relevant fishing industry stakeholders. Further details of the procedures in place to minimise and mitigate potential snagging risk will be provided in the FMMS / FLCP which will apply to both English and Scottish waters.

195. The impact is predicted to be a very local spatial extent (localised to the footprint of Marine Scheme infrastructure), long-term duration and intermittent and high reversibility. The impact is not considered to differ between English and Scottish waters, and therefore, the magnitude for the whole Marine Scheme is considered to be low.

12.12.2.2.2 SENSITIVITY OF THE RECEPTOR

All fisheries

196. The sensitivity of receptors to snagging risk and associated loss or damage to fishing gear during operation and maintenance is as previously identified for the construction phase and apply to both Scottish and English waters:

- All fisheries: medium sensitivity.

12.12.2.2.3 SIGNIFICANCE OF THE EFFECT

All fisheries

197. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be moderate. The effect will, therefore, be of **minor adverse significance** for the Marine Scheme as a whole which is not significant in EIA terms.

12.12.2.2.4 SECONDARY MITIGATION AND RESIDUAL EFFECT

198. Given that there are no likely significant effects in EIA terms, secondary mitigation is not required.

12.12.2.3 INDIRECT IMPACTS RESULTING FROM CHANGES IN ABUNDANCE AND DISTRIBUTION OF TARGET SPECIES

199. There is the potential for the Marine Scheme operation and maintenance phase to impact commercially important fish and shellfish species with indirect impacts on the commercial fisheries receptors that target these species.

200. The potential impact of the Marine Scheme operation and maintenance phase on fish and shellfish species, including those of commercial importance, are assessed in Volume 2, Chapter 9, section 9.12.2 and include:

- EMF effects;
- Permanent habitats loss; and
- Thermal emissions from operational cables.

201. The assessment presented in Volume 2, Chapter 9 did not identify any impacts above minor adverse significance on fish and shellfish species of commercial importance. Consequently, any effects associated with this on the commercial fisheries that target them are also expected to not exceed **minor adverse significance** for the Marine Scheme as a whole which is not significant in EIA terms.

12.12.3 Potential Effects During Decommissioning

202. The impacts during the decommissioning phase are considered analogous with, or likely less than, those of the construction phase. The decommissioning plan and programme will be updated during the Project lifespan to take account of changing best practice and new technologies.

203. The effects of decommissioning activities associated with the removal of infrastructure with regard to potential loss or restricted access to fishing grounds are therefore expected to be the same or similar in nature to the effects of construction.

12.13 Proposed Monitoring

204. As described in section 12.12.1, no significant residual effects have been identified, and therefore, no commercial fisheries monitoring is considered necessary as no significant effects identified.

12.14 Cumulative Effects Assessment

12.14.1 Methodology

205. The Cumulative Effects Assessment (CEA) takes into account the impact associated with the Marine Scheme together with other relevant plans, developments and activities. Cumulative effects are therefore the complete set of effects arising from the Marine Scheme together with the effects from a number of different developments, on the same receptor or resource. Please see Volume 2, Chapter 3: EIA Methodology for detail on CEA methodology.

206. The developments selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise and the development of a ‘long list’ of cumulative developments relevant to the Marine Scheme (see Volume 3, Appendix 3.4). Each development has been considered on a case by case basis for screening in or out of this chapter’s assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved, to create the ‘short list’ as summarised in Table 12.12. This approach was agreed during Scoping and further consultation and technical engagement undertaken with consultees, as detailed in Table 12.3.

207. A 20 km Zone of Influence (ZoI) was considered for commercial fisheries for the identification of cumulative developments. The potential for a cumulative effect on commercial fisheries receptors depends on the extent of the fishing grounds for the receptors potentially affected. It is acknowledged that cumulative effects on commercial fisheries may extend beyond 20 km. However, a 20 km ZoI was considered appropriate and proportionate for the assessment of cumulative effects for commercial fisheries, considering the highly localised impacts anticipated from the Marine Scheme. The specific projects scoped into the CEA for commercial fisheries, are outlined in Table 12.12.

Table 12.12 List of Other Developments Considered within the CEA for Commercial Fisheries

Development Plan	Status	Distance from Marine Scheme (km)	Description of Development / Plan	Dates of Construction (if Applicable)	Dates of Operation (if Applicable)	Phase Overlap with the Marine Scheme
BBWF[11]	In planning	0 (direct physical overlap)	Offshore wind farm	Construction anticipated to be 2025 to 2033	Operational from 2033 (35-year operational life)	Construction and operation and maintenance
Eastern Green Link 1	In planning	0 (direct physical overlap)	Transmission infrastructure	Construction anticipated to be 2024 to 2027	Operational from 2027 (50-year operational life)	Construction and operation and maintenance
Eastern Green Link 2	In planning	Approximately 3 km	Transmission infrastructure	Construction anticipated to be 2025 to 2029	Operational from 2029 (50-year operational life)	Construction and operation and maintenance
Blyth Demonstrator Offshore Wind Farm 2	In planning	1	Offshore wind farm	Unknown	Anticipated to be operational from 2025	Operation and maintenance
Blyth Demonstration Phase 2 (&3) Cable Corridor	Consented	0 (direct physical overlap)	Transmission infrastructure	Unknown	25 year operational life	Unknown (potentially construction and operation and maintenance)

[11] Both the proposed onshore infrastructure for the BBWF landwards of MLWS and the proposed offshore infrastructure seawards of MHWS will be assessed separately as two projects.

Development Plan	Status	Distance from Marine Scheme (km)	Description of Development / Plan	Dates of Construction (if Applicable)	Dates of Operation (if Applicable)	Phase Overlap with the Marine Scheme
Northumberland Energy Park (Phase 3)	Consented	5	Port development	Unknown	Unknown	Unknown (potentially construction and operation and maintenance)
Neart Na Gaoithe	Under construction	17	Offshore wind farm	Construction anticipated to be 2022 to 2024	Operational from 2024 (25-year operational life)	Operation and maintenance
Seagreen 1	Under construction	5	Offshore wind farm	Construction anticipated to be 2022 to 2023	Operational from 2023 (25 year operational life)	Operation and maintenance
Inch Cape wind farm and OFTO	Consented – pending variation	10	Transmission infrastructure	Construction anticipated to be 2022 to 2025	Operational from 2025 (50 year operational life)	Operation and maintenance
Fisheries management measures within the Firth of Forth Banks Complex ncMPA	Possible Marine Conservation Order (MCO)	0	ncMPA	N / A	N / A	N / A
Fisheries management measures within the East of Farnes Deep HMPA	Pending designation before 6 July 2023	14	HMPA	N / A	N / A	N / A

12.14.2 Cumulative Effects Assessment

208. An assessment of the likely significance of the cumulative effects of the Marine Scheme together with other relevant plans, projects, developments and activities upon commercial fisheries receptors arising from each identified impact is given below.

12.14.2.1 POTENTIAL CUMULATIVE EFFECTS DURING CONSTRUCTION

12.14.2.1.1 TEMPORARY LOSS, DISPLACEMENT OR RESTRICTED ACCESS TO FISHING GROUNDS

12.14.2.1.1.1 Magnitude of impact

Demersal trawling – *Nephrops*

209. Of the developments identified in Table 12.12, of relevance to *Nephrops* grounds, predominantly the BBWF, Seagreen 1, Eastern Link 1 and Eastern Link 2, offshore export cables of Inch Cape, and Neart Na Gaoithe that would have potential to add to cumulative effects. In this context it is important to note that Inch Cape, Neart Na Gaoithe and Seagreen 1 are currently under construction and therefore the construction phases of these developments are not expected to overlap with the construction of the Marine Scheme.

210. There is no potential for the Marine Scheme to add cumulatively to loss of fishing grounds on the Firth of Forth *Nephrops* grounds that overlap with the Forth and Tay projects. The Marine Scheme, and the proposed closures to trawling within the Firth of Forth Banks Complex MPA, BBWF and Eastern Link 2 avoid the Firth of Forth *Nephrops* grounds.

211. Eastern Link 1 and the Blyth Demonstrator Offshore Wind Farm 2 and Blyth Demonstration Phase 2 (&3) cable corridor also overlap the Farnes Deeps *Nephrops* grounds. The cumulative impact from these developments is predicted to be of small spatial extent, being limited to areas where safety zones and advisory measures are in place in these cable projects during their construction / operation. The effect would be short-term duration as the *Nephrops* fishery is only of relevance to the Marine Scheme in English waters.

212. The pending designation of the North East of Farnes Deep HMPA will occur in ICES rectangle 40E9 to the east of the Marine Scheme, and once designated, fishing will be prohibited within this area. However, as described in section 12.7, demersal trawling within ICES rectangle 40E9 occurs at negligible levels, and thus, the potential for cumulative impacts with the Marine Scheme is low.

213. Taking the low levels of activity for demersal trawling for *Nephrops* within Scottish waters, the cumulative impact in Scottish waters is defined as being of negligible magnitude.

214. In English waters, where higher levels of activity by demersal trawlers for *Nephrops* are recorded within the Marine Scheme boundary, the cumulative impact is defined as being of low magnitude.

Creeling/ potting – Lobster and crab

215. Local creelers that limit their activity to nearshore areas would only be potentially affected by developments of relevance to the inshore area affected by the Marine Scheme, namely Blyth Demonstrator Offshore Wind Farm 2, Blyth Demonstration Phase 2 (&3) Cable Corridor and Eastern Green Link 1.

In the case of vessels that have extended operational ranges, there may be potential for cumulative impacts to additionally arise from the Inch Cape, Neart Na Gaoithe, Eastern Link 2, BBWF and Seagreen 1. Neart Na Gaoithe, Seagreen1, and Inch Cape are currently under construction and it is expected to be operational by the time that construction starts the Marine Scheme.

For the remaining developments, however, there could be potential overlap between their construction phases and construction at the Marine Scheme.

216. The Marine Scheme overlaps BBWF array area in Scottish waters and construction of both developments overlap both spatially and temporally. As the Marine Scheme and BBWF are being jointly progressed by BBWF Limited both development's vessel movements will be jointly coordinated at the same Marine Coordination centre. Therefore, potential cumulative loss, displacement or restricted access to fishing grounds will be reduced through careful coordination, wherever practicable.

217. The management measures within the Firth of Forth Banks complex would not apply to creelers/ potters and those within North East of Farnes Deep HMPA are anticipated to be at or approaching the limit for creelers/ potters, and thus, only negligible levels of creeling or potting would be anticipated in these areas.

218. The impact will be of small spatial extent (being limited to discrete areas of creeling grounds that overlap with the footprint of the infrastructure of these projects and with areas where safety zones and advisory passage distances may in place at a given time). The duration of the impact will be short term. As described in section 12.11, a range of fisheries liaison and management measures will be implemented to reduce disturbance to creelers/ potters during construction, and it would be expected that other developments would employ similar measures.

219. Taking the low to moderate levels of activity for creels and pots within Scottish waters, whilst acknowledging the potential requirements for gear removal or relocation from the Marine Scheme boundary, the impact in Scottish waters is defined as being of low magnitude.

220. Taking the moderate to high levels of activity for creels and pots within English waters and acknowledging the potential requirements for gear removal or relocation from the Marine Scheme boundary, the impact in English waters is defined as being of medium magnitude.

Dredging – scallops

221. Given the operational extent of scallop dredging activities, particularly in the case of nomadic vessels, there may be potential for all the developments add cumulatively to the magnitude of the impact identified for the Marine Scheme.

222. The developments of most relevant to scallop dredging include those within the Forth and Tay region that overlap with scallop grounds, such as BBWF, Neart na Gaoithe, Inch Cape and Seagreen 1. Neart na Gaoithe, Inch Cape and Seagreen 1 are under construction and will be operational during the construction of the Marine Scheme. The construction of the BBWF may overlap with the construction of the Marine Scheme.

223. During the construction phase of the Marine Scheme and BBWF, loss of access and associated displacement will be limited to discrete areas associated with statutory safety zones (for the BBWF only) and the advisory clearance zones for both of these developments. As the Marine Scheme and BBWF are being jointly progressed by BBWF Limited both development's vessel movements will be jointly coordinated at the same Marine Coordination centre. Therefore, potential cumulative loss, displacement or restricted access to fishing grounds will be reduced through careful coordination, wherever practicable.

224. Considering the distribution and levels of fishing activity in relation to the location of the Marine Scheme and the BBWF, and the extent of grounds available to the fishery, the cumulative impact is considered to be local to regional in extent and of a short term duration.

225. The Firth of Forth Banks Complex ncMPA and the pending North East of Farnes Deep HMPA are located in areas will low levels of scallop dredging. Therefore, the potential for a cumulative impact is low.

226. Taking the low to moderate levels of activity for scallop dredging within Scottish and English waters and in the developments identified for cumulative assessment, the impact for the whole Marine Scheme is defined as being of low magnitude.

Summary

227. The magnitude of the cumulative impact for temporary loss, displacement of restricted access to fishing grounds due to the presence of vessels and safety zones as described above is as follows:

- Demersal trawling – *Nephrops*:
  - Scottish waters – negligible
  - English waters – low
- Creeling/ potting – Lobster and crabs:
  - Scottish waters – low
  - English waters – medium
- Dredging – scallops:
  - Scottish waters – low
  - English waters – low

12.14.2.1.1.2 Sensitivity of the receptor

228. The sensitivity of the receptors to cumulative reduced access to temporary loss, displacement or restricted access to fishing grounds during the construction phase is as assessed for the Marine Scheme alone:

- Demersal trawling – *Nephrops*: medium
- Creeling/ potting – Lobster and crabs: medium
- Dredging – scallops: low

12.14.2.1.1.3 Significance of the effect

Demersal trawling – *Nephrops*

229. Overall, the magnitude of the cumulative impact in Scottish waters is deemed to be negligible and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **negligible to minor significance** and not significant in EIA terms.

230. Overall, the magnitude of the cumulative impact in English waters is deemed to be low and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **minor adverse significance** which is not significant in EIA terms.

Creeling/ potting – Lobster and crab

231. Overall, the magnitude of the cumulative impact in Scottish waters is deemed to be low and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **minor adverse significance** which is not significant in EIA terms.

232. Overall, the magnitude of impact in English waters is deemed to be moderate and the sensitivity of the receptor is considered to be moderate. The cumulative effect will, therefore, be of **moderate adverse significance** which is significant in EIA terms.

Dredging – scallops

233. Overall, the magnitude of the cumulative impact in Scottish and English waters is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of **negligible to minor adverse significance** which is not significant in EIA terms.

12.14.2.1.1.4 Secondary mitigation and residual effect

234. Overall, following designed-in mitigation, the magnitude of the cumulative impact is deemed to be medium in English waters for creeling/ potting – lobsters and cabs and the sensitivity if considered to be medium. The cumulative effect will, therefore, be of moderate adverse significance which is significant in EIA terms. This is mainly in relation to the high activity by creelers/ potters along the Northumberland coast and the potential requirement for the removal or relocation of gear during the construction phase. Where this is the case, mitigation will be implemented for affected vessels in the form of an evidence-based approach, in accordance with FLOWW guidance, through the establishment of co-operation agreements. With the implementation of this, the magnitude of the cumulative impact would be reduced to low and the residual significance of the cumulative effect reduced to minor adverse significance which is not significant in EIA terms.

12.14.2.1.2 THE PRESENCE OF MARINE SCHEME VESSEL TRAFFIC, LEADING TO THE POTENTIAL FOR INCREASES TO STEAMING TIMES

12.14.2.1.2.1 Magnitude of impact

All mobile fisheries

235. As described previously, it is possible for the construction of BBWF, Eastern Link 2 and Eastern Link 2 to result in cumulative increases in steaming times and potential interference with normal fishing patterns. As noted for the assessment of the Marine Scheme alone, appropriate liaison would be undertaken with fisheries stakeholders via the Proposed Development's FLO and other appropriate channels (e.g. Kingfisher Information Service, NtM, etc) to ensure that they are informed of the nature, timing and location of construction activities associated with the Marine Scheme, including the location and extent of advisory clearance zones, in a timely and efficient manner. It would be expected that other developments would employ similar measures. Furthermore, as the Marine Scheme and BBWF are being jointly progressed by BBWF Limited both development's vessel movements will be jointly coordinated at the same Marine Coordination centre. Therefore, potential cumulative increase in steaming times will be reduced through careful coordination, wherever practicable.

236. The impact is predicted to be very small spatial extent, short term and intermittent. The cumulative impact is not considered to differ between English and Scottish waters, and therefore, the magnitude for the whole Marine Scheme is considered to be low.

Creeling/ potting – Lobster and crabs

237. Creelers/ potters in the nearshore area may be affected by other developments in this area such as Eastern Green Link 1 and those with larger operational ranges may also be affected by BBWF and Eastern Link 2.

238. As noted for the assessment of the Marine Scheme alone, appropriate liaison would be undertaken with fisheries stakeholders via the Proposed Development's FLO and other appropriate channels (e.g. Kingfisher Information Service, NtM, etc) to ensure that they are informed of the nature, timing and location of construction activities associated with the Marine Scheme, including the location and extent of advisory clearance zones, in a timely and efficient manner. It would be expected that other developments would employ similar measures. Therefore, potential cumulative increase in steaming times with BBWF will be reduced, wherever practicable, through careful coordination between these developments that are being jointly progressed by the BBWF Limited,

239. The impact is predicted to be very small spatial extent, short term and intermittent. The cumulative impact is not considered to differ between English and Scottish waters, and therefore, the magnitude for the whole Marine Scheme is considered to be low.

12.14.2.1.2.2 Sensitivity of the receptor

240. The sensitivity of the receptors to cumulative reduced access to temporary loss, displacement or restricted access to fishing grounds during the construction phase is as assessed for the Marine Scheme alone:

- All mobile fisheries – low
- Creeling/ potting – Lobster and crabs: medium

12.14.2.1.2.3 Significance of the effect

All mobile fisheries

241. Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of **negligible to minor adverse significance** which is not significant in EIA terms.

Creeling/ potting – Lobster and crabs

242. Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **minor adverse significance** which is not significant in EIA terms.

12.14.2.1.2.4 Secondary mitigation and residual effect

243. Given that there are no likely significant effects in EIA terms, secondary mitigation is not required.

12.14.2.1.3 SNAGGING RISK DURING INSTALLATION RESULTING FROM SECTIONS OF EXPOSED CABLE PRIOR TO BURIAL / PROTECTION

12.14.2.1.3.1 Magnitude of impact

All fisheries

244. As described for the Marine Scheme alone, areas of unburied or unprotected cable and seabed obstacles may present a potential snagging risk. Designed-in measures will be implemented to minimise potential snagging risks including timely promulgation of information regarding the construction works, including the location of advisory clearance zones, the presence guard vessels and OFLOs, as appropriate, and the implementation of a dropped objects procedure. It is expected that other developments would employ similar measures to minimise snagging risk.

245. The impact is predicted to be a local spatial extent, short-term duration and intermittent. The cumulative impact is not considered to differ between English and Scottish waters, and therefore, the magnitude for the whole Marine Scheme is considered to be low.

12.14.2.1.3.2 Sensitivity of the receptor

All fisheries

7. The sensitivity of the receptors to snagging risk during installation resulting from sections of exposed cable prior to burial / protection during the construction phase is as assessed for the Marine Scheme alone:

- All fisheries – medium

12.14.2.1.3.3 Significance of the effect

All fisheries

246. Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **minor adverse significance** which is not significant in EIA terms.

12.14.2.1.3.4 Secondary mitigation and residual effect

247. Given that there are no likely significant effects in EIA terms, secondary mitigation is not required.

12.14.2.1.4 INDIRECT IMPACTS RESULTING FROM CHANGES IN ABUNDANCE AND DISTRIBUTION OF TARGET SPECIES

248. There is the potential for the Marine Scheme construction phase to cumulatively impact commercially important fish and shellfish species with indirect impacts on the commercial fisheries receptors that target these species.

249. The potential cumulative impacts of the Marine Scheme construction phase on fish and shellfish species, including those of commercial importance, are assessed in Volume 2, Chapter 9 and includes:

- Temporary habitat and species loss or disturbance;
- Temporary increases in SSC and associated sediment deposition and potential release of contaminants; and
- Underwater noise.

250. The assessment presented in Volume 2, Chapter 9 did not identify any impacts above minor adverse significance on fish and shellfish species of commercial importance. Consequently, any impacts associated with this on the commercial fisheries that target them are also expected to not exceed **minor adverse significance** which is not significant in EIA terms.

12.14.2.2 POTENTIAL CUMULATIVE EFFECTS DURING OPERATION AND MAINTENANCE

12.14.2.2.1 LONG-TERM REDUCED ACCESS TO KEY FISHING GROUNDS AND RESULTANT DISPLACEMENT

12.14.2.2.1.1 Magnitude of impact

251. The Marine Scheme, together with the developments identified in Table 12.12 may result in loss of grounds or restricted access to fishing grounds (and associated displacement) during the operation and maintenance the Marine Scheme. These developments would be expected to implement similar safety zones and advisory measures around vulnerable cables during the construction / decommissioning and operation and maintenance phase to those described in respect of the Marine Scheme.

Demersal trawling – *Nephrops*

252. As described for the construction phase, the developments of most relevance to the Farnes Deeps *Nephrops* grounds include Eastern Link 1, Blyth Demonstrator Offshore Wind Farm 2 and Blyth Demonstration Phase 2 (&3) cable corridor. These developments would have potential to add to cumulative impacts on the *Nephrops* fishery. The operation and maintenance phase of these developments will overlap with the operation and maintenance phase of the Marine Scheme.

253. The cumulative impact is predicted to be of small spatial extent, being limited to the footprint of the Marine Scheme infrastructure and the cumulative developments. This cumulative impact will be long-term and additional localised loss of grounds associated with safety zones or advisory measures would be short term, temporary and intermittent.

254. A range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during the operation and maintenance phase of the Marine Scheme, including various measures to facilitate co-existence with mobile fisheries (e.g. consideration of rock placement designs that minimise gear snagging risk and undertaking of post-lay and burial inspections as well as assessments to determine cable burial status and to identify potential changes to seabed conditions). Similar approaches are expected to be implemented by other developments.

255. The pending designation of the North East of Farnes Deep HMPA will occur in ICES rectangle 40E9 to the east of the Marine Scheme, and once designated, fishing will be prohibited within this area. However, as described in section 12.7, demersal trawling within ICES rectangle 40E9 occurs at negligible levels, and thus, the potential for cumulative impacts with the Marine Scheme is low.

256. Taking the low levels of activity for demersal trawling for *Nephrops* within Scottish waters, the cumulative impact in Scottish waters is defined as being of negligible magnitude.

257. In English waters, where higher levels of activity by demersal trawlers for *Nephrops* are recorded within the Marine Scheme boundary, the cumulative impact is defined as being of low magnitude.

Creeling/ potting – Lobster and crab

258. Local creelers/ potters that limit their activity to inshore areas would only be potentially affected cumulatively by developments such as Eastern Green Link 1, Blyth Demonstrator Offshore Wind Farm 2, Blyth Demonstration Phase 2 (&3) Cable Corridor. In the case of vessels that have extended operational ranges, there may be potential for cumulative impacts to additionally arise from the Inch Cape, Neart Na Gaoithe, Eastern Link 2, BBWF and Seagreen 1. It is anticipated that the operation and maintenance phase of all the developments listed within Table 12.14 will overlap with that of the Marine Scheme. Creeling activity will be able to resume within these developments during the operation and maintenance phase. Designed-in measures will be in place to reduce the disturbance of any short-term periods of reduced access during maintenance activities as outlined in section 12.9.1, and it would be expected that other developments would implement similar measures.

259. The impact will be of small spatial extent (being limited to discrete areas of creeling grounds that overlap with the footprint of the infrastructure of these developments and with areas where safety zones and vulnerable sections of cables may be in place at a given time). The presence of project infrastructure will be long-term; however, any additional localised loss of grounds associated with safety zones or advisory measures which may be required would be short term, temporary and intermittent.

260. Taking the low to moderate levels of activity for creels and pots within Scottish waters, and the temporary and highly localised nature of any reduced access and associated displacement during operation and maintenance, the cumulative impact in Scottish waters is defined as being of negligible magnitude.

261. Taking the moderate to high levels of activity for creels and pots within English waters and the temporary and highly localised nature of any reduced access and associated displacement during operation and maintenance, the cumulative impact in English waters is defined as being of low magnitude.

Dredging – scallops

262. Given the operational extent of scallop dredging activities, particularly in the case of nomadic vessels, there may be potential for all the developments included within Table 12.12 to add cumulatively to the magnitude of the impact identified for the Marine Scheme. There is potential for the operation and maintenance phase of all these projects to overlap with the operation and maintenance phase at the Marine Scheme.

263. The presence of the Marine Scheme will be long-term, however, any additional localised loss of grounds associated with the implementation of safety zones or with the presence of vulnerable sections of cables would be of small spatial extent and for the most part, short term, temporary and intermittent. Furthermore, a range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during the operation and maintenance phase for the Marine Scheme.

264. In addition, dredging within the Firth of Forth Banks Complex ncMPA and the pending North East of Farnes Deep HMPA are located in areas will low levels of scallop dredging.

265. Taking the low to moderate levels of activity for scallop dredging within Scottish and English waters, combined with the highly localised nature of any reduced access across a small proportion of the grounds for this fleet, the cumulative impact for the whole Marine Scheme is defined as being of low magnitude.

Summary

266. The magnitude of the cumulative impact for long-term reduced access to key fishing grounds and resultant displacement as described above is as follows:

- Demersal trawling – *Nephrops*:
  - Scottish waters – negligible
  - English waters – low
- Creeling/ potting – Lobster and crabs:
  - Scottish waters – negligible
  - English waters – low
- Dredging – scallops:
  - Scottish waters – low
  - English waters – low

12.14.2.2.1.2 Sensitivity of the receptor

267. The sensitivity of the receptors to cumulative long-term reduced access to key fishing grounds and resultant displacement during the operation and maintenance is as assessed for the Marine Scheme alone:

- Demersal trawling – *Nephrops*: medium
- Creeling/ potting – Lobster and crabs: medium
- Dredging – scallops: low

12.14.2.2.1.3 Significance of the effect

Demersal trawling – *Nephrops*

268. Overall, the magnitude of the cumulative impact in Scottish waters is deemed to be negligible and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **negligible to minor significance** and not significant in EIA terms.

269. Overall, the magnitude of the impact in English waters is deemed to be low and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **minor adverse significance** which is not significant in EIA terms.

Creeling/ potting – Lobster and crab

270. Overall, the magnitude of the cumulative impact in Scottish waters is deemed to be negligible and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **negligible to minor adverse significance** which is not significant in EIA terms.

271. Overall, the magnitude of cumulative impact in English waters is deemed to be low and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **minor adverse significance** which is not significant in EIA terms.

Dredging – scallops

272. Overall, the magnitude of the cumulative impact in Scottish and English waters is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of **negligible to minor adverse significance** which is not significant in EIA terms.

12.14.2.2.1.4 Secondary mitigation and residual effect

273. Given that there are no likely significant effects in EIA terms, secondary mitigation is not required.

12.14.2.2.2 POTENTIAL FOR FISHING GEAR TO BECOME ENTANGLED WITH CABLE (I.E. SNAGGING), RESULTING IN DAMAGE OR LOSS OF FISHING GEAR

12.14.2.2.2.1 Magnitude of impact

All fisheries

274. Obstacles may present a potential snagging risk. Designed-in measures will be implemented to minimise potential snagging risks including designing external protection to reduce snagging risk with fishing gear where practicable, post-lay and post-burial surveys to determine cable burial status and potential changes to seabed conditions. The post lay survey results, including the location, extent and nature of external cable protection measures used will be provided to the UKHO and Kingfisher for inclusion in Admiralty and KIS-ORCA charts. In the event that any cable exposures are identified during operation, the location of these will be shared with fisheries stakeholders and additional temporary measures will be in place (e.g. marker buoys). It is expected that other developments would employ similar measures to minimise snagging risk.

275. The impact is predicted to be a very local spatial extent, short-term duration and intermittent. The cumulative impact is not considered to differ between English and Scottish waters, and therefore, the magnitude for the whole Marine Scheme is considered to be low.

12.14.2.2.2.2 Sensitivity of the receptor

All fisheries

276. The sensitivity of the receptors to potential for fishing gear to become entangled with cable (i.e. snagging), resulting in damage or loss of fishing gear during the operation and maintenance phase is as assessed for the Marine Scheme alone:

- All fisheries – medium

12.14.2.2.2.3 Significance of the effect

All fisheries

277. Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **minor adverse significance** which is not significant in EIA terms.

12.14.2.2.2.4 Secondary mitigation and residual effect

278. Given that there are no likely significant effects in EIA terms, secondary mitigation is not required.

12.14.2.2.3 INDIRECT IMPACTS RESULTING FROM CHANGES IN ABUNDANCE AND DISTRIBUTION OF TARGET SPECIES

279. There is the potential for the Marine Scheme construction phase to cumulatively impact commercially important fish and shellfish species with indirect impacts on the commercial fisheries receptors that target these species.

280. The potential cumulative impacts of the Marine Scheme operation and maintenance phase on fish and shellfish species, including those of commercial importance, are assessed in Volume 2, Chapter 9, section 9.14.2.2 and includes:

- EMF effects;
- Permanent habitats loss; and
- Thermal emissions from operational cables.

281. The assessment presented in Volume 2, Chapter 9 did not identify any cumulative impacts above minor adverse significance on fish and shellfish species of commercial importance. Consequently, any cumulative effects associated with this on the commercial fisheries that target them are also expected to not exceed **minor adverse significance** which is not significant in EIA terms.

12.15 Inter-Related Effects

282. Inter-related effects are the potential effects of multiple impacts, effecting one receptor or a group of receptors. Inter-related effects include interactions between the impacts of the different stages of the Marine Scheme (i.e., interaction of impacts across construction, operation and maintenance and decommissioning), as well as the interaction between impacts on a receptor within a Marine Scheme phase. A description of the likely inter-related effects arising from the Marine Scheme on commercial fisheries is provided below.

283. All phases have potential the potential to interact various commercial fisheries receptors. As the Marine Scheme is constructed, the area of impact associated with temporary loss of access, displacement or increased steaming will increase. 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 fishing vessels. Standard embedded mitigation measures will be in place to reduce the severity of effects on fishers, such as those implemented through the FMMS / FLCP. Therefore, it is not anticipated that impacts relating to loss of access, displacement, or increased steaming will interact across the Marine Scheme phases and result in a greater effect on commercial fisheries receptors than when each stage is assessed in isolation.

284. Snagging risk is highly localised and managed through designed-in measures to reduce any potential risks. For these reasons, there is no potential for the snagging between the Marine Scheme phases to interact and result in a greater effect on commercial fisheries receptors than when each stage is assessed in isolation.

285. The key potential interaction between the effects assessed within the Marine Scheme 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 impacts has been considered as part of the assessment and is the key reason as to why this impact has been assessed holistically as one impact. Furthermore, the designed-in measures will be in place to reduce potential effects of loss or restricted access (e.g. incorporation of evidence-based mitigations for vessels requested to relocate gear, where required) will also act to minimise displacement effects. Considering there is no additional potential interaction between impacts assessed within the Marine Scheme that could result in an effect of greater significance than when the impact is assessed in isolation.

286. As noted above, effects on commercial fishing also have the potential to have secondary effects on other receptors and these effects are fully considered in the topic-specific chapters. These receptors and effects are:

- fish and shellfish receptors.

287. These inter-related effects as described above are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phases. Therefore, these inter-related effects would not be significant in EIA terms.

12.16 Transboundary Effects

288. A screening of transboundary impacts has been carried out and has identified that there were no likely significant transboundary effects with regard to commercial fisheries from the Marine Scheme upon the interests of other European Economic Area (EEA) States. This is due to the negligible levels of activity by non-UK vessels within the commercial fisheries study area.

12.17 Summary of Impacts, Mitigation Measures, Likely Significant Effects and Monitoring

289. Information on commercial fisheries within the commercial fisheries study area was collected through a desktop review and consultation with local fisheries stakeholders. Table 12.13 presents a summary of the potential impacts, mitigation measures and the conclusion of likely significant effects in EIA terms in respect to commercial fisheries. The impacts assessed include:

- Temporary loss, displacement or restricted access to fishing grounds (C & D);
- The presence of Marine Scheme vessel traffic, leading to the potential for increases to steaming times (C & D);
- Snagging risk during installation, resulting from sections of exposed cable prior to burial/protection (C&D);
- Long-term reduced access to key fishing grounds and resultant displacement (O & M);
- Potential for fishing gear to become entangled with cable (i.e., snagging), resulting in damage or loss of fishing gear (O&M); and
- Indirect impacts resulting from changes in abundance and distribution of target species (C, O & M, D).

290. Overall, it is concluded that, prior to application of secondary mitigation, a likely significant effect may arise from the Marine Scheme during construction in relation to the effects of temporary loss, displacement or restricted access to fishing grounds due to presence of vessels and safety zones during route preparation activities and during construction on creeling/ potting in English waters. This is mainly in relation to the high activity by creelers/ potters along the Northumberland coast and the potential requirement for the removal or relocation of gear during the construction phase. Where this is the case, mitigation will be implemented for affected vessels in the form of an evidence-based approach, in accordance with FLOWW guidance, through the establishment of co-operation agreements. With the implementation of this, the magnitude of the impact would be reduced to low and the residual significance of the effect reduced to minor adverse significance which is not significant in EIA terms.

291. Table 12.14 presents a summary of the potential cumulative impacts, mitigation measures and the effects of conclusion of likely significant effects on Commercial Fisheries in EIA terms. The cumulative effects assessed include:

- Temporary loss, displacement or restricted access to fishing grounds (C & D);

- The presence of Marine Scheme vessel traffic, leading to the potential for increases to steaming times (C & D);
- Snagging risk during installation, resulting from sections of exposed cable prior to burial/protection (C&D);
- Long-term reduced access to key fishing grounds and resultant displacement (O & M);
- Potential for fishing gear to become entangled with cable (i.e., snagging), resulting in damage or loss of fishing gear (O&M); and
- Indirect impacts resulting from changes in abundance and distribution of target species (C, O & M, D).

292. Overall, it is concluded that, prior to application of secondary mitigation, a likely significant cumulative effect may arise from the Marine Scheme during construction in relation to the effects of temporary loss, displacement or restricted access to fishing grounds due to presence of vessels and safety zones during route preparation activities and during construction on creeling/ potting in English waters due to the potential requirement for the relocation or removal of static gear. As described above for the Marine Scheme alone, where this is the case, mitigation will be implemented for affected vessels in the form of an evidence-based approach, in accordance with FLOWW guidance, through the establishment of co-operation agreements. With the implementation of this, the magnitude of the cumulative impact would be reduced to low and the residual significance of the cumulative effect reduced to minor adverse significance which is not significant in EIA terms.

Table 12.13 Summary of Potential Likely Significant Environmental Effects, Mitigation and Monitoring

Scheme	Receptor	Phase			Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Residual Effect	Proposed Monitoring
		C	O	D						
Temporary loss, displacement or restricted access to fishing grounds										
Scottish waters	Demersal trawling -*Nephrops*	✓	×	✓	Negligible	Medium	Negligible to minor	NA	Not significant	NA
	Creeling/pots	✓	×	✓	Low	Medium	Minor	NA	Not significant	NA
	Dredging - scallops	✓	×	✓	Low	Low	Negligible to minor	NA	Not significant	NA
English waters	Demersal trawling -*Nephrops*	✓	×	✓	Low	Medium	Minor	NA	Not significant	NA
	Creeling/pots	✓	×	✓	Medium	Medium	Moderate	Co-operation agreements (which changes significance to minor)	Not significant	NA
	Dredging - scallops	✓	×	✓	Low	Low	Negligible to minor	NA	Not significant	NA
Interference with fishing activity as a result of increased vessel traffic, including potential increases to steaming times										
Marine Scheme overall	All mobile fisheries	✓	×	✓	Low	Low	Negligible to Minor	NA	Not significant	NA
	Creeling/potting – lobsters and crabs	✓	×	✓	Low	Medium	Minor	NA	Not significant	NA

Scheme	Receptor	Phase			Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Residual Effect	Proposed Monitoring
Potential for fishing gear to become entangled with cable (i.e., snagging), resulting in damage or loss of fishing gear										
Marine Scheme overall	All fisheries	✓	×	✓	Low	Medium	Minor	NA	Not significant	NA
Indirect impacts resulting from changes in abundance and distribution of target species										
Marine Scheme overall	The assessment presented in Volume 2, Chapter 9 did not identify any impacts above minor adverse significance on fish and shellfish species of commercial importance, for any stage of the Marine Scheme. Consequently, any impacts associated with this on the commercial fisheries that target them are also expected to not exceed minor adverse significance which is not significant in EIA terms.									
Long-term reduced access to key fishing grounds and resultant displacement										
Scottish waters	Demersal trawling - *Nephrops*	×	✓	×	Negligible	Medium	Negligible to minor	NA	Not significant	NA
	Creels/pots – lobster and crab	×	✓	×	Negligible	Medium	Negligible to minor	NA	Not significant	NA
English waters	Demersal trawling - *Nephrops*	×	✓	×	Low	Medium	Minor	NA	Not significant	NA
	Creels/pots – lobster and crab	×	✓	×	Low	Medium	Minor	NA	Not significant	NA
Marine Scheme overall	Dredging - scallops	×	✓	×	Low	Low	Negligible	NA	Not significant	NA

Table 12.14 Summary of Likely Significant Cumulative Environment Effects, Mitigation and Monitoring

Scheme	Receptor	Phase			Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Residual Effect	Proposed Monitoring
		C	O	D						
Temporary loss, displacement or restricted access to fishing grounds										
Scottish waters	Demersal trawling - *Nephrops*	✓	×	✓	Negligible	Medium	Negligible to Minor	NA	Not significant	NA
	Creeling/pots	✓	×	✓	Low	Medium	Minor	NA	Not significant	NA
	Dredging - scallops	✓	×	✓	Low	Low	Negligible to minor	NA	Not significant	NA
English waters	Demersal trawling -*Nephrops*	✓	×	✓	Low	Medium	Minor	NA	Not significant	NA
	Creeling/pots	✓	×	✓	Medium	Medium	Moderate	Co-operation agreements (which changes significance to minor)	Not significant	NA
	Dredging - scallops	✓	×	✓	Low	Low	Negligible to minor	NA	Not significant	NA
Interference with fishing activity as a result of increased vessel traffic, including potential increases to steaming times										
Marine Scheme overall	All mobile fisheries	✓	×	✓	Low	Low	Negligible to Minor	NA	Not significant	NA
	Creeling/potting – lobsters and crabs	✓	×	✓	Low	Medium	Minor	NA	Not significant	NA

Scheme	Receptor	Phase			Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Residual Effect	Proposed Monitoring
Potential for fishing gear to become entangled with cable (i.e., snagging), resulting in damage or loss of fishing gear										
Marine Scheme overall	All fisheries	✓	×	✓	Low	Medium	Minor	NA	Not significant	NA
Indirect impacts resulting from changes in abundance and distribution of target species										
Marine Scheme overall	The assessment presented in Volume 2, Chapter 9 did not identify any impacts above minor adverse significance on fish and shellfish species of commercial importance, for any stage of the Marine Scheme. Consequently, any impacts associated with this on the commercial fisheries that target them are also expected to not exceed minor adverse significance which is not significant in EIA terms.									
Long-term reduced access to key fishing grounds and resultant displacement										
Scottish waters	Demersal trawling - *Nephrops*	×	✓	×	Negligible	Medium	Negligible to minor	NA	Not significant	NA
	Creels/pots – lobster and crab	×	✓	×	Negligible	Medium	Negligible to minor	NA	Not significant	NA
English waters	Demersal trawling - *Nephrops*	×	✓	×	Low	Medium	Minor	NA	Not significant	NA
	Creels/pots – lobster and crab	×	✓	×	Low	Medium	Minor	NA	Not significant	NA
Marine Scheme overall	Dredging - scallops	×	✓	×	Low	Low	Negligible to Minor	NA	Not significant	NA

12.18 References

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