



BERWICK BANK WIND FARM ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Volume 2, Chapter 12: Commercial Fisheries

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Sarah Edwards	
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Prepared by: RPS
 Prepared for: SSE Renewables

Checked by: Douglas Watson
 Accepted by: Ross Hodson
 Approved by: Sarah Edwards

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CONTENTS

12. Commercial Fisheries	1
12.1. Introduction.....	1
12.2. Purpose of this Chapter.....	1
12.3. Study Area.....	1
12.4. Policy and Legislative Context	2
12.5. Consultation.....	4
12.6. Methodology to Inform Baseline.....	17
12.6.1. Desktop Study.....	17
12.6.2. Consultation to Inform the Baseline.....	19
12.7. Baseline Environment	19
12.7.1. Overview of Baseline Environment.....	19
12.7.2. Demersal Trawling – <i>Nephrops</i> and Squid fishery	21
12.7.3. Creeling - Lobster and Crab Fishery.....	28
12.7.4. Dredging – Scallop Fishery.....	32
12.7.5. Future Baseline Scenario	36
12.7.6. Data Limitations and Assumptions	37
12.8. Key Parameters for Assessment.....	37
12.8.1. Maximum Design Scenario.....	37
12.8.2. Impacts Scoped out of the Assessment	42
12.9. Methodology for Assessment of Effects.....	42
12.9.1. Overview	42
12.9.2. Criteria for Assessment of Effects	42
12.10. Measures Adopted as part of the Proposed Development	43
12.11. Assessment of Significance.....	44
12.11.1. Proposed Monitoring.....	57
12.12. Cumulative Effects Assessment.....	57
12.12.1. Methodology	57
12.12.2. Maximum Design Scenario.....	60
12.12.3. Cumulative Effects Assessment	62
12.13. Transboundary Effects	75
12.14. Inter-Related Effects (And Ecosystem Assessment).....	75
12.15. Summary of Impacts, Mitigation Measures, Likely Significant Effects and Monitoring	75

12.16. References.....	80
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TABLES

Table 12.1: Summary of SNMP Policies Relevant to Commercial Fisheries	2
Table 12.2: Summary of Key Consultation of Relevance to Commercial Fisheries.....	5
Table 12.3: Summary of Scoping Opinions and MSS Advice of Relevance to Commercial Fisheries Provided with Regard to 2020 Berwick Bank Wind Farm Project Offshore Scoping Report Which are also of Relevance for the Proposed Development.....	11
Table 12.4: Summary of Key Fisheries Data and Information.....	18
Table 12.5: Maximum Design Scenario Considered for Each Impact as Part of the Assessment of Likely Significant Effects Commercial Fisheries.....	38
Table 12.6: Definition of Terms Relating to the Magnitude of an Impact	42
Table 12.7: Definition of Terms Relating to the Sensitivity of the Receptor	42
Table 12.8: Matrix Used for the Assessment of the Significance of the Effect.....	43
Table 12.9: Designed In Measures Adopted as Part of the Proposed Development.....	43
Table 12.10: Assessment of the Impact of Displacement of Fishing Activities into other Areas.....	51
Table 12.11: Monitoring Commitments for Commercial Fisheries	57
Table 12.12: List of Other Developments Considered Within the CEA for Commercial Fisheries.....	58
Table 12.13: Maximum Design Scenario Considered for Each Impact as Part of the Assessment of Likely Significant Cumulative Effects on Commercial Fisheries.....	61
Table 12.14: Assessment of the Cumulative Effect of Displacement of Fishing Activities into Other Areas	69
Table 12.15: Summary of Likely Significant Inter-Related Effects on the environment from Individual Effects Occurring across the Construction, Operation and Maintenance and Decommissioning Phases of the Proposed Development and from Multiple Effects Interacting Across all Phases (Receptor-led Effects).....	77
Table 12.16: Summary of Likely Significant Environmental Effects, Mitigation and Monitoring.....	78
Table 12.17: Summary of Likely Significant Cumulative Environment Effects, Mitigation and Monitoring	79

FIGURES

Figure 12.1: Commercial Fisheries Study Area	2
Figure 12.2: Surveillance Sightings by Method (2011 – 2020) (Source: MMO and Marine Scotland via Data Request on an Annual Basis, the Datasets are Explained in Summary of Key Fisheries Data and Information) .	20
Figure 12.3: Annual UK Landings Value (£) by Method (Average 2015 – 2019) (Source: MMO)	20
Figure 12.4: Annual Landings Values (£) by Species (Average 2015 – 2019) (Source: MMO).....	21
Figure 12.5: Surveillance Sightings of Trawlers (2011 to 2020) (Source: MMO and Marine Scotland).....	22
Figure 12.6: VMS Value (£) Demersal Trawl/Seine (Average 2015 – 2019) (Source: MMO).....	22

Figure 12.7: Combined Fishing Activity of Trawls (Shelmerdine and Mouat, 2021)	23	Figure 12.38: Squid Landings (£) Average 2015 -2019 and Cumulative Projects	63
Figure 12.8: <i>Nephrops</i> Landings (Annual Average 2015 -2019) (Source: MMO).....	24	Figure 12.39: Squid Grounds from Consultation with Fisheries Stakeholders and Cumulative Projects.....	64
Figure 12.9: <i>Nephrops</i> Functional Units and Suitable <i>Nephrops</i> Habitat (Source: Marine Scotland)	24	Figure 12.40: Creeling Grounds from Consultation with Fisheries Stakeholders and Cumulative Projects	65
Figure 12.10: VMS Intensity for <i>Nephrops</i> and Crustaceans Bottom Trawls (Average 2009 -2017) (Source: Marine Scotland)	25	Figure 12.41: VMS (£) Scallop Dredgers (average 2015 -2019) and Cumulative Projects.....	66
Figure 12.11: Trawling Grounds (<i>Nephrops</i> and Squid) Identified during Consultation	25		
Figure 12.12: Monthly <i>Nephrops</i> Landings (£) in the Commercial Fisheries Study Area (average 2015 -2019) (Source: MMO)	26		
Figure 12.13: Squid Landings by Value (£) (Annual Average 2015 - 2019) (Source: MMO).....	27		
Figure 12.14: Under 15 m Trawls Excluding <i>Nephrops</i> Trawls Monetary Value (ScotMap, 2014)	27		
Figure 12.15: Squid – Amalgamated VMS Intensity (2009 -2013) (Kafas <i>et al.</i> , 2013)	28		
Figure 12.16: Monthly Landings of Squid by Value (£) in the Commercial Fisheries Study Area (average 2015 -2019) (Source: MMO).....	28		
Figure 12.17: Surveillance Sightings of Creelers (2011 to 2020) (Source: MMO and Marine Scotland)	29		
Figure 12.18: Lobster and Crab Landings by Value (£) (Annual Average 2015 – 2019) (Source: MMO)	29		
Figure 12.19: Combined Fishing Activity for Creels (Shelmerdine and Mouat, 2021)	30		
Figure 12.20: Creel Fishing Effort (Average No. of Crab and Lobster Hauls per Day) (Marine Scotland, 2017)	30		
Figure 12.21: Creel Positions (2022) (SWFPA, 2022)	31		
Figure 12.22: Creeling Grounds identified during Consultation	31		
Figure 12.23: Monthly Lobster and Crab Landings in the Commercial Fisheries Study Area (Average 2015-2019) (Source: MMO).....	32		
Figure 12.24: Surveillance Sightings of Dredgers (2011 to 2020) (Source: MMO and Marine Scotland)	33		
Figure 12.25: Scallop Landings by Value (£) (Average 2015- 2019) (Source: MMO)	33		
Figure 12.26: Combined Fishing Activity for Scallop Dredgers (Source: Shelmerdine and Mouat, 2021)	34		
Figure 12.27: UK VMS Value (£) Dredges (Average 2015 – 2019) (Source: MMO)	34		
Figure 12.28: UK VMS Value (£) Dredges UK Wide (Average 2015 -2019) (Source: MMO).....	35		
Figure 12.29: Inshore Scallop Grounds Identified during Consultation.....	35		
Figure 12.30: Monthly Landings of Scallop Dredgers in the Commercial Fisheries Study Area (average 2015 -2019).....	36		
Figure 12.31: Annual Variation in the Landings of Scallops in the Commercial Fisheries Study Area (2010 to 2019)	36		
Figure 12.32: AIS Tracks of a 22 m Creeler Fishing within Hornsea One	47		
Figure 12.33: AIS Tracks of a 30 m Beam Trawler Fishing within Walney Extension	47		
Figure 12.34: AIS Tracks of a 20 m Trawler Undertaking an Overtrawlability Survey within Beatrice	48		
Figure 12.35: AIS Tracks of a 33 m Scallop Dredger Fishing within Moray East	48		
Figure 12.36: Other Developments Screened into the Cumulative Effects Assessment for Commercial Fisheries.....	60		
Figure 12.37: VMS by Value (£) Demersal Trawls/Seines (average 2015-2019) and Cumulative Projects.....	62		

12. COMMERCIAL FISHERIES

12.1. INTRODUCTION

1. This chapter of the Offshore Environmental Impact Assessment (EIA) Report presents the assessment of the likely significant effects (as per the “EIA Regulations”) on the environment of the Berwick Bank Wind Farm offshore infrastructure which is the subject of this application (hereafter referred to as “the Proposed Development”) on commercial fisheries. Specifically, this chapter considers the potential impacts of the Proposed Development seaward of Mean High Water Springs (MHWS) during the construction, operation and maintenance, and decommissioning phases.
2. Likely significant effect is a term used in both the “EIA Regulations” and the Habitat Regulations. Reference to likely significant effect in this Offshore EIA Report refers to “likely significant effect” as used by the “EIA Regulations”. This Offshore EIA Report is accompanied by a Report to Inform Appropriate Assessment (RIAA) (SSER, 2022c) which uses the term as defined by the Habitats Regulations Appraisal (HRA) Regulations.
3. The assessment presented is informed by the following technical chapters:
 - volume 2, chapter 9: Fish and Shellfish Ecology; and
 - volume 2, chapter 13: Shipping and Navigation.
4. This chapter summarises information contained within volume 3, appendix 12.1.

12.2. PURPOSE OF THIS CHAPTER

5. The primary purpose of the Offshore EIA Report is outlined in volume 1, chapter 1. It is intended that the Offshore EIA Report will provide statutory and non-statutory stakeholders with sufficient information to determine the potential significant impacts of the Proposed Development on the receiving environment.
6. This Commercial Fisheries Offshore EIA Report chapter:
 - presents the existing environmental baseline established from desk studies, analysis of available fisheries data and consultation with stakeholders;
 - identifies any assumptions and limitations encountered in compiling the environmental information;
 - presents the likely significant environmental impacts on commercial fisheries arising from the Proposed Development and reaches a conclusion on the likely significant effects on commercial fisheries, based on the information gathered and the analysis and assessments undertaken; and
 - highlights any necessary monitoring and/or mitigation measures which are recommended to prevent, minimise, reduce or offset the likely significant adverse environmental effects of the Proposed Development on commercial fisheries.

12.3. STUDY AREA

7. Fisheries data are recorded and collated by International Council for the Exploration of the Sea (ICES) statistical rectangles. The commercial fisheries study area has therefore been defined with reference to the ICES rectangles within which the Proposed Development is located. As shown in Figure 12.1, these are as follows:
 - ICES rectangle 41E8 - encompasses the Proposed Development array area and part of the Proposed Development export cable corridor; and

- ICES rectangles 41E7 and 40E7 - include the inshore section of the Proposed Development export cable corridor.
8. Linking the commercial fisheries study area to ICES rectangles supports the analysis of landings data that has been collected for each ICES rectangle. The commercial fisheries study area defined in paragraph 7 and Figure 12.1 has been used to identify fishing activities of relevance in the immediate area of the Proposed Development. Where relevant, data and information have been analysed for wider areas to provide context and describe the wider extent of activity of the fisheries included in the assessment.

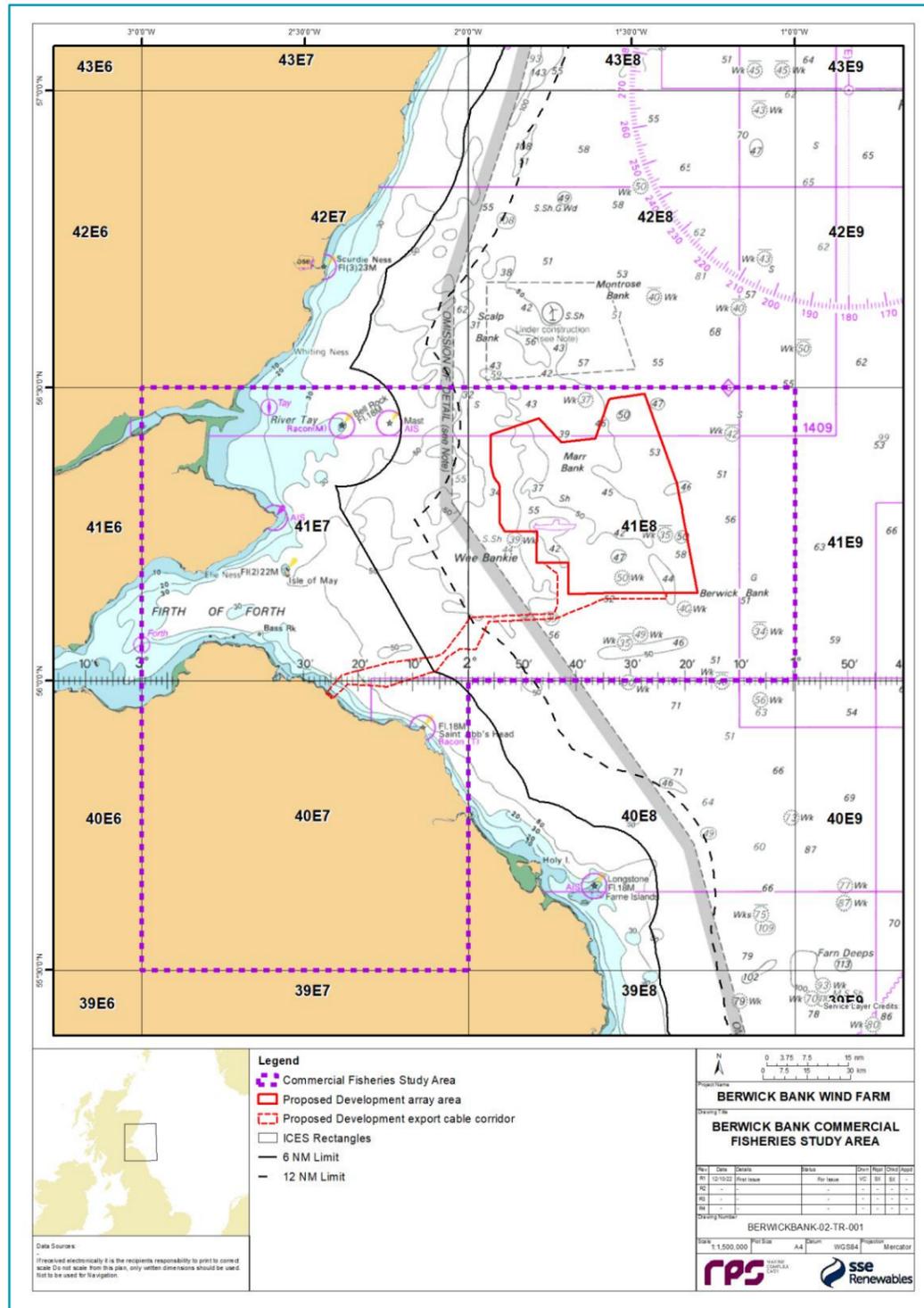


Figure 12.1: Commercial Fisheries Study Area

12.4. POLICY AND LEGISLATIVE CONTEXT

9. Policy and legislation on renewable energy infrastructure is presented in volume 1, chapter 2 of the Offshore EIA Report. Policy specifically in relation to commercial fishing, is contained in the Scottish National Marine Plan (SNMP). A summary of SNMP policy provisions related to commercial fisheries is provided in Table 12.1. This is focused on those directly of relevance to commercial fisheries in the context of the assessment presented in this chapter.

Table 12.1: Summary of SNMP Policies Relevant to Commercial Fisheries

Summary of Relevant Policy Framework	How and Where Considered in the Offshore EIA Report
General Planning Principle (GEN) Policies	
<ul style="list-style-type: none"> 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. 	<p>The Applicant is committed to facilitating co-existence between the Proposed Development and the fishing industry. To this end, a range of “Designed-In” measures have been proposed (Table 12.9). Provisions for these measures will be included in the Fisheries Management and Mitigation Strategy (FMMS) which will be produced for the Proposed Development (see Outline FMMS in volume 4, appendix 24).</p>
Fisheries, Marine Planning Policies	
<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> existing fishing opportunities and activities are safeguarded wherever possible; an ecosystem-based approach to the management of fishing which ensures sustainable and resilient fish stock and avoids damage to fragile habitats; protection of vulnerable stocks (in particular 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; and mechanisms for managing conflicts between fishermen and between the fishing sector and other users of the marine environment. FISHERIES 2 - The following key factors should be taken into account when deciding on uses of the marine environment and potential impact on fishing: <ul style="list-style-type: none"> the cultural and economic importance of fishing, in particular 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; 	<p>The Applicant is committed to facilitating co-existence between the Proposed Development and the fishing industry. To this end, a range of “Designed-In” measures have been proposed (Table 12.9). Provisions for these measures will be included in a FMMS which will be produced for the Proposed Development (see Outline FMMS in volume 4, appendix 24). This has been developed as an outline FMMS for inclusion within the Proposed Development Application in consultation with relevant stakeholders. The FMMS will be further developed by the Applicant, in consultation with relevant stakeholders, post-consent.</p> <p>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.</p> <p>The potential impacts of the Proposed Development 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. Potential knock-on effects of impacts on fish and shellfish species on the fisheries that target them as well as the impact of displacement of fishing activities into other areas are assessed in section 12.110.</p> <p>Socio-economic effects, including aspects of relevance to fishing communities are discussed in volume 2, chapter 18. Please also see Table 12.3 regarding link between commercial fisheries and socio-economic</p>

Summary of Relevant Policy Framework	How and Where Considered in the Offshore EIA Report
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<ul style="list-style-type: none"> – the environmental impact on fishing grounds (such as nursery, spawning areas), commercial fisheries 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. • FISHERIES 3 - Where existing fishing opportunities or activity cannot be safeguarded, a Fisheries Management and Mitigation Strategy (FMMS) should be prepared by the 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: <ul style="list-style-type: none"> – 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. 	<p>impacts. Impacts on other sea users are addressed in volume 2, chapter 17.</p> <p>A FMMS will be produced for the Proposed Development. An Outline FMMS is provided with the Application (volume 4, appendix 24).</p>
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Sea Fisheries, Interactions with Other Users
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<ul style="list-style-type: none"> • Updated Paragraphs 6.22 to 6.26: <ul style="list-style-type: none"> – 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. In respect of Developments this includes: <ul style="list-style-type: none"> • Energy developments can 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. • There is also potential for damage to occur to both infrastructure and fishing equipment as a result of interactions, with obvious 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 	<p>The potential impact of loss of fishing grounds as a result of the Proposed Development and associated displacement of activity is assessed in section 12.11. Similarly, impacts associated with potential increased snagging risk and associated loss or damage to fishing gear are also assessed in section 12.11.</p> <p>Potential impacts on fish and shellfish species, including those of commercial importance, are assessed in volume 2, chapter 9.</p> <p>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 as appropriate.</p>
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Summary of Relevant Policy Framework	How and Where Considered in the Offshore EIA Report
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<ul style="list-style-type: none"> • 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. 	<p>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.</p>
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Offshore Wind and Marine Renewable Energy, Interactions with Other Users
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<ul style="list-style-type: none"> • Paragraphs 11.26 to 11.29: <ul style="list-style-type: none"> – Key marine sectors can be affected by marine renewable energy development. Physical competition for space, navigational 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. 	<p>The potential impact of the Proposed Development on commercial fisheries is assessed in section 12.11. A number of “Designed In” measures have been proposed (Table 12.9) to minimise potential impacts on fishing activities. Provisions for these measures will be included in the FMMS which will be produced for the Proposed Development (see Outline FMMS in volume 4, appendix 24).</p> <p>The Applicant is committed to adhere to FLOWW Guidance. In addition, the Applicant is a member of the existing Forth and Tay Commercial Fisheries Working Group (FTCFWG) and will continue its participation in the group post-consent.</p>
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Submarine Cables, Marine Planning Policies
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<ul style="list-style-type: none"> • CABLES 2 <ul style="list-style-type: none"> – 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 may 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. 	<p>Offshore export cables will be buried to a target minimum depth of 0.5 m and will only be protected where burial is not possible or at cable crossings.</p> <p>As described in Table 12.9, 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. Findings would be shared with the fishing industry to discuss requirements for any further surveys.</p> <p>Provisions for these measures will be included in the FMMS which will be produced for the Proposed Development (see Outline FMMS in volume 4, appendix 24)</p>
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Submarine Cables, Interactions with Other Users

<ul style="list-style-type: none"> • Paragraphs 14.9 to 14.11 <ul style="list-style-type: none"> – 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. 	<p>Cables will be buried to a minimum target depth of 0.5 m and only protected where burial is not possible or at cable crossings. As described in Table 12.9, 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</p>
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Summary of Relevant Policy Framework	How and Where Considered in the Offshore EIA Report
<ul style="list-style-type: none"> – 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 burial and protection is considered on a case-by-case basis due to the variables that influence it. – The fishing sector can gain access to accurate and comprehensive information held by Kingfisher under the Kingfisher Information Service – Offshore Renewable and Cable Awareness (KIS-ORCA)¹⁵⁴ project on the National Marine Plan interactive (NMPi) on the majority of submarine cables within United Kingdom (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. 	<p>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 to discuss requirements for any further surveys.</p> <p>Provisions for these measures will be included in the FMMS which will be produced for the Proposed Development (see Outline FMMS in volume 4, appendix 24).</p>

12.5. CONSULTATION

10. A Fisheries Liaison Officer (FLO) has been appointed to facilitate engagement with the fishing industry from the early stages of the Proposed Development. The FLO maintains regular contact with fisheries stakeholders via face-to-face meetings, e-mail and phone communications. In addition, consultation has been undertaken by the Applicant to aid the collection of baseline information to help inform the assessment, as requested by fisheries stakeholders during an initial meeting held on 16 November 2021 with the Scottish Fishermen’s Federation (SFF), the North and East Coast Regional Inshore Fisheries Group (NECRIFG), the Under 10 m Association and local Fishing Industry Representatives (FIRs). Furthermore, the FLO has engaged with the wider fishing industry to collect baseline information on commercial fishing activities from relevant sectors currently not represented by local FIRs, as appropriate. More detailed information on the consultation undertaken to help inform the commercial baseline is provide in section 12.6.2 and in volume 3, appendix 12.1.
11. There have also been regular meetings at strategic level between the Applicant and SFF, and local meetings have been held at Dunbar and Eyemouth upon request of local FIRs. In addition, regular meetings are held between the Applicant and the SFF, the Scottish Whitefish Producers Association (SWFPA), N&EC RIFG and local FIRs via Microsoft Teams to provide project updates and an opportunity for fisheries stakeholders to raise any concerns and give relevant feedback. Project updates are also provided by the Applicant at the CFWG meetings.
12. A summary of the key issues raised during the consultation with commercial fisheries stakeholders undertaken to date is presented in Table 12.2, including details of how these have been considered in the production of this chapter. This includes issues raised at consultation meetings with fisheries stakeholders as well as in relevant scoping opinions.
13. The Berwick Bank Wind Farm Scoping Opinion (MS-LOT, 2022) and advice provided for 2020 Berwick Bank (e.g. the 2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)) which is also of relevance to the Proposed Development are summarised separately in Table 12.3.

Table 12.2: Summary of Key Consultation of Relevance to Commercial Fisheries

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
16 November 2021	Consultation meeting with Scottish Fishermen Federation (SFF), NECRIFG, Under 10 m Association and Firth of Forth Fishing Industry Representatives (FIRs). Meeting aimed at providing an update on the Proposed Development and discussed the planned consultation with local fisheries stakeholders to help inform the baseline.	<p>Key queries/concerns of relevance to the Proposed Development raised during the meeting included:</p> <ul style="list-style-type: none"> queries raised in relation to the number of proposed offshore export cables and how the cable laying would be phased; concerns regarding the use of outdated fisheries datasets (i.e. Kafas <i>et al.</i>, 2014) as these may not be representative of current fishing activity in certain areas and on the limitations on some of the available fisheries studies (e.g. Marine Scotland, 2017) since not all fishermen were consulted to inform these, and therefore are not fully comprehensive; FIRs and fishing representatives noted the need for the cumulative impacts of displacement from other offshore developments in the vicinity of the Proposed Development to be included in the Offshore EIA Report; fisheries stakeholders noted that the Proposed Development array area should not be fully closed to fishing at one given time, but that exclusion zones should be sectioned and phased to minimise impacts on the fishing industry; concerns noted over a lack of transparency regarding the need for a secondary cable route and it was requested that consultation with the fishing industry is undertaken in relation to the secondary offshore export cable route; concern raised regarding the level of resolution of the geotechnical and geophysical data collected; and the impact of the COVID-19 pandemic on the fishing sector was discussed and it was agreed that 2020 fisheries statistics should not be included in the assessment as 2020 was not representative of normal levels of fishing activity. 	<ul style="list-style-type: none"> The maximum design scenario with regard to offshore export cables installation is described in Table 12.5. This includes installation of up to eight offshore export cables (872 km in total) over a period of up to 124 months (including pre-commissioning). The limitations of the datasets used to inform the commercial fisheries baseline characterisation are described in Table 12.4 and section 12.7.6. To ensure that up to date information and local knowledge was incorporated in the baseline, in addition to publicly available fisheries data and information, consultation has been undertaken with local fishermen via the FIRs and the information provided by fishermen has been integrated in the baseline. Cumulative considerations have been taken account of in the assessment (section 12.12), including with regards to loss of fishing grounds and associated displacement. The potential for a secondary offshore export cable route has been discussed during consultation. The Applicant intends to consult with the fishing industry, as well as other relevant stakeholders on the secondary route but notes that this will form a separate project and it is not part of the Proposed Development. The secondary offshore export cable route has been given consideration in the assessment of cumulative effects (section 12.12) and is referred to as the Cambois connection. The maximum design scenario with regards to potential exclusion from the Proposed Development during the construction phase, is described in Table 12.5. This will be limited to areas around safety zones and any advisory measures which may be necessary at any one time. Geotechnical and geophysical data will be collected in line with required standards and allow for the detail required to undertake a full site assessment. Fisheries statistics for the year 2020 have been excluded from the assessment due to the effect of the COVID-19 pandemic on fishing activity during this year. Final data for 2021 is not expected to be made publicly available until the end of 2022 (see section 12.7 and volume 3, appendix 12.1 for more detail).
15 December 2021	Consultation meeting with SFF, NECRIFG, SWFPA and Firth of Forth local FIRs to provide project update	<p>Introductory project progress meeting. Information shared included:</p> <ul style="list-style-type: none"> project and policy background; onshore and offshore update; sandeels management; and Project timelines. 	<ul style="list-style-type: none"> N/A
28 January 2022	Consultation meeting with SFF, NECRIFG, SWFPA and Firth of Forth local FIRs to provide project update	<p>Fisheries stakeholders requested further information on the potential for a secondary 1.8 GW connection point at Blyth (subsequently renamed Cambois connection) for the Proposed Development.</p> <p>The Applicant confirmed to fisheries stakeholders that for the connection to Branxton, Skateraw was the preferred landfall option for the Proposed Development.</p> <p>Discussions held with regard to potential sandeel fisheries management measures as part of the derogation case to offset impacts on ornithological receptors. Fisheries stakeholders stated that they will not engage or comment in the matter until they have held discussions with Marine Scotland.</p> <p>Updates provided with regard to progress made to date by FIRs on the collection of information via questionnaires to help inform the baseline characterisation of commercial fishing for the Proposed Development. The Dunbar FIR noted the difficulties to date in collecting the information due to the coincidence of the consultation period with the Christmas break and the need to speak directly to fishermen.</p> <p>The Pittenweem FIR noted that skippers in the area that he covers do not feel that there is any point in responding to the consultation as the assessments of effects will conclude “minimal effect”. In addition, he noted that the vessels that he represents will not be greatly affected by the Proposed Development. The representative from the SWFPA confirmed that squid and scallop vessels had received the questionnaires and had been asked to respond directly to the FLO.</p>	<ul style="list-style-type: none"> The grid connection process was explained to stakeholders during the meeting and it was clarified that an offer for the Cambois connection was made to the Applicant by National Grid on 21 December 2021, but this was not yet formally signed off. The Applicant notes that the potential secondary connection is not part of the Proposed Development and would be subject to a separate licence, assessment and consultation process if taken forward. In addition, information on the potential type and number of cables associated with the Cambois connection was provided to fisheries stakeholders and it was agreed that the fishing industry would be provided the opportunity to input on the cable route. No issues with regard to the selection of the Skateraw landfall option were raised by FIRs and the Applicant offered to meet with FIRs of relevance to the Skateraw landfall to discuss this further if required. The Applicant set up a meeting with Dunbar fishermen on 01/02/2022 at the request of the local Dunbar FIR to facilitate the collection of baseline information. In addition, it offered to support FIRs in this process wherever possible. Similarly, an additional meeting was set up with the Eyemouth FIR and local fishermen on 24 February 2022 to facilitate the collection of baseline information. The information provided in the completed questionnaires received has been given consideration in the baseline characterisation (see section 12.7 and volume 3, appendix 12.1).

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
31 January 2022	Consultation meeting with Dunbar FIR and local fishermen to discuss project updates and the baseline consultation	<p>The Applicant confirmed that a maximum of eight offshore export cables are being considered for the Proposed Development and that cables would not be buried in the same trench. In addition, The Applicant explained that there will be a secondary connection point potentially in the north of England, near Blyth but this is yet to be determined. The Applicant also confirmed that the intention is for cables to be buried at a target minimum burial depth of 0.5 m with cable protection only required where sufficient burial cannot be achieved (i.e. in hard grounds and at cable crossings).</p> <p>Concerns were raised by fisheries stakeholders with regard to potential impacts associated with the Proposed Development on the seabed and shellfish species, particularly long term impacts on lobster with some fishermen referring to other projects having affected lobster and <i>Nephrops</i>.</p> <p>The Applicant explained that the purpose of the consultation questionnaires that had been provided to the Dunbar FIR for circulation amongst fishermen was to improve the understanding of the commercial fisheries baseline for inclusion within the Offshore EIA Report. In addition, it was noted that the purpose of this consultation was not related to compensation.</p> <p>Fishermen queried whether there will be an impact from cables in five to ten years' time and what would be in place to compensate this.</p>	<ul style="list-style-type: none"> Maximum project design parameters have been taken account for in the assessment presented in section 12.11, including with regard to maximum number of cables, requirements for cables protection and minimum burial depth. Potential impacts on fish and shellfish species are assessed in detail in volume 2, chapter 9. Information provided in consultation questionnaires has been included in the commercial fisheries baseline presented in section 12.6.2 and described in more detail in volume 3, appendix 12.1. Evidence available from operational sites in the UK indicates that fishing activity can resume around offshore export cables and inter-array cables during the operation and maintenance phase of projects. Examples of fishing vessels operating within operational projects are provided in section 12.11. The Applicant is committed to a range of Designed In measures, which have been proposed to minimise disturbance to fishing activities, including measures to minimise snagging risk (Table 12.9).
04 February 2022	Northumberland Inshore Fisheries and Conservation Authority (NIFCA) Scoping Representation	<p>NIFCA confirmed that the scope of the project falls outside of their district, and that given the lack of any direct impacts to activities that NIFCA is responsible for managing, they felt it was not appropriate for them to comment on the consultation. NIFCA has a statutory duty to manage the exploitation of sea fisheries resources, and given the only impacts proposed in this report to areas within the district are visual, this falls outside of our remit.</p> <p>NIFCA noted that some of the desk-based fisheries information included in the scoping report may fall into the northern-most areas of their district, however they would be unable to provide such region-specific fisheries statistics for such a relatively small area of their district.</p>	<ul style="list-style-type: none"> Noted. Noted.
04 February 2022	SFF Scoping Representation (20 November 2021)	<p>The SFF notes that the Executive Summary has not one, out of thirteen, material benefits of the restructuring of Berwick and Marr into one farm, which is specifically relevant to commercial fisheries. This would appear to be in contravention of the following policies from Scotland's National Marine Plan:</p> <ul style="list-style-type: none"> GEN 2 Economic benefit; GEN 3 Social benefit; GEN 4 Co-existence; GEN 9 Natural heritage; GEN 17 Fairness; GEN 19 Sound evidence; and and also the specific policies in the SNMP which refer to the protection of fishing wherever possible. <p>The SFF is concerned about the fourth para in the Executive Summary which is not clear about grid connection and offshore export cables. It is known that there is a connection for the project in the Torness area, but it is only for 2.3 GW, which is way short of the required capacity. This will inevitably result in a variation application, increasing the work that stakeholders have to put into the development applications.</p> <p>The SFF believes that this application of the Rochdale Envelope whilst giving a bit of free scope for developers is an added burden on stakeholders.</p> <p>Page 2, para 23, on the possible repowering of the farm after 35 years, adds another dimension to the problem of displacement of commercial fisheries, so should be assessed on the basis of 70 years loss of access.</p>	<ul style="list-style-type: none"> The Applicant considers that the amendment to the Proposed Development site boundary and the associated overall reduction in the Proposed Development's footprint is of benefit to commercial fisheries, particularly in the north-west of the site where scallop dredging has been identified. Additionally, discussions on the navigable corridor between the Proposed Development and Inch Cape Offshore Limited (ICOL) have included representation from SFF and any mitigation in relation to this will beneficially affect the commercial fisheries sector. The Applicant has accepted two grid connection offers for connecting to the grid at Branxton, and a third to connect into Blyth, Northumberland. These offers are sufficient to connect the full capacity of the Proposed Development. Furthermore, the Applicant has engaged with SFF and the wider commercial fisheries community to discuss the approach to the additional cable connection (referred to as Cambois connection) including to seek views upon the possible routing of the export cable corridor. Noted. However, the Applicant will not be in a position to determine all design parameters prior to application. The Rochdale Envelope provides the necessary flexibility for detailed design, but also provides sufficient detail to allow impacts to be fully assessed and the relevant realistic worst-case scenarios to be outlined. The approach is standard and has been adopted to consent a number of offshore wind farm projects in Scotland. If repowering of the wind farm was to be undertaken, this would be subject to a new licence application at that time along with any necessary environmental assessment of effects. The current application does not seek consent for the possible repowering of the wind farm.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
		<p>Page 13, para 2.3.9.110 and 112, is not acceptable to the SFF, our experience with the whole subject of cable installation, both inter-array and export, leads us to believe this should be assessed and agreed pre-application.</p>	<ul style="list-style-type: none"> The Applicant notes that this follows best practice and fisheries stakeholders will be consulted in order to inform cable micro-siting. In addition, post-lay and burial inspection surveys will be undertaken and, where appropriate and practicable, rectification works. Assessments will also be undertaken to determine cable burial status (including cable protection) and identify potential changes to seabed conditions. Findings would be shared with the fishing industry to discuss requirements for any further surveys.
		<p>Page 14, listing the measures designed in, for the project, the following lines are of great concern to the SFF; Development and adherence to a Cable Plan (CaP); Development of, and adherence to, a Decommissioning Plan; Development of, and adherence to, a Navigation Safety and Vessel Management Plan (NSVMP); Development of, and adherence to, Ongoing consultation with the fishing industry and appointment of a Fisheries Liaison Officer (FLO); Development of a FMMS; Adherence to good practice guidance with regards to fisheries liaison (e.g. FLOWWW, 2014;2015); Timely and efficient distribution of Notice to Mariners (NtM), Kingfisher notifications and other navigational warnings of the position and nature of works associated with the Proposed Development; Use of guard vessels and Offshore Fisheries Liaison Officers (OFLOs), as appropriate; Implementation Navigational Safety Plan (NSP); Undertaking of post-lay and cable burial inspection surveys and monitoring, Participation in the FTFCWG and liaison with FIRs, as appropriate; The use of locally manufactured content where possible and appropriate; The use of local contractors (where possible) during construction for onshore infrastructure and potential offshore construction work where possible and appropriate; Employment and training possibilities for local people on the operation and maintenance of a wind farm where feasible; Supporting the community through sponsorship of local groups and teams.</p> <p>All of these make the right statements, but our experience with developments serves to strengthen our belief that these all need to be discussed and agreed with the fishing industry before the farm gets licenced.</p> <p>The final topic “supporting the community” is not aligned with Scottish Government advice on Community Benefit and if more explanation, on any of these points is required, happy to discuss.</p>	<ul style="list-style-type: none"> Designed In measures provided in page 14 of the Berwick Bank Wind Farm Offshore Scoping Report (SSER, 2021a) include all those proposed by the Proposed Development, regardless of topic. Those of specific relevance to commercial fisheries were outlined in section 12.10 of this chapter. Measures of relevance to commercial fishing have been further refined since the publication of the Berwick Bank Wind Farm Offshore Scoping Report (SSER, 2021a) and are outlined in Table 12.9 within this chapter. Reference to these measures is included in the Outline FMMS (volume 4, appendix 24). The FMMS will be updated and further developed post-consent as further details on the Proposed Development become available. Guidance on community benefits in relation to offshore wind is currently being developed by Marine Scotland. The Applicant will be able to include recommendations from this guidance once this is published.
		<p>Page 22, para 169 only includes SFF as engaged, but should also note Scottish White Fish Producers Association (SWFPA), Anglo-Scottish Fishermen’s Association, Pittenweem Fishermen’s Mutual Association (FMA), St Andrews FMA and the Arbroath FMA along with the appropriate FIR for the area.</p>	<ul style="list-style-type: none"> The list provided in page 22 of the Berwick Bank Wind Farm Offshore Scoping Report (SSER, 2021a) report included engagement with regard to the pre-scoping activities which was reduced to a limited number of high-level stakeholders covering a wide range of topics in addition to commercial fishing. Additional consultation with fisheries stakeholders has been undertaken since. This is described in Table 12.2 and section 12.6.2 and further details are provided in volume 3, appendix 12.1 The fisheries organisations consulted with and the approach to consultation has been undertaken as agreed with the SFF, NECRIFG, the Under 10 m Association and local FIRs during the consultation meeting held on 16 November 2021.
		<p>Page 22, para 182, as ever the SFF disputes the matrix design, as it does not properly consider the impact on individual fishing businesses, which is in contravention of the SNMP</p>	<ul style="list-style-type: none"> The assessment of effects has been undertaken using a matrix approach as it is standard practice for the purposes of an EIA Report. The undertaking of assessments on individual vessels would be beyond the scope of an EIA. This applies to commercial fisheries but also to other receptors.
		<p>The designed in measures are as much of a problem as a mitigation. Scour protection introduces new material to the environment which will make it difficult to restore the seabed post decommissioning.</p>	<ul style="list-style-type: none"> The use of scour protection has not been proposed as a Designed In mitigation measure in relation to commercial fisheries. Designed In measures of relevance to commercial fisheries are described in Table 12.9.
		<p>Monitoring the protection during operation and maintenance; Should define the construction phase too, also needs to define what actions are followed up.</p>	<ul style="list-style-type: none"> As noted in section 12.10, post-lay and burial surveys will be undertaken and rectification works where appropriate and practicable. Assessments will be undertaken to determine cable burial status (including cable protection) and identify potential changes to seabed conditions. Findings would be shared with the fishing industry to discuss requirements for any further surveys.
		<p>Adherence to a CaP; at this stage in the project - it is impossible to say this. Recent experience in this area shows that after ten years of surveys the plan is a guesstimate.</p>	<ul style="list-style-type: none"> Adherence to the CaP is considered current best practice.
		<p>The SFF is not comfortable with the reliance on desk top studies and modelling. The developer should take the opportunity to add knowledge and data on these matters for the common good.</p>	<ul style="list-style-type: none"> In addition to desk-top studies and available fisheries data and statistics, the baseline characterisation on which the assessment of effects is based on has been informed through the undertaking of consultation with fisheries stakeholders (see section 12.6.2 and volume 3, appendix 12.1).
		<p>The SFF has made some additional comments related to coastal processes, noise, benthic, fish ecology and shipping and navigation.</p>	<ul style="list-style-type: none"> These comments are addressed in the relevant chapters.

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04 February 2022	Berwick Bank Wind Farm Scoping Opinion (MS-LOT, 2022)	With regards to the available information proposed by the Developer to be used to inform the commercial fisheries baseline assessment, the Scottish Ministers highlight the MSS December advice (16 December 2021) that the 2020 landings data is now available but should be carefully interpreted due to the impacts of COVID-19 on the commercial fishing industry.	<ul style="list-style-type: none"> 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 (2000 to 2019) has been analysed. Whilst data for 2020 is currently available, this is not considered representative of normal fishing activities due to the COVID-19 pandemic. As such, this data has not been included in the commercial fisheries assessment. The exclusion of 2020 data from the assessment was agreed with fisheries stakeholders during the consultation meeting held on 16 November 2022.
04 February 2022	Berwick Bank Wind Farm Scoping Opinion (MS-LOT, 2022)	The Scottish Ministers recommend that all the data and guidance detailed in the MSS December advice (16 December 2021) and MSS January advice (24 January 2022), including the MSS good practice guidance for assessing fisheries displacement once published, are fully considered in the Offshore EIA Report.	<ul style="list-style-type: none"> Noted. MMS advice of relevance to commercial fisheries is listed in Table 12.3, including details of how it has been considered in this chapter. It is noted that 'Good practice guidance for assessing fisheries displacement by other licensed marine activities' was published by Marine Scotland Science (MSS) in June 2022 (MSS, 2022). This guidance has been taken into account in the assessment of potential fisheries displacement in section 12.11.
04 February 2022	Berwick Bank Wind Farm Scoping Opinion (MS-LOT, 2022)	Within Table 7.1 of the Berwick Bank Wind Farm Offshore Scoping Report (SSER, 2021a) Scoping Report the Developer details the potential effects on commercial fisheries during the different phases of the Proposed Development which they propose to scope in for assessment within the Offshore EIA Report. The Scottish Ministers agree with the potential effects detailed and scoped in, however advise that the representation from the SFF (20 November 2021) and the MSS December advice (16 December 2021) and MSS January advice (24 January 2022) must also be fully considered and addressed by the Developer.	<ul style="list-style-type: none"> SFF's 2022 consultation representations are included in this table. The representations from the SFF and the MSS 16 December 2021 and MSS 24 January 2022 advice, are listed in Table 12.3, including details of how they have been considered in this chapter.
04 February 2022	Berwick Bank Wind Farm Scoping Opinion (MS-LOT, 2022)	The Scottish Ministers advise that a fisheries displacement assessment must be carried out to estimate any displacement levels. The assessment must include, but not be limited to, consideration of minimum operating space requirements for the range of fishing activities (deploying and hauling gear), vessel manoeuvrability, overtrawlability of cables and the cumulative impact from any fisheries management measures within the Firth of Forth Banks Complex Nature Conservation Marine Protected Area (ncMPA). The displacement assessment must include consideration of the effects of different types of foundations within the design envelope and also consideration of displacement of fishing to other areas as a result of loss of grounds if applicable. The MSS January advice (24 January 2022) supporting this view must be fully implemented by the Developer.	<ul style="list-style-type: none"> A full assessment of potential fisheries displacement is included under the assessment of long term loss of access to fishing grounds in section 12.11. The assessment is supported with evidence of fishing within existing operational wind farms the UK and takes into account the MSS 2022 guidance on displacement assessments (MSS, 2022). The potential impact of displacement of fishing activities into other areas has also been assessed in section 12.11. The assessment of cumulative effects includes consideration of the fisheries management measures currently proposed within the Firth of Forth Banks Complex Marine Protected Area (MPA). The MSS January advice (24 January 2022) of relevance to commercial is listed in Table 12.3, including details of how it has been considered in this chapter.
04 February 2022	Berwick Bank Wind Farm Scoping Opinion (MS-LOT, 2022)	The Scottish Ministers also advise that the Developer must adopt a clear position on whether they will be content for fishing to continue over cables within the Proposed Development. This position must be adopted prior to the fisheries displacement assessment so the implications from this can be included in the assessment. If the Developer is content for fishing to continue over cables, then the Scottish Ministers advise that a practical overtrawlability study must be carried out in accordance with the recommendations of the MSS December (16 December 2021) advice and MSS January (24 January 2022) advice.	<ul style="list-style-type: none"> The Applicant is committed to facilitate co-existence between the Proposed Development and fishing activities. As described in section 12.11, it has been assumed that fishing will be able to continue within the Proposed Development array area and along the Proposed Development export cable corridor during the operation and maintenance phase. Cables will be buried to a minimum target depth of 0.5 m. Where sufficient burial cannot be achieved (i.e. due to hard grounds or at cable crossings) cable protection will be used. A number of Designed In Measures have been proposed to facilitate co-existence and minimise snagging risk. As described in Table 12.9, the location, extent and nature of the cable protection used will be shared with fisheries stakeholders. In areas where rock placement is required, consideration will be given to designs that reduce potential snagging risk with fishing gear to facilitate co-existence with mobile fisheries, particularly demersal trawling (i.e. use of graded rocks and berms designed with 1:3 gradients). Furthermore, post-lay and burial surveys will be undertaken and rectification works where appropriate and practicable. Assessments will be undertaken to determine cable burial status (including cable protection) and identify potential changes to seabed conditions. Findings would be shared with the fishing industry to discuss requirements for any further surveys. These would be aimed at facilitating co-existence with fishing and minimising snagging risk and associated loss or damage of fishing gear and safety issues. Provisions for the measures above will be included in the FMMS which will be produced for the Proposed Development (see volume 4, appendix 24 for the Outline FMMS provided at Application). The MMS January (24 January 2022) advice is listed in Table 12.3, including details of how it has been considered in this chapter

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
04 February 2022	Berwick Bank Wind Farm Scoping Opinion (MS-LOT, 2022)	With regards to the Developer's proposed approach to assessing the potential effects on safety issues for fishing vessels, the Scottish Ministers advise that these effects must be considered and assessed separately from the Shipping and Navigation assessment relative to section 7.2 of the Scoping Report. This must include consideration of the risk of snagging fishing gear. The Scottish Ministers highlight the MSS January (24 January 2022) advice in this regard.	<ul style="list-style-type: none"> Consideration has been given to the potential effects of snagging risk and associated loss and damage to fishing gear and safety issues inspection in section 12.11.
04 February 2022	Berwick Bank Wind Farm Scoping Opinion (MS-LOT, 2022)	In addition to the effects identified in Table 7.1 of the Scoping Report, the Scottish Ministers advise more detailed information for the decommissioning phase is required, in particular in relation to the potential safety hazard disused infrastructure left in the marine environment poses to commercial fishing. The Scottish Ministers highlight the MSS January advice (24 January 2022) in this regard.	<ul style="list-style-type: none"> At the end of the operational lifetime of the Proposed Development, piled substructures will be cut at an agreed depth below the level of the seabed for partial removal. Scour protection will be fully removed where it is possible and appropriate to do so noting this will depend on the type of protection used and condition of the protection at the time of removal. All cables will be removed where it is possible and appropriate to do so. Cable protection will be fully removed where it is possible and appropriate to do so noting this will depend on the type of protection used and condition of the protection at the time of removal. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment. The decommissioning plan and programme will be updated during the Project lifespan to take account of changing best practice and new technologies. It may be decided, closer to the time of decommissioning, that removal will result in greater environmental impacts than leaving offshore components <i>in situ</i>. Consideration has been given to the impact of infrastructure being left <i>in situ</i> with regard to the assessment of snagging risk in respect of the decommissioning phase in section 12.11.
04 February 2022	Berwick Bank Wind Farm Scoping Opinion (MS-LOT, 2022)	With regards to cumulative impacts, the Scottish Ministers advise that the cumulative assessment of effects should discuss the potential for fisheries management measures within MPA and direct the Developer to the map layers for current fisheries management layers referenced in the MSS December advice (16 December 2021).	<ul style="list-style-type: none"> The assessment of cumulative effects includes consideration of the fisheries management measures currently proposed within the Firth of Forth Banks Complex MPA.
04 February 2022	Berwick Bank Wind Farm Scoping Opinion (MS-LOT, 2022)	The Scottish Ministers advise that in identifying appropriate mitigation measures, the Developer must consider the different types of fishing that takes place within the Proposed Development 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 Developer 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 and highlight the additional fisheries stakeholders listed in SFF's representation in this regard.	<ul style="list-style-type: none"> Consideration has been given throughout the assessment to the different types of activities that take place within the Proposed Development and a range of designed in measures have been proposed to minimise impacts on commercial fisheries. There are also referred to in the Outline FMMS (see volume 4, appendix 24). The assessment presented in section 12.11 has identified impacts on commercial fisheries not exceeding minor significance, and therefore no additional mitigation measures have been proposed. Consultation with the fishing industry is ongoing and will continue post-consent, including throughout the development of the FMMS that will be submitted post-consent. The significance of impacts in EIA terms is clearly set out in section 12.11.
24 February 2022	Consultation meeting with Eyemouth FIR and local fishermen to discuss project updates and the baseline consultation	<p>Fisheries stakeholders questioned whether there was any point in participating in upcoming virtual consultation events as the site and cable routes are already selected and made queries with regards to some of the parameters of the Proposed Development, specifically:</p> <ul style="list-style-type: none"> number of wind turbines and spacing; width of the cable route; cable installation procedure; approach to cable protection at the crossings with the Neart na Gaoithe export cables as this would overlap with an area of narrow inshore grounds targeted by local squid fishermen; queries with regard to the potential connection at Blyth; concerns with regard to cumulative effects on the inshore grounds with other proposed projects, particularly Eastern Link 1; overall construction programme, potential for phased approach to construction and overall lifespan of the Proposed Development; surveys planned in the near future; and preference for consideration of recent but also historic data so that historical fishing grounds are also considered. 	<ul style="list-style-type: none"> During the meeting the Applicant provided a response to the queries raised by fishermen and encouraged them to participate in the baseline consultation by completing and returning consultation questionnaires. The minimum spacing between wind turbines would be 1,000 m and the maximum width of the cable route up to approx. 400 m (i.e. if up to 8 cables are installed with 50 m distance between cables). Cables will be buried and cable protection only used where sufficient burial cannot be achieved (i.e. due to the presence of hard ground and at cable crossings). Where rock protection is used this will be designed to minimise snagging risk (i.e. 1:3 berm profiles and use of graded rock). This approach would also apply to the cable crossing with the Neart na Gaoithe export cables.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
17 March 2022	Consultation meeting in Berwick-upon-Tweed with Berwickshire Shellfish Co to discuss potential impacts on their business	Concern expressed over the potential impact of the Proposed Development on their business as it depends on the availability of shellfish in the local area. Specifically, concerns were raised over the Proposed Development resulting in a permanent closure/ban to fishing.	<p>The Applicant explained that it does not propose any form of permanent closure/ban to fishing within the Proposed Development boundary.</p> <p>The Applicant noted the individual's concerns and arranged a follow-up meeting at the stakeholder's premises on 17 March 2022, with relevant members of the Applicant's Project team present.</p> <p>After the meeting, the business owner was satisfied the Proposed Development would have negligible adverse impacts on their activities.</p>

Table 12.3 Summary of Scoping Opinions and MSS Advice of Relevance to Commercial Fisheries Provided with Regard to 2020 Berwick Bank Wind Farm Project Offshore Scoping Report Which are also of Relevance for the Proposed Development

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
09 March 2021	2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	With regards to the characterisation of the baseline for assessment of effect on commercial fisheries, the Scottish Ministers highlight the MSS November Advice and advise that the recommendations to extend the range of landings data and to use the most up to date statistics must be implemented.	<ul style="list-style-type: none"> 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 (2000 to 2019) has been analysed. Whilst data for 2020 is currently available, this is not considered representative of normal fishing activities due to the COVID-19 pandemic. As such, this data has not been included in the commercial fisheries assessment. The exclusion of 2020 data from the assessment was agreed with fisheries stakeholders during the consultation meeting held on 16 November 2021.
09 March 2021	2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<p>The Scottish Ministers advise that the guidance and data detailed in the MSS November Advice (from 19 November 2020) must be considered, including the MSS guidance for assessing fisheries displacement once published.</p> <p>The Scottish Ministers advise that a fisheries displacement assessment must be carried out to estimate any displacement levels.</p> <p>The assessment must include, but not be limited to, consideration of minimum operating space requirements for the range of fishing activities (deploying and hauling gear), vessel manoeuvrability, overtrawlability of cables and the cumulative impact from any fisheries management measures within the Firth of Forth Complex ncMPA.</p> <p>The displacement assessment must include consideration of the effects of different types of foundations within the design envelope and also consideration of displacement of fishing to other areas as a result of loss of grounds if applicable. The MSS November Advice (from 19 November 2020) and the MSS December Advice (16 December 2021) supporting this view must be fully implemented by the Developer.</p>	<ul style="list-style-type: none"> Consideration has been given to MSS November Advice (from 19 November 2020) within this table. Consideration has been given to relevant aspects under the assessment of long term loss of access to fishing grounds during the operation and maintenance phase in section 12.11. The Applicant notes however that MSS guidance for assessing fisheries displacement was published 30 June 2022 and has been considered in this chapter. The assessment is also supported with evidence of fishing within existing operational wind farms the UK. In addition, the potential impact of displacement of fishing activities into other areas has also been assessed in section 12.11. The assessment of cumulative effects includes consideration of the fisheries management measures currently proposed within the Firth of Forth Banks Complex MPA.
09 March 2021	2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<p>Within Table 8.2 of the Scoping Report the Developer details the potential effects on commercial fisheries during the different phases of the Proposed Development which they propose to scope in for assessment within the Offshore EIA Report.</p> <p>The Scottish Ministers agree with the potential effects detailed and scoped in however advise that the representations from the SFF and NECRIFG together with the MSS November Advice (from 19 November 2020) must also be fully considered and addressed by the Developer.</p>	<ul style="list-style-type: none"> Noted. Consideration has been given to consultation representations and advice for the 2020 Berwick Bank Scoping Opinion from the SFF and NECRIFG, dated 07 September 2020 and 07 October 2020, respectively.
09 March 2021	2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<p>The Scottish Ministers also advise that the Developer must adopt a clear position on whether they will be content for fishing to continue over cables within the Proposed Development. This position must be adopted prior to the fisheries displacement assessment so the implications from this can be included in the assessment</p> <p>If the Developer is content for fishing to continue over cables, then the Scottish Ministers advise that a practical overtrawlability study must be carried out in accordance with the recommendations of the MSS November Advice (from 19 November 2020).</p>	<ul style="list-style-type: none"> The Applicant is committed to facilitate co-existence between the Proposed Development and fishing activities. As described in section 12.11, it has been assumed that fishing will be able to continue within the Proposed Development array area and along the offshore export cables during the operation and maintenance phase. Cables will be buried to a minimum target depth of 0.5 m. Where sufficient burial cannot be achieved (i.e. due to hard grounds or at cable crossings) cable protection will be used. As described in Table 12.9, the location, extent and nature of the cable protection used will be shared with fisheries stakeholders. In areas where rock placement is required, consideration will be given to designs that reduce potential snagging risk with fishing gear to facilitate co-existence with mobile fisheries, particularly demersal trawling (i.e. use of graded rocks and berms designed with 1:3 gradients). Furthermore, post-lay and burial inspections surveys will be undertaken. In addition, assessments will be carried out to determine cable burial status (including cable protection) and to identify potential changes to seabed conditions. These would be aimed at facilitating co-existence with fishing and minimising snagging risk and associated loss or damage of fishing gear and safety issues.

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09 March 2021	2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> With regards to the Developer's proposed approach to assessing the potential effects on safety issues for fishing vessels, the Scottish Ministers agree with the representations from the SFF, NECRIFG together with the MSS November Advice (from 19 November 2020) and the MSS December Advice (16 December 2021) and advise that these effects must be considered and assessed separately from the Shipping and Navigation assessment relative to section 8.2 of the Scoping Report. This must include consideration of the risk of snagging fishing gear. 	<ul style="list-style-type: none"> Provisions for the measures above will be included in the outline FMMS which will be produced for the Proposed Development (see volume 4, appendix 24). Consideration has been given to the potential effects of snagging risk and associated loss and damage to fishing gear and safety issues in section 12.11.
09 March 2021	2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> In addition to the effects identified in Table 8.2 of the Scoping Report, the Scottish Ministers advise that impacts to the sale of fish and the supply chain must be considered and assessed in the Offshore EIA Report. This view is supported by the representation from SFF and the MSS December Advice (16 December 2021), whose comments should all be fully addressed within the Offshore EIA Report. 	<ul style="list-style-type: none"> Since the publication of the 2022 Scoping Opinion, the Applicant has engaged in multiple discussions with Marine Scotland and MAU to clarify the nature of this request. The Applicant was advised that MAU are developing a socio-economic toolkit, which could help (these have not been made available). Further, it is noted that, MAU did "<i>not wish to specify the methodology or data to be used as it is for the developer to consider what is needed.</i>" The Applicant has not able to undertake the assessment as requested but has ascertained no likely impact on supply chain. The justification for this is two-fold: <ul style="list-style-type: none"> in the absence of an established assessment framework, or any precedent or guidance any such assessment would be complex and unreliable, such that it would not result in a meaningful assessment; and as concluded in this chapter commercial fisheries will not be significantly affected by the Proposed Development, and this negates the need for an assessment of supply lines and socioeconomic effects. Given the social, economic and environmental variations that could influence the outcomes, any attempt for an integrated assessment of supply chains is expected to be complex and unreliable. The information required for the analysis (e.g. the number and diversity of relevant fisheries, their supply chains and resilience to unknown influences) would, if it existed, be widely dispersed and uneven. It is the Applicant's position that any such assessment would require the development of a complex assessment framework to process the data, and account for unpredictable factors such as human responses to change, environmental variations and external supply chain disruptions. In the absence of such a framework, any assessment would be so unreliable and would not result in a meaningful assessment. The commercial fisheries assessment (volume 2, chapter 12) considers impacts on commercial fisheries from reduced access to, or enhanced competition within fishing grounds. The commercial fisheries assessment does not identify any significant likely significant effects on fishers related to a loss of access to fishing grounds. It is further expected that cooperation agreements will be entered with affected individual fishers. It is therefore the Applicant's position that commercial fisheries will not likely be affected. With no significant impacts at source, there would be no significant manifestation of effects later in the supply chain.
09 March 2021	2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> In addition, the Scottish Ministers highlight the comments in the MSS November Advice (from 19 November 2020) regarding the provision of more detailed information for the decommissioning phase, in particular noting the potential safety hazard disused infrastructure left in the marine environment poses to commercial fishing. 	<ul style="list-style-type: none"> At the end of the operational lifetime of the Proposed Development, jacket (pin pile) substructures will be cut at an agreed depth below the level of the seabed for partial removal and jacket (suction caisson) foundations will be fully removed. All cables will be removed where it is possible and appropriate to do so and cable protection will be fully removed where it is possible and appropriate to do so noting this will depend on the type of protection used and condition of the protection at the time of removal. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment. The decommissioning plan and programme will be updated during the Project lifespan to take account of changing best practice and new technologies. It may be decided, closer to the time of decommissioning, that removal will result in greater environmental impacts than leaving offshore components <i>in situ</i>. Consideration has been given to the potential impact of infrastructure being left <i>in situ</i> as part of the assessment of gear snagging risk during the decommissioning phase.
09 March 2021	2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> With regards to cumulative impacts, the Scottish Ministers advise that the Developer must consider and assess the in combination effects from potential fisheries management measures within the overlapping proposed management area of the Firth of Forth Complex ncMPA together with any displacement, restriction of access or complete loss of fishing areas due to the Proposed Development. 	<ul style="list-style-type: none"> The assessment of cumulative effects includes consideration of the fisheries management measures currently proposed within the Firth of Forth Banks Complex MPA.

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09 March 2021	2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> The Scottish Ministers advise that in identifying appropriate mitigation measures, the Developer must consider the different types of fishing that takes place within the Proposed Development 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 Developer 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. 	<ul style="list-style-type: none"> Consideration has been given throughout the assessment to the different types of activities that take place within the Proposed Development and a range of designed in measures have been proposed to minimise impacts on commercial fisheries. There are also referred to in the Outline FMMS (see volume 4, appendix 24). The assessment presented in section 12.11 has identified impacts on commercial fisheries not exceeding minor significance, and therefore no additional mitigation measures have been proposed. Consultation with the fishing industry is ongoing and will continue post-consent, including throughout the development of the FMMS that will be submitted post-consent. The significance of impacts in EIA terms is clearly set out in section 12.11.
09 March 2021	2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> In addition, the Scottish Ministers emphasise the importance of engaging with the fishing industry throughout the application process and highlight the comments from NECRIFG regarding consultation on the cable landfall site or sites. The Scottish Ministers recommend the use of the Developer's proposed 'Road Map' process in considering this factor further. This should include agreement on the fisheries displacement assessment and the practical overtrawlability study. 	<ul style="list-style-type: none"> Consultation with the fishing industry is ongoing through the FLO and will continue throughout the application and post -application phase. Details on the consultation undertaken to date are provided in section 12.5 and section 12.6.2. This has included significant engagement with the NECRIFG and local FIRs and fishermen, including discussions with regard to the landfall options and the fishing activities undertaken. Consideration has been given to loss of access to fishing grounds and associated displacement within assessment. The Applicant notes that MSS guidance for assessing fisheries displacement was published 30 June 2022 and has been considered in this chapter. The assessment is also supported with evidence of fishing within existing operational wind farms in the UK. As described in Table 12.9, the location, extent and nature of the cable protection used will be shared with fisheries stakeholders. In areas where rock placement is required, consideration will be given to designs that reduce potential snagging risk with fishing gear to facilitate co-existence with mobile fisheries, particularly demersal trawling (i.e. use of graded rocks and berms designed with 1:3 gradients). Furthermore, post-lay and burial surveys will be undertaken and rectification works where appropriate and practicable. Assessments will be undertaken to determine cable burial status (including cable protection) and identify potential changes to seabed conditions. Findings would be shared with the fishing industry to discuss requirements for any further surveys. These would be aimed at facilitating co-existence with fishing and minimising snagging risk and associated loss or damage of fishing gear and safety issues. Provisions for the measures above will be included in the FMMS which will be produced for the Proposed Development (see volume 3, appendix 24) and consulted with fisheries stakeholders.
07 September 2020	SFF - 2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> The embedded mitigation does not adequately compensate for any temporary loss or restricted access, during either construction or operation, so it should be scoped in. Similarly, the embedded mitigation does not address displacement, so should be scoped in. The SFF would like to see any numerical modelling backed up by up to date science. 	<ul style="list-style-type: none"> Designed in measures of relevance to commercial fishing are outline in Table 12.9. All potential impacts identified in the scoping report have been scoped in for assessment. This includes the assessment of loss or restricted access to fishing grounds as well as displacement. No numerical modelling has been undertaken in support of this chapter.
07 September 2020	SFF - 2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> Safety issues must be recognised as the fishing industry's biggest concern about the introduction of infrastructure to the Marine Environment. This is a completely different slant to the Shipping and Navigation assessment and should be scoped in its own right. 	<ul style="list-style-type: none"> Consideration has been given to the potential effects of snagging risk and associated loss and damage to fishing gear and safety issues in section 12.11.
07 September 2020	SFF - 2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> No, this does not cover the sale of fish and the supply chain which will be impacted. 	<ul style="list-style-type: none"> The commercial fisheries assessment (volume 2, chapter 12) considers impacts on commercial fisheries from reduced access to, or enhanced competition within fishing grounds. The commercial fisheries assessment does not identify any significant likely effects on fishers related to a loss of access to fishing grounds. It is further expected that a financial compensation would likely negate financial impacts to individual fishers. It is therefore the Applicant's position that commercial fisheries will not likely be affected. With no significant impacts at source, there would be no significant manifestation of effects later in the supply chain. Socio-economic effects of the Proposed Development, including those of relevance to fishing communities, are discussed in volume 2, chapter 18.
07 October 2020	NECRIFG - 2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> Both displacement, restricted access and complete loss of fishing areas is of concern to the inshore fleet. It is 	<ul style="list-style-type: none"> Consideration has been given to relevant aspects under the assessment of long-term loss of access to fishing grounds during the operation and maintenance phase in section 12.11. The assessment is also supported with evidence of fishing within existing operational wind farms the UK.

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07 October 2020	NECRIFG - 2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<p>essential that these issues are within the scope of the application.</p> <ul style="list-style-type: none"> Safety at sea is of paramount importance particularly when fishing activities may be compromised by developments within the marine environment. 	<ul style="list-style-type: none"> In addition, the potential impact of displacement of fishing activities into other areas has also been assessed in the section 12.11. Consideration has been given to the potential effects of snagging risk and associated loss and damage to fishing gear and safety issues in section 12.11.
07 October 2020	NECRIFG - 2020 Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> The overall consensus is the request to ensure that the Inshore fleet's interests and input are considered at each stage of the application process. With regards to Section 1 (proposed export cable corridor) - I would ask that the inshore fleet are fully consulted on the landfall site to ensure that the least amount of disruption or exclusion is caused. It seems as though this decision-making process has already begun so I urge you to engage to ensure you have the best information. 	<ul style="list-style-type: none"> Consultation with the fishing industry is ongoing through the FLO and will continue throughout the application and post -application phase. Details on the consultation undertaken to date are provided in section 12.5 and section 12.6.2. This has included significant engagement with the NECRIFG and local FIRs and fishermen.
05 February 2021	MSS Advice (19 November 2020) referenced in Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> In terms of using 2018 landings data by ICES rectangle, MSS recommend using data for the last five years to add strength to the assessment and identify any trends in the activity. MSS highlight that finalised Scottish Government fisheries statistics for 2019 were published in October 2020 and therefore MSS recommend using the most up-to-date statistics. Please note that the format of the statistics has changed and from 2019 onwards, these will be published in .csv format and made available through the Marine Scotland Data page: https://data.marine.gov.scot/group/fisheries. The 2019 finalised statistics (which include finalised statistics for 2015 - 2019) are available on the following web page (doi: 10.7489/12338-1): https://data.marine.gov.scot/dataset/2019-scottish-sea-fisheries-statistics-fishing-effort-and-quantityand-value-landings-ices Historical statistics are also still available on the following web page: https://www2.gov.scot/Topics/Statistics/Browse/Agriculture-Fisheries/RectangleData 	<ul style="list-style-type: none"> Noted. 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 (2000 to 2019) has been analysed. Whilst data for 2020 is currently available, this is not considered representative of normal fishing activities due to the COVID-19 pandemic. As such, this data has not been included in the commercial fisheries assessment. The exclusion of 2020 data from the assessment was agreed with fisheries stakeholders during the consultation meeting held on 16 November 2022.

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05 February 2021	MSS Advice (19 November 2020) referenced in Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> MSS agree with the potential impacts which have been identified for commercial fisheries however MSS have some further points for consideration. In terms of embedded mitigation, MSS recommends consideration of the types of fishing that takes place in the area, their minimum operating space requirements (deploying and hauling gear) and vessel manoeuvrability and factor this into wind farm layout, configuration and wind turbine spacing from an early design process stage. For example, ensuring wind turbine spacing is at least 800 m to 1000 m to allow fishing activity to continue after construction of the wind farm and to encourage coexistence between the marine users and industries. MSS also recommends that a fisheries displacement assessment is carried out to estimate any displacement levels. This assessment should include but not be limited to consideration of minimum operating space requirements for the range of fishing activities (deploying and hauling gear), vessel manoeuvrability and overtrawlability of cables. 	<ul style="list-style-type: none"> Consideration has been given to relevant aspects under the assessment of long-term loss of access to fishing grounds during the operation and maintenance phase in section 12.11. The Applicant notes that MSS guidance for assessing fisheries displacement was published 30 June 2022 and has been considered in this chapter. The assessment is also supported with evidence of fishing within existing operational wind farms the UK. In addition, the potential impact of displacement of fishing activities into other areas has also been assessed in section 12.11.
05 February 2021	MSS Advice (19 November 2020) referenced in Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> If the developer is content with fishing to continue over cables, then MSS would expect a practical overtrawlability study to be carried out using local vessels and gear to test the safe use of fishing gear and to minimise, as far as reasonably practicable, the risks of fishing gear snagging on cables. 	<ul style="list-style-type: none"> The Applicant is committed to facilitate co-existence between the Proposed Development and fishing activities. As described in section 12.11, it has been assumed that fishing will be able to continue within the Proposed Development array area and along the offshore export cables during the operation and maintenance phase. Cables will be buried to a minimum depth of 0.5 m. Where sufficient burial cannot be achieved (i.e. due to hard grounds or at cable crossings) cable protection will be used. As described in Table 12.9, the location, extent and nature of the cable protection used will be shared with fisheries stakeholders. In areas where rock placement is required, consideration will be given to designs that reduce potential snagging risk with fishing gear to facilitate co-existence with mobile fisheries, particularly demersal trawling (i.e. use of graded rocks and berms designed with 1:3 gradients). Furthermore, post-lay and burial inspections surveys will be undertaken. In addition, assessments will be carried out to determine cable burial status (including cable protection) and to identify potential changes to seabed conditions. These would be aimed at facilitating co-existence with fishing and minimising snagging risk and associated loss or damage of fishing gear and safety issues. Furthermore, post-lay and burial surveys will be undertaken and rectification works where appropriate and practicable. Assessments will be undertaken to determine cable burial status (including cable protection) and identify potential changes to seabed conditions. Findings would be shared with the fishing industry to discuss requirements for any further surveys. Provisions for the measures above will included in the FMMS which will be produced for the Proposed Development and consulted with fisheries stakeholders. An outline FMMS is provided with the Application (see volume 3, appendix 24).
05 February 2021	MSS Advice (19 November 2020) referenced in Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> Agree, the risk of snagging fishing gear is not a concern for shipping and navigation and should be reviewed separately rather than as part of the shipping and navigation assessment. 	<ul style="list-style-type: none"> Consideration has been given to the potential effects of snagging risk and associated loss and damage to fishing gear and safety issues in section 12.11.

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05 February 2021	MSS Advice (19 November 2020) referenced in Berwick Bank Scoping Opinion (MS-LOT, 2021)	<ul style="list-style-type: none"> Agree, sale of fish and the supply chain should be included in assessments. 	<ul style="list-style-type: none"> Since the publication of the 2022 Scoping Opinion, the Applicant has engaged in multiple discussions with Marine Scotland and MAU to clarify the nature of this request. The Applicant was advised that MAU are developing a socio-economic toolkit, which could help (these have not been made available). Further, it is noted that, MAU did <i>“not wish to specify the methodology or data to be used as it is for the developer to consider what is needed.”</i> The Applicant has not able to undertake the assessment as requested but has ascertained no likely impact on supply chain. The justification for this is two-fold: <ul style="list-style-type: none"> in the absence of an established assessment framework, or any precedent or guidance any such assessment would be complex and unreliable, such that it would not result in a meaningful assessment; and as concluded in this chapter commercial fisheries will not be significantly affected by the Proposed Development, and this negates the need for an assessment of supply lines and socioeconomic effects. Given the social, economic and environmental variations that could influence the outcomes, any attempt for an integrated assessment of supply chains is expected to be complex and unreliable. The information required for the analysis (e.g. the number and diversity of relevant fisheries, their supply chains and resilience to unknown influences) would, if it existed, be widely dispersed and uneven. It is the Applicant’s position that any such assessment would require the development of a complex assessment framework to process the data, and account for unpredictable factors such as human responses to change, environmental variations and external supply chain disruptions. In the absence of such a framework, any assessment would be so unreliable and would not result in a meaningful assessment. The commercial fisheries assessment (volume 2, chapter 12) considers impacts on commercial fisheries from reduced access to, or enhanced competition within fishing grounds. The commercial fisheries assessment does not identify any significant likely significant effects on fishers related to a loss of access to fishing grounds. It is further expected that cooperation agreements will be entered with affected individual fishers. It is therefore the Applicant’s position that commercial fisheries will not likely be affected. With no significant impacts at source, there would be no significant manifestation of effects later in the supply chain.

12.6. METHODOLOGY TO INFORM BASELINE

14. The commercial fisheries baseline has been informed through the review and analysis of available fisheries data and information from relevant publications. In addition, consultation with local fisheries stakeholders has been carried out to aid the collection of baseline information.
15. The information collected via the desktop study and consultation with fisheries stakeholder has been compiled into volume 3, appendix 12.1 with a summary provided in section 12.6.2 within this chapter.

12.6.1. DESKTOP STUDY

16. Information on commercial fisheries within the commercial fisheries study area was collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 12.4.

Table 12.4: Summary of Key Fisheries Data and Information

Dataset	Year	Coverage	Notes and Limitations
Landings Data by ICES Rectangle, Marine Management Organisation (MMO)	2010 - 2019	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 live weight (value (£)).	<ul style="list-style-type: none"> Landings data by ICES rectangle are available for areas of relevance to the proposed Development from both the MMO and Marine Scotland. Although the landings datasets provided by both are the same, the format in which the dataset is provided by the MMO allows a more detailed analysis of information and has therefore been used in the assessment (i.e. data can be filtered for a given method by species, etc). 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 (2000 to 2019) has been analysed. It should be noted that fishing is normally not equally distributed across the whole 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 Proposed Development is located supports.
Fisheries Surveillance Sightings (MMO and Marine Scotland)	2011 – 2020	Surveillance sightings of vessels by gear type (all nationalities) recorded in UK waters by surveillance patrols	<ul style="list-style-type: none"> Only sightings of vessels recorded as “fishing” have been included in the analysis. 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 should be noted, however that surveillance patrols are not carried out at constant time intervals and that the level of surveillance effort may vary significant between years.
Fishing Activity for UK Vessels 15 m and over Data layers (MMO)	2015 - 2019	Satellite tracking data (VMS) pings recorded in 0.05° by 0.05° grids from UK vessels in UK and European waters. VMS data combined with log book data with values assigned to each cell in the grid in terms of effort and value (£)	<ul style="list-style-type: none"> This type of data is only available for vessels over 15 m in length. Data has been analysed by value (£) and presented as an annual average for the period 2015-2019. Fishing gear categories used in the dataset do not allow to distinguish activity between some fisheries (i.e. demersal trawls/seines gear category doesn't separate activity by demersal trawlers engaged in the <i>Nephrops</i> fishery from those targeting squid).
Amalgamated VMS intensity layers (Kafas <i>et al.</i> , 2013)	2009 - 2013	VMS data for all UK commercial fishing vessels over 15 m in length combined with landings information to develop GIS layers describing spatial patterns of landings of the Scottish offshore fleet from within the Scottish zone of the UK Fishing Limits (200 nm). Data layers are separated by individual species/fisheries	<ul style="list-style-type: none"> Dataset has been used in this report to illustrate the distribution of the over 15 m in length vessels engaged in the squid fishery. Dataset covers information for the period 2009 to 2013 and therefore may not be fully representative of current activities.
ScotMap - Inshore Fisheries Mapping Project in Scotland (Kafas <i>et al.</i> , 2014)	2007 – 2011	Spatial information on the fishing activity of Scottish-registered commercial fishing vessels under 15 m in length. The data were collected during face-to-face interviews with individual vessel owners and operators and relate to fishing activity for the period 2007 to 2011. Interviewees were asked to identify the areas in which they fish, and to provide associated information on their fishing vessel, species targeted, fishing gear used and income from fishing.	<ul style="list-style-type: none"> Monetary value (£) maps have been used to inform this report. The information provided in this dataset is based on information gathered via interviews with a sample of fisheries stakeholders and therefore is not necessarily representative of the views of all stakeholders. In addition, the data was collected between 2007 and 2011 and may therefore not be fully representative of current activities.
Creel Fishing Effort Study (Marine Scotland, 2017)	2015 – 2017	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.	<ul style="list-style-type: none"> The maps produced as part of the study provide information on the average number of crab and lobster hauls per day per 4 km². 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.
Scottish White Fish Producers Association Gear Locations (SWFPA, 2022)	2021-2022	Locations of static gear provided voluntarily by fishermen to help avoid conflict with towed gear fisheries.	<ul style="list-style-type: none"> Provides an indication of areas where creels are deployed. The lack of data in a given area, however, does not imply absence of creeling activity.
VMS Fishing Intensity for <i>Nephrops</i> and crustaceans (Marine Scotland)	2009 - 2017	ICES Secretariat has collected relevant VMS and logbook data to produce, as a technical service to OSPAR, updated spatial data layers on fishing intensity/pressure. Improved data quality control checks were implemented. This is a Marine Scotland aggregated version displaying fishing for <i>Nephrops</i> and crustaceans with bottom trawls.	<ul style="list-style-type: none"> The data is specifically focused on vessels engaged in demersal trawling for <i>Nephrops</i>. Only vessels 15 m and over are included in the dataset.
Mapping fisheries and habitats in the NERIFG area	2009 - 2019	Report produced for the NERIFG aimed at compiling available information on fishing activity (location, landings, and value) and important habitat information for key species to create a series of maps for integration in the NERIFG management plan.	<ul style="list-style-type: none"> The study reviews a number of available fisheries data sources of relevance to the NERIFG (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.

12.6.2. CONSULTATION TO INFORM THE BASELINE

17. In addition to the review and analysis of publicly available fisheries data and information described in section 12.6.1, the commercial fisheries baseline has been informed through the collection of information from local fishermen active in the commercial fisheries study area.
18. An initial consultation meeting was held between the Applicant and the SFF, NECRIFG, the Under 10 m Association and local FIRs to discuss the commercial fisheries baseline in the commercial fisheries study area and the key concerns of the fishing industry with regard to the Proposed Development (Consultation meeting, 16 November 2021). During this meeting the limitations of the fisheries data and information that are publicly available were acknowledged, particularly with regard to vessels in the smaller length categories, as these are not currently satellite tracked (i.e. not included in the VMS dataset). To address these data limitations, the Applicant had initially proposed to carry out direct face to face consultation with local fishermen and fisheries organisations via the FLO using standard questionnaires. The fisheries stakeholders that participated in the meeting on the 16 November 2021, however, requested for this consultation to be carried by the local FIRs instead. To facilitate this, the Applicant provided local FIRs with consultation questionnaires for distribution amongst their members.
19. Early feedback provided by FIRs indicated that the collection of baseline information from their members via questionnaires was challenging within the timescales required by the Offshore EIA Report programme considering the time availability and other work commitments of both FIRs and fishermen. To address this issue, the Applicant offered the assistance of the FLO to FIRs for the distribution and collection of questionnaires and extended the deadlines for submission of questionnaires to maximise participation.
20. Questionnaires were initially distributed to FIRs, SFF and the Scottish White Fish Producers Association (SWFPA) on 9th December 2021 for circulation amongst their members. Consultees were asked to return completed questionnaires by 09 January 2022. The deadline to submit questionnaires was then subsequently extended to 31 January 2022. Late responses received up to 09 March 2022 have however been given consideration.
21. Two of the local FIRs (Eyemouth and Dunbar) noted that their members were not comfortable completing the questionnaires at this early stage. This was due to concerns over the use of the information they provide. These FIRs requested meetings with the Applicant for clarification and further information. Meetings were organised by the Applicant at Dunbar and Eyemouth on 31 January 2022 and 24 February 2022 respectively. Following these meetings, some of the attendees completed and returned questionnaires.
22. Some of the fishermen potentially active in areas of the Proposed Development are not represented by local FIRs, particularly nomadic scallop dredgers and visiting squid trawlers. To ensure that these vessels were also covered as part of the consultation process, both the Moray Firth squid and scallop FIRs were contacted by the FLO directly and via the SWFPA through the SFF. In addition, at the time the consultation was undertaken, there was no local FIR covering the areas of Arbroath and Montrose, therefore consultation with local vessels from these areas was undertaken directly by the FLO.
23. Following the consultation process, a total of 53 completed questionnaires were received. This included 43 creelers and ten demersal trawlers. One of the demersal trawlers that completed the questionnaire, also provided details of inshore scallop grounds. The majority of questionnaires were completed by local vessels. No questionnaires were returned by nomadic scallop dredgers and only one questionnaire was returned by a visiting squid trawler. It should be noted that nomadic scallop dredgers and visiting squid vessels tend to be in the larger size category (i.e. over 15 m in length) and therefore the spatial distribution of their activity is well represented by the available VMS data.
24. The information collected via questionnaires has been integrated in the baseline characterisation as appropriate and is described in detail in volume 3, appendix 12.1.

12.7. BASELINE ENVIRONMENT

12.7.1. OVERVIEW OF BASELINE ENVIRONMENT

25. The commercial fisheries study area supports a range of commercial fishing activities. Analysis of landings values and surveillance sightings indicates that the main fishing activity is demersal trawling, predominantly for *Nephrops* and to a much lesser extent squid, followed by creeling for lobster and crab, and dredging for scallops (Figure 12.2, Figure 12.3 and Figure 12.4). Vessels active in the commercial fisheries study area are predominantly UK registered vessels. As described in volume 3, appendix 12.1, activity by non-UK vessels in the Proposed Development is expected at negligible levels.
26. Activity by demersal trawlers concentrates inshore within the 6 nm limit (Figure 12.2) with the highest landings values recorded in ICES rectangles 41E7 and 40E7 (Figure 12.3). Landings of lobster and crab by creelers are also higher in these two inshore rectangles (Figure 12.4 and Figure 12.3).
27. Activity by scallop dredgers occurs primarily in ICES rectangle 41E8, which overlaps the Proposed Development array area, with comparatively low activity taking place in inshore rectangles 40E7 and 41E7 (Figure 12.2 and Figure 12.3).
28. A summary of the commercial fisheries baseline in the commercial fisheries study area is given in the following sections for each of the identified key fisheries:
 - demersal trawling- *Nephrops* and squid fisheries;
 - creeling -Lobster and crab fishery; and
 - dredging -Scallop fishery.
29. More detailed information on fishing activities, including fishing methods, operating practices and further analysis of available fisheries data and information is included in volume 3, appendix 12.1.

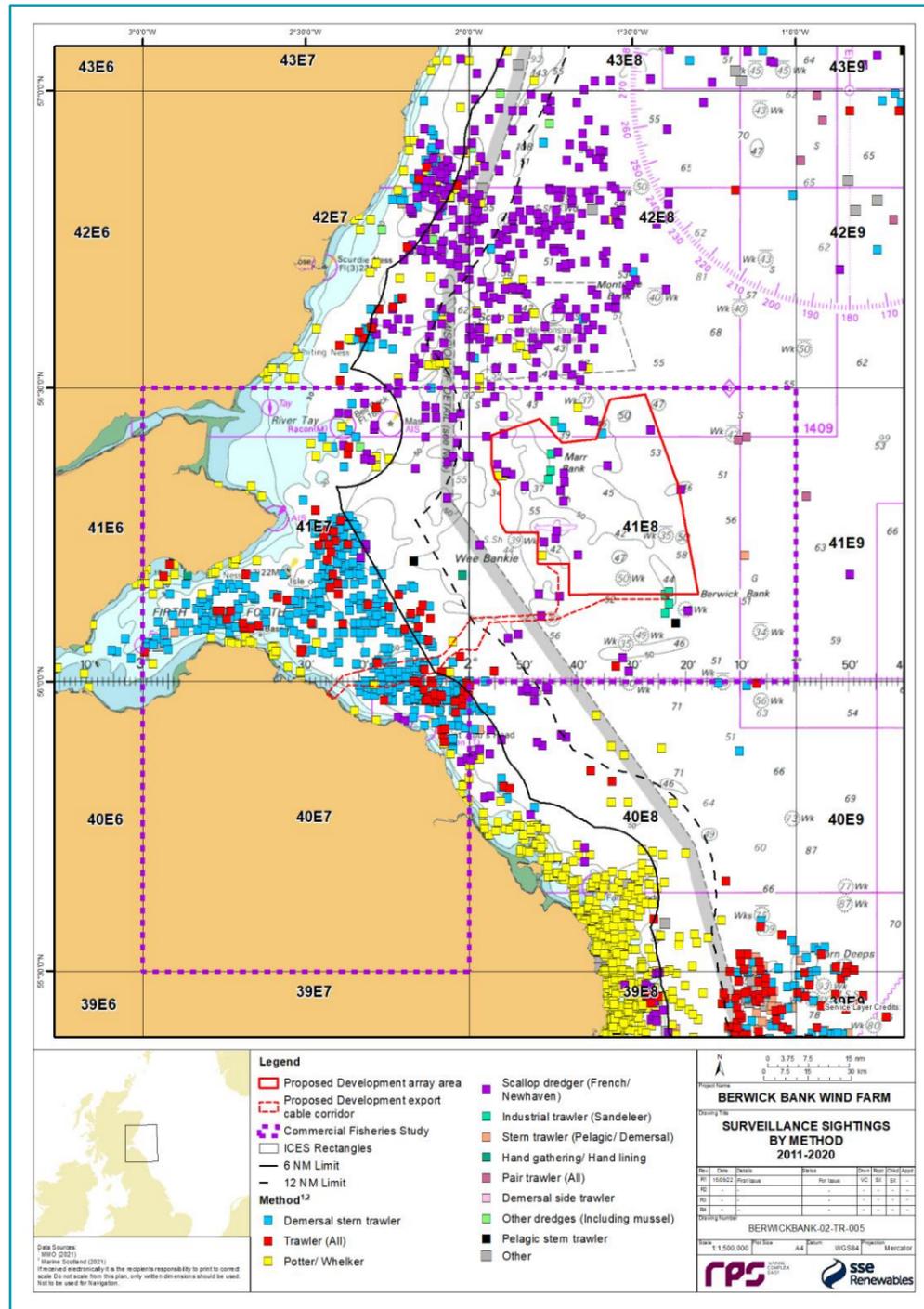


Figure 12.2: Surveillance Sightings by Method (2011 – 2020) (Source: MMO and Marine Scotland via Data Request on an Annual Basis, the Datasets are Explained in Summary of Key Fisheries Data and Information)

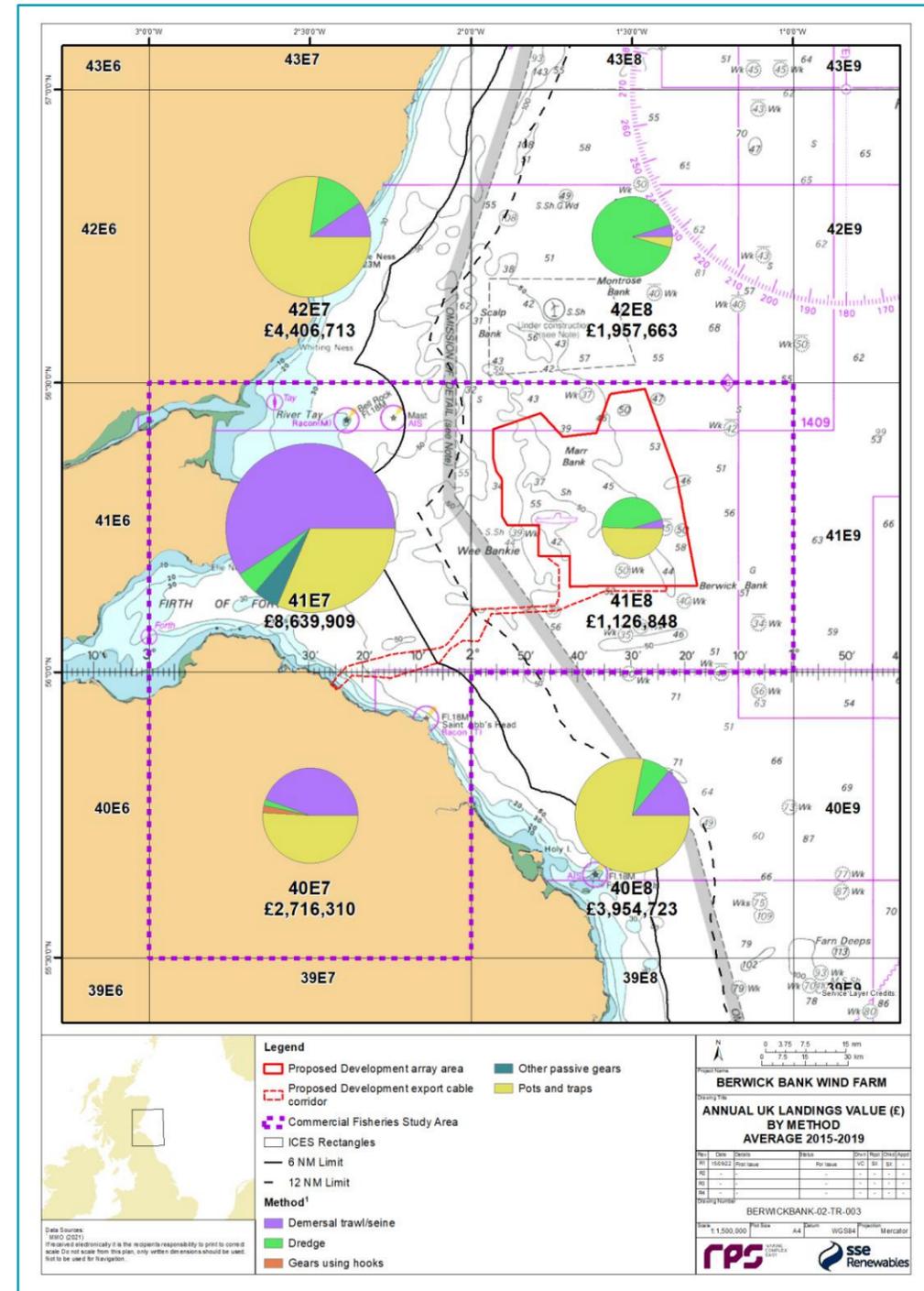


Figure 12.3: Annual UK Landings Value (£) by Method (Average 2015 – 2019) (Source: MMO)

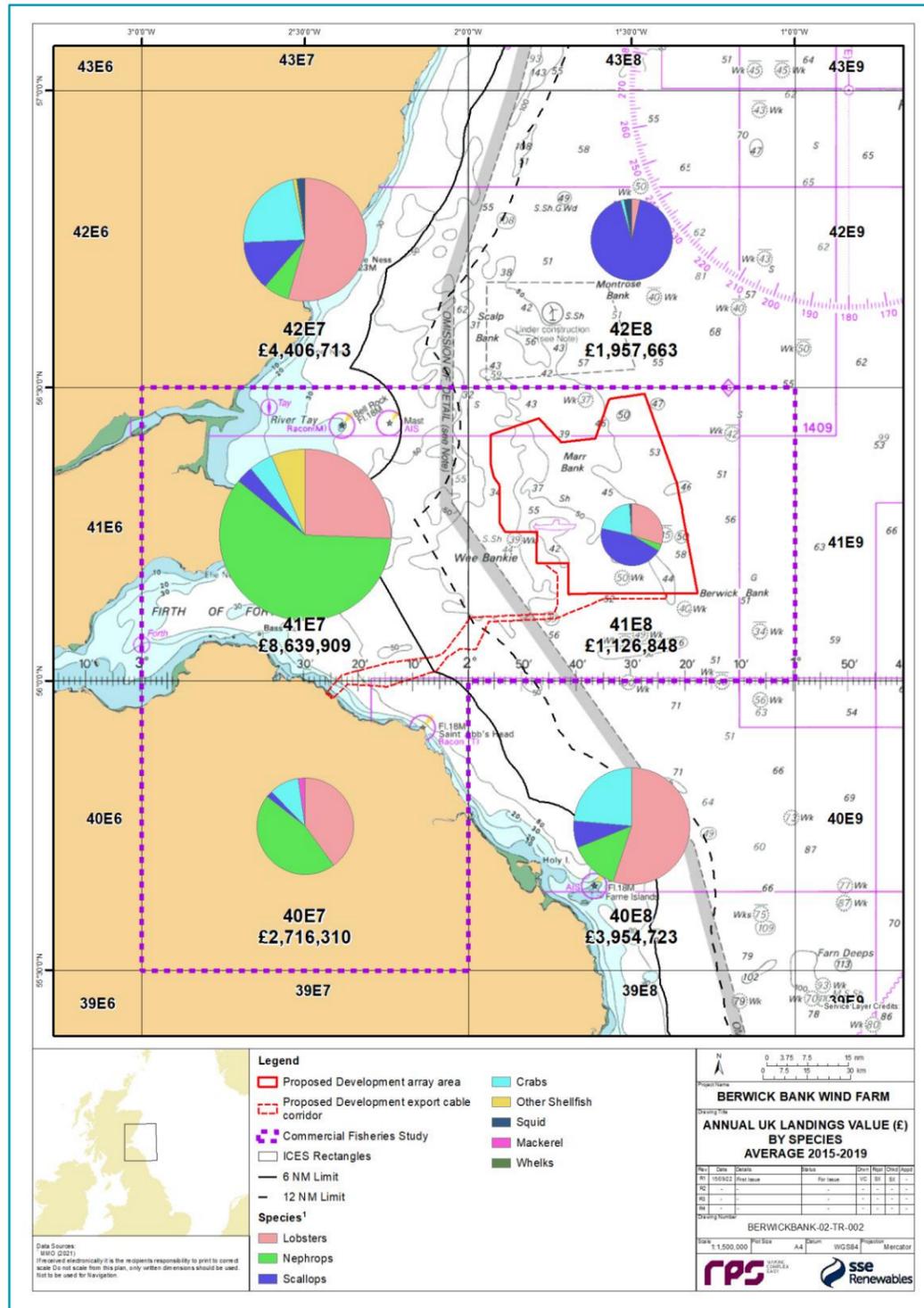


Figure 12.4: Annual Landings Values (£) by Species (Average 2015 – 2019) (Source: MMO)

12.7.2. DEMERSAL TRAWLING – NEPHROPS AND SQUID FISHERY

30. Demersal trawlers active in areas of relevance to the Proposed Development are typically between 10 m and 20 m in length and predominantly use twin rig demersal trawls to target *Nephrops* and single rig trawls to target squid (volume 3, appendix 12.1).
31. An indication of the distribution of fishing by demersal trawlers based on surveillance sightings, VMS data and information collected in Shelmerdine and Mouat (2021), is given in Figure 12.5 to Figure 12.7. As shown, the distribution of activity for the most part concentrates within the 12 nm limit and predominantly within the 6 nm limit and overlaps with the inshore section of the Proposed Development export cable corridor. Activity by demersal trawlers within the Proposed Development array area is expected at very low levels.

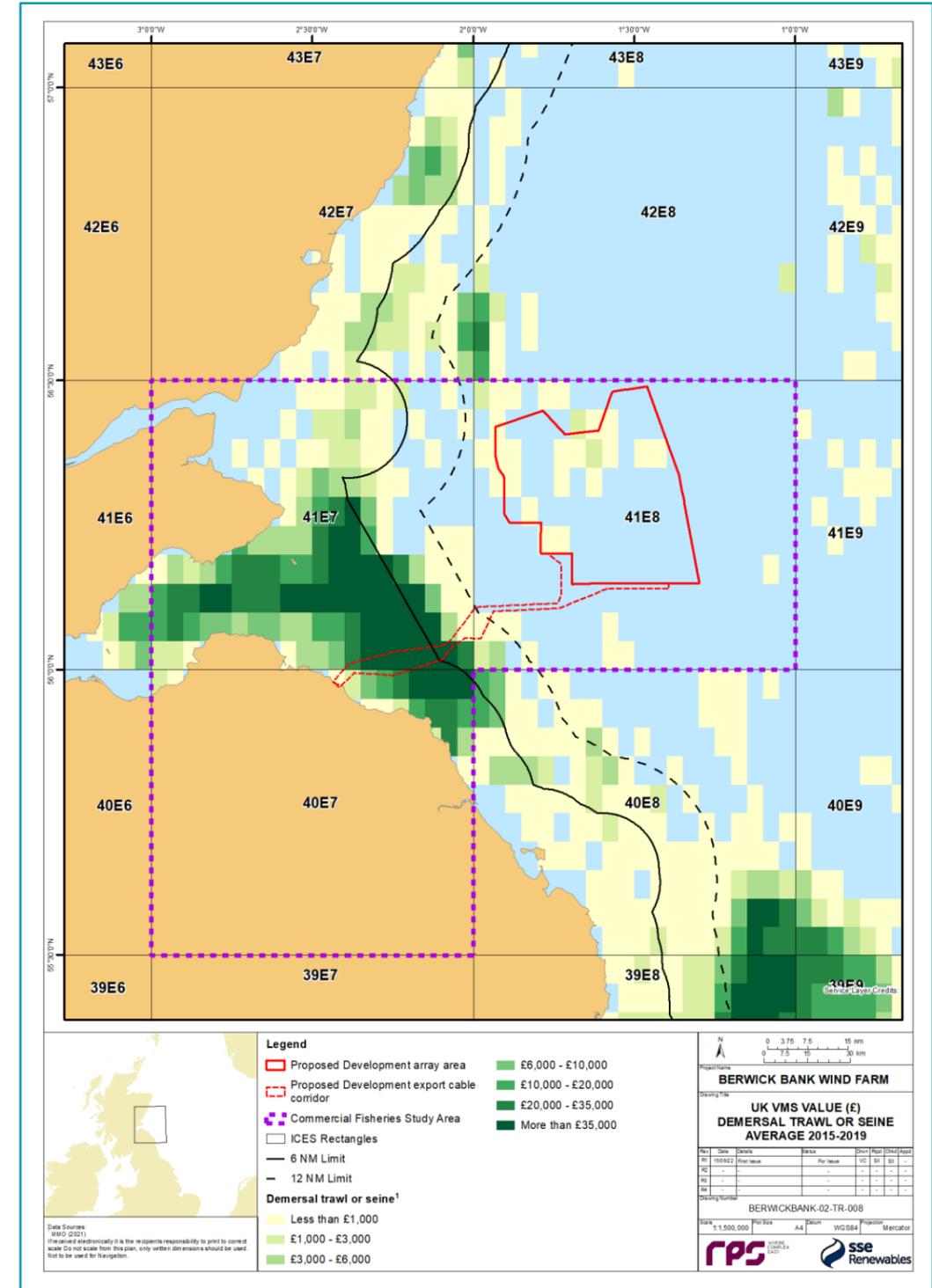
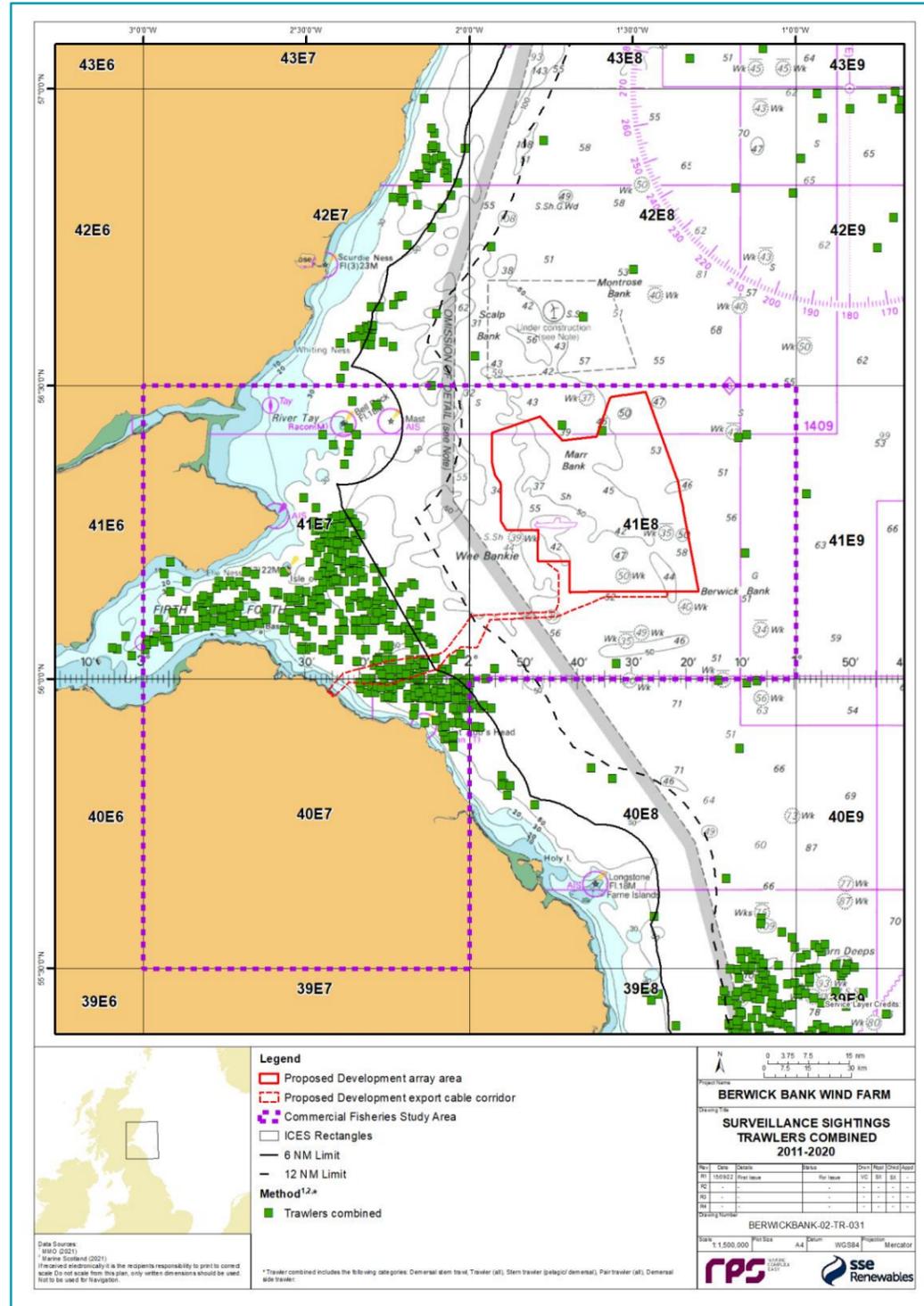


Figure 12.5: Surveillance Sightings of Trawlers (2011 to 2020) (Source: MMO and Marine Scotland)

Figure 12.6: VMS Value (£) Demersal Trawl/Seine (Average 2015 – 2019) (Source: MMO)

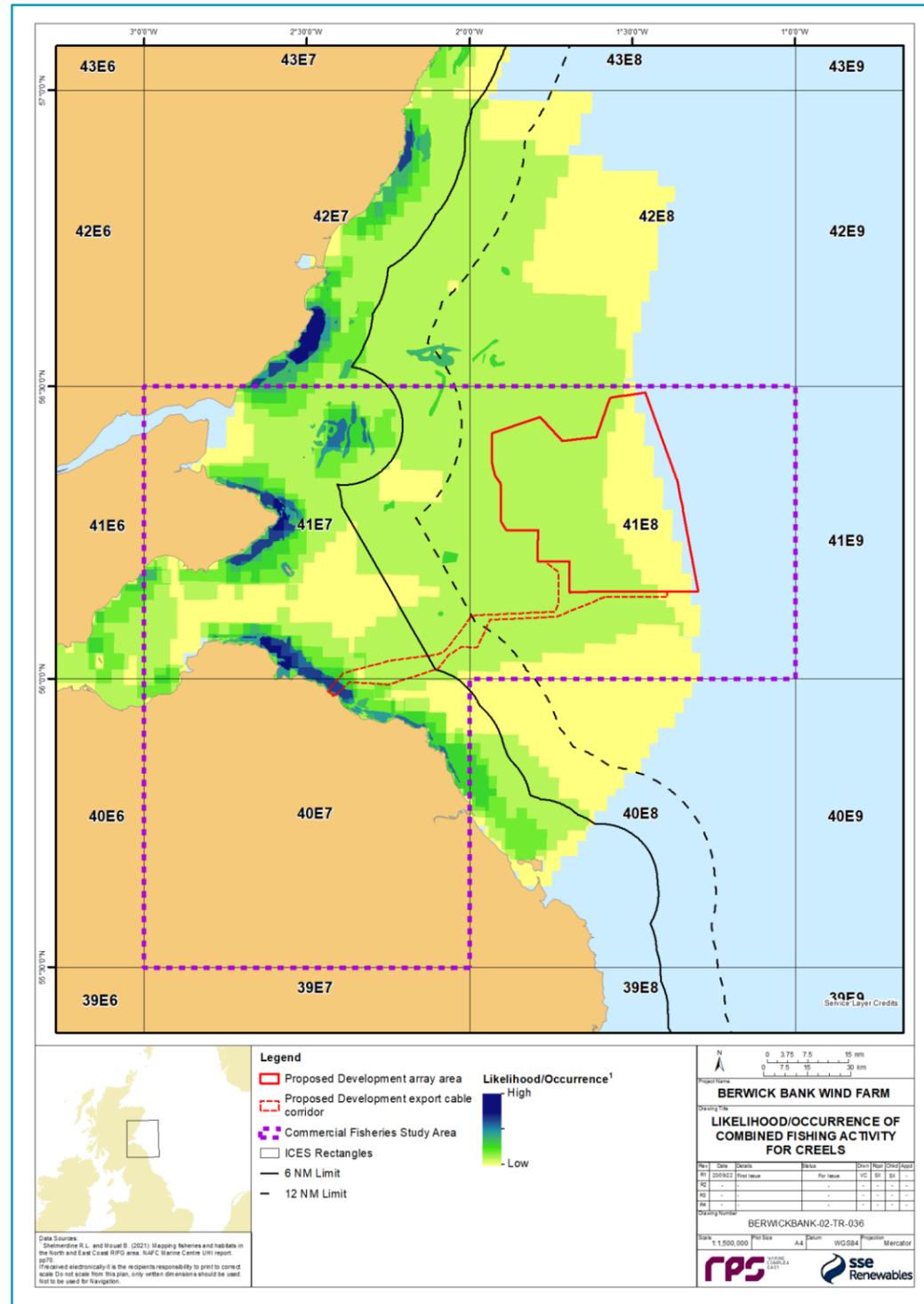


Figure 12.7: Combined Fishing Activity of Trawls (Shelmerdine and Mouat, 2021)

Nephrops fishery

32. Demersal trawlers engaged in the *Nephrops* fishery concentrate their activity in the commercial fisheries study area in ICES rectangles 41E7 and 40E7, within sectors of suitable muddy substrate including the inshore section of the Proposed Development export cable corridor (Figure 12.8 to Figure 12.11). Activity occurs at highest intensities in grounds located within the 6 nm limit in the area coinciding with the presence of *Nephrops* preferred habitat.
33. The level of overlap between the Proposed Development export cable corridor and defined *Nephrops* habitat is however relatively small (approximately 31.4 km², which represents approximately 3.2% of the overall *Nephrops* habitat identified in the Firth of Forth *Nephrops* FU) (Figure 12.9). Negligible activity levels are expected within the Proposed Development array area (Table 12.10).
34. *Nephrops* are targeted all year-round. However, in the commercial fisheries study area, highest landings values tend to be recorded in the summer from June to August, typically peaking in July. Relatively high landings values are also recorded from November to January (Figure 12.12). Similarly, during consultation with fisheries stakeholders, the year-round nature of the fishery was noted and the periods between May to July and October to January were reported as the main fishing season in the Firth of Forth and in grounds off Dunbar, respectively (volume 3, appendix 12.1).

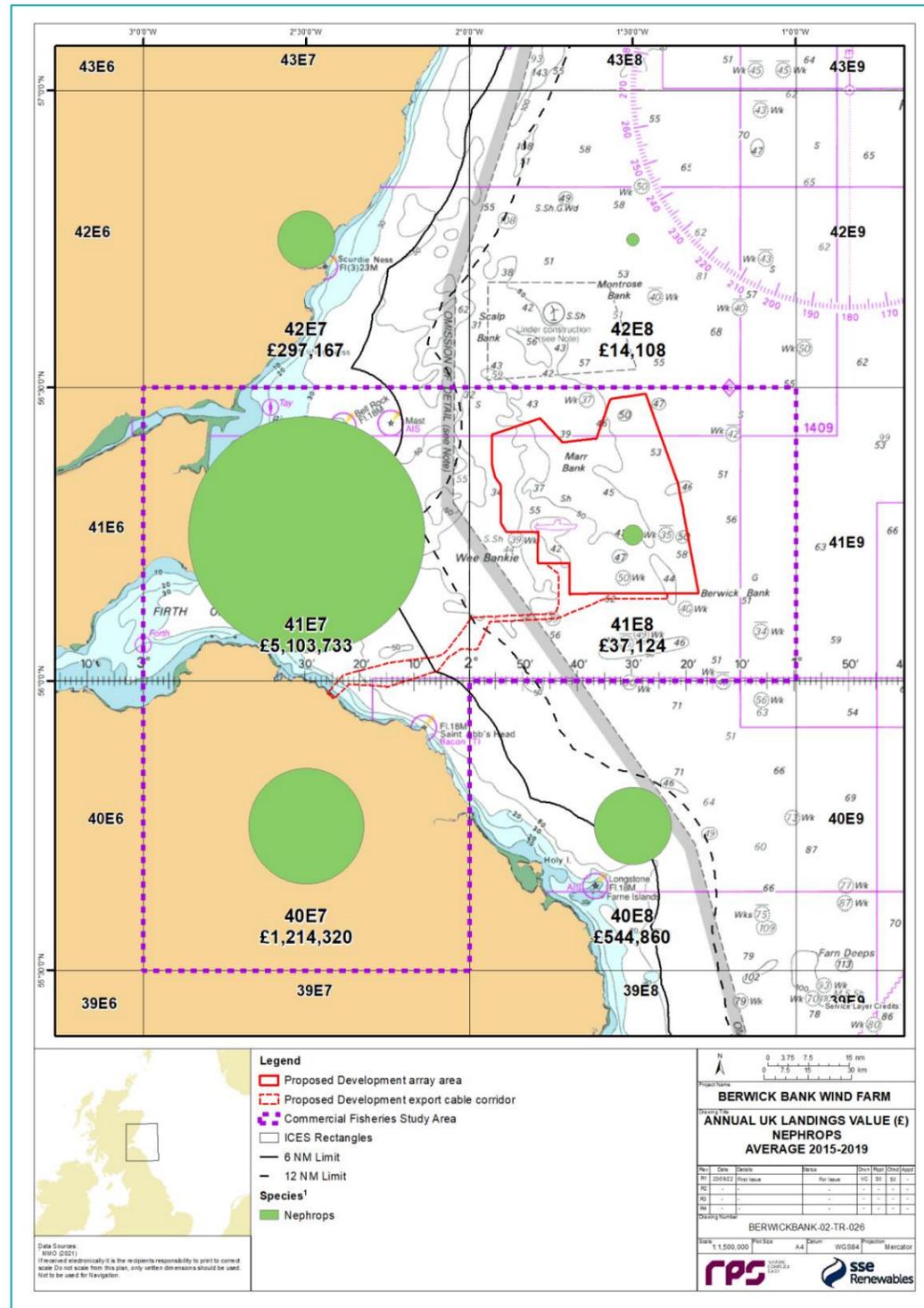


Figure 12.8: Nephrops Landings (Annual Average 2015 -2019) (Source: MMO)

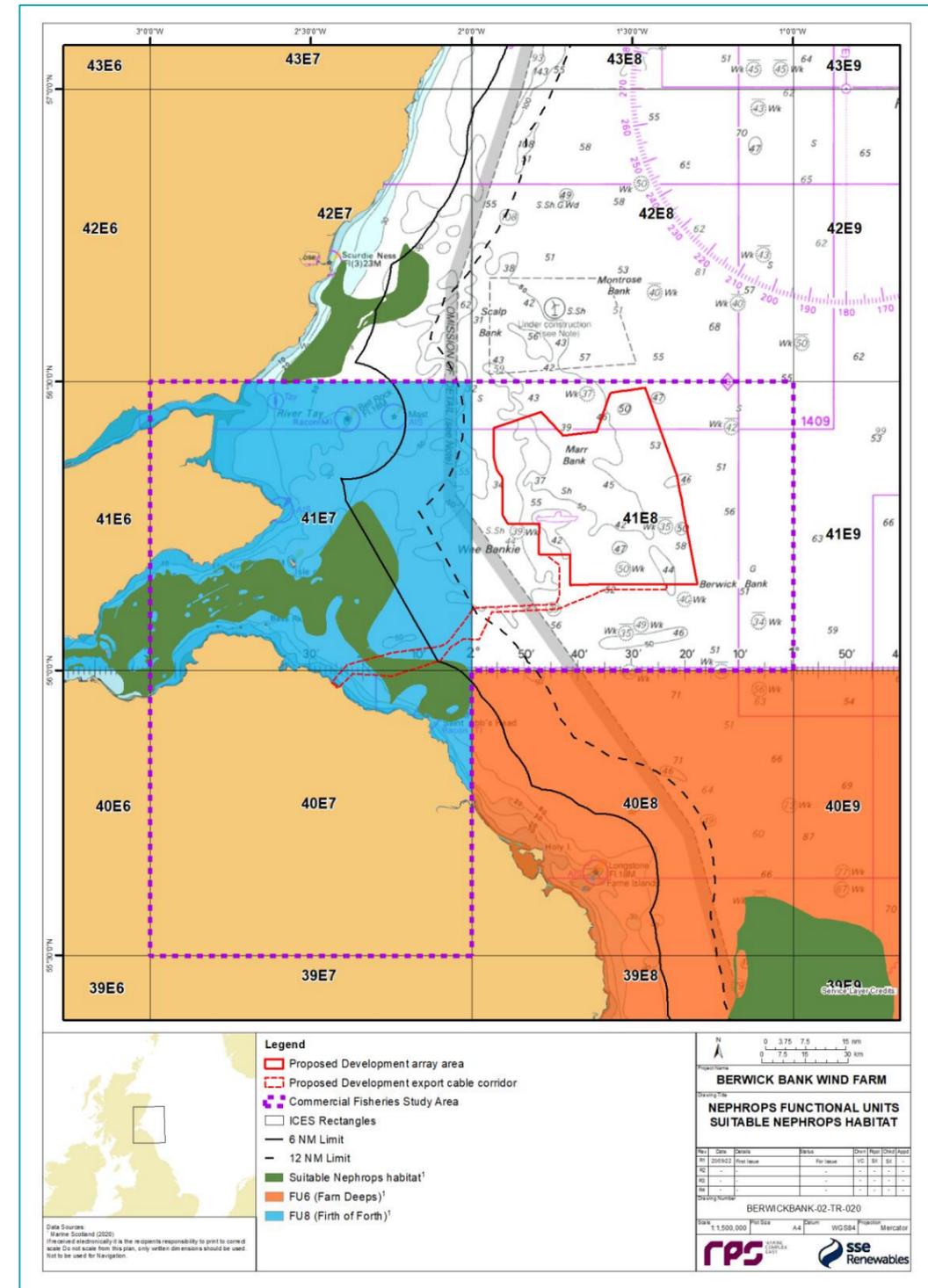


Figure 12.9: Nephrops Functional Units and Suitable Nephrops Habitat (Source: Marine Scotland)

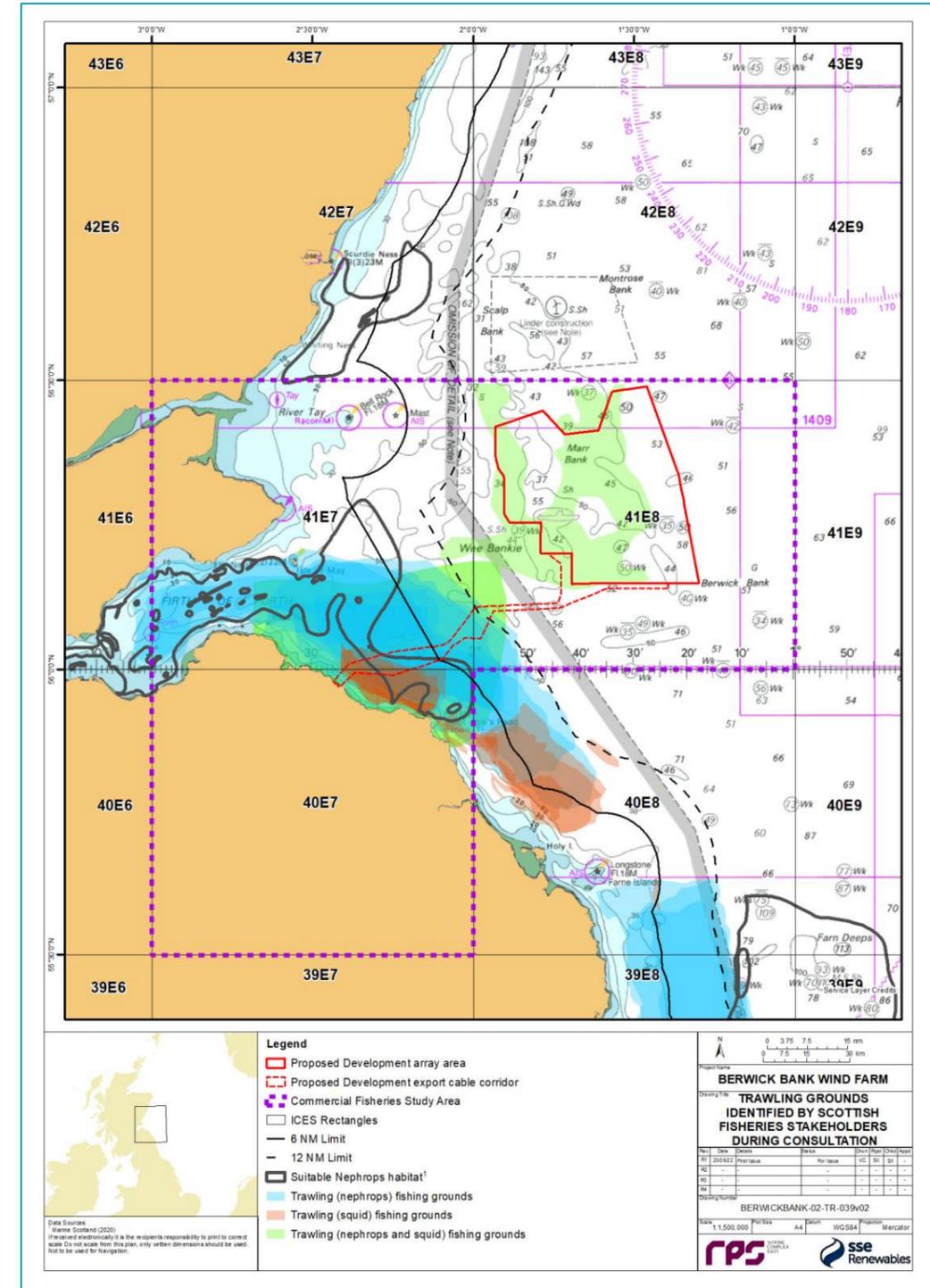
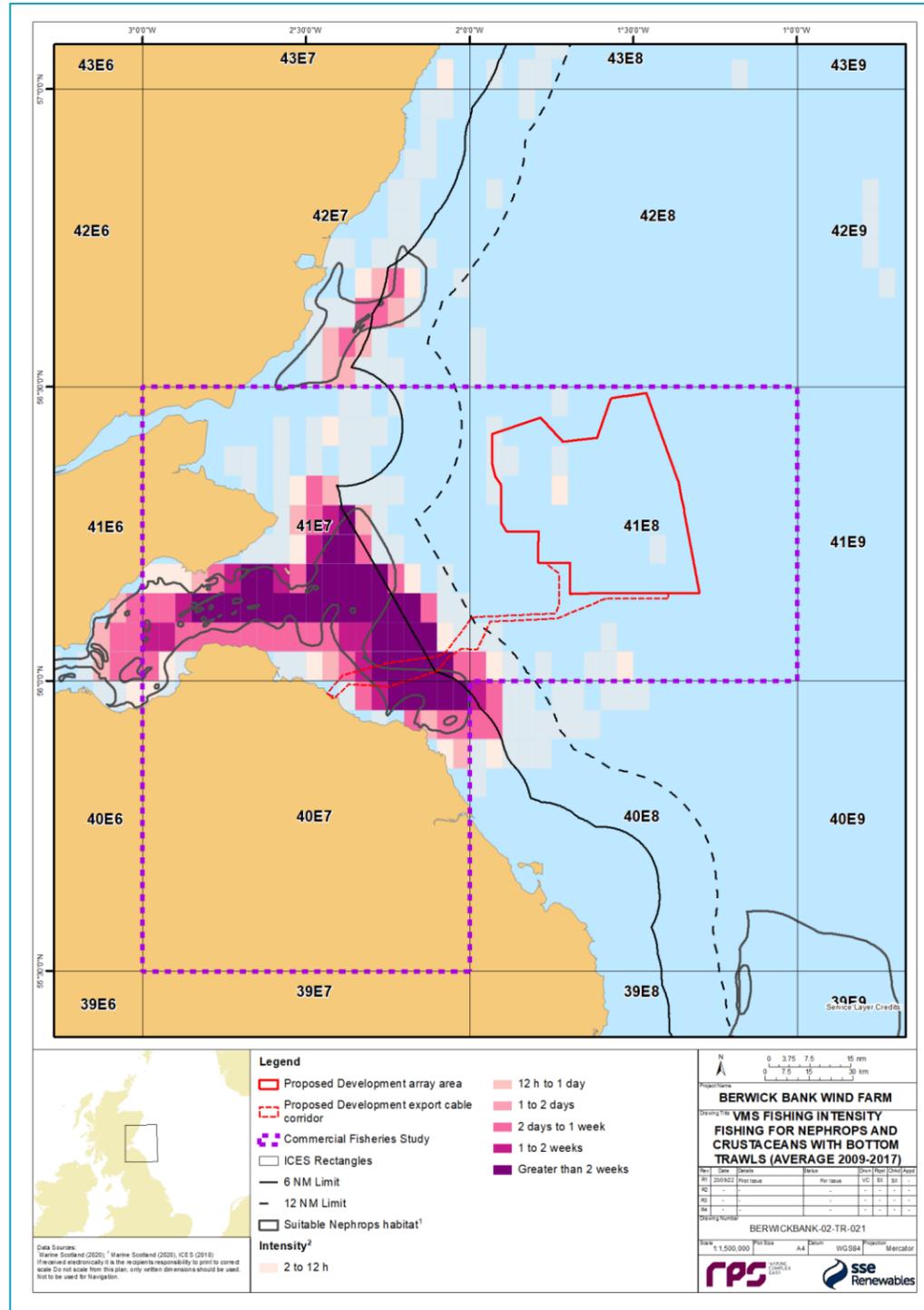


Figure 12.10: VMS Intensity for *Nephrops* and Crustaceans Bottom Trawls (Average 2009 -2017) (Source: Marine Scotland)

Figure 12.11: Trawling Grounds (*Nephrops* and Squid) Identified during Consultation

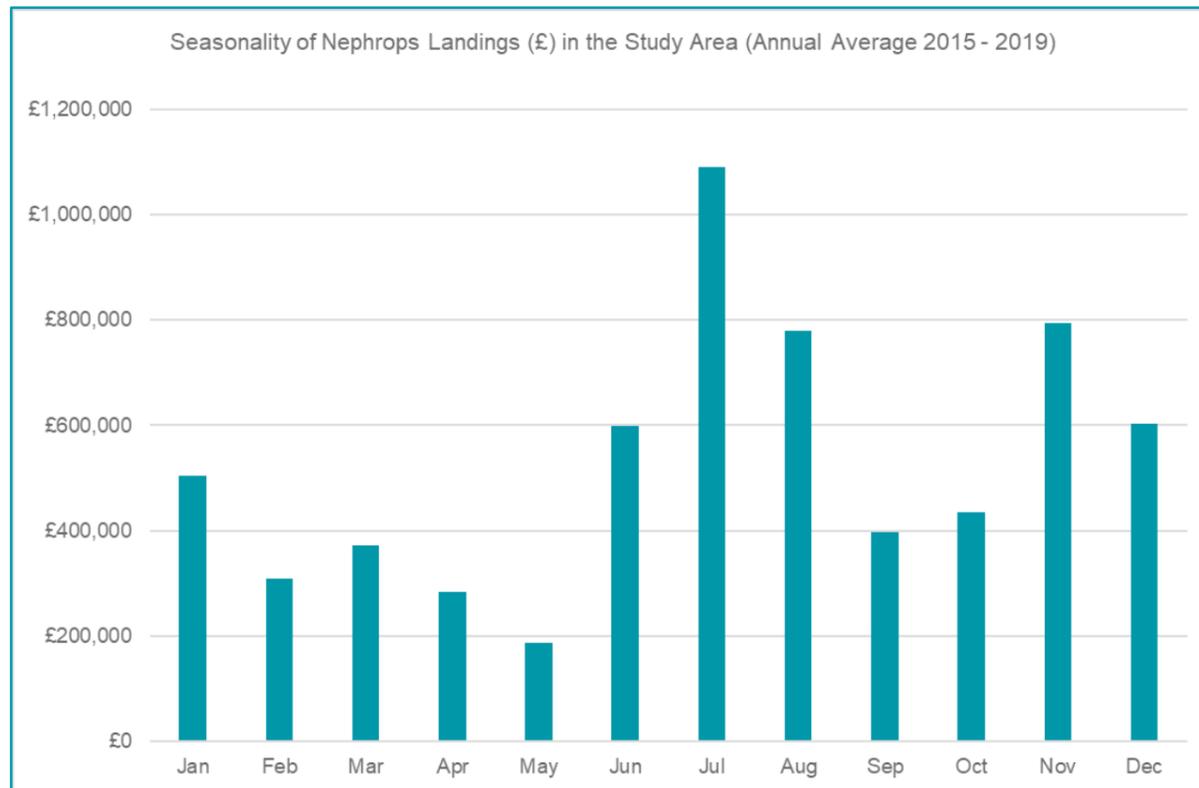


Figure 12.12: Monthly *Nephrops* Landings (£) in the Commercial Fisheries Study Area (average 2015 -2019)
(Source: MMO)

Squid fishery

35. In addition to *Nephrops*, some of the local demersal trawlers active in the commercial fisheries study area target squid on a seasonal basis. Visiting vessels based in other areas in the north-east coast of Scotland may also target squid in the commercial fisheries study area at times.
36. As shown in Figure 12.2, overall, landings of squid within the commercial fisheries study area are low compared to those recorded in other areas off the east coast of Scotland and are for the most part recorded in inshore rectangles 41E7 and 40E7, with limited landings in rectangle 41E8, where the Proposed Development array area is located.
37. Squid grounds are often located in inshore areas; however, their location may vary from year to year and activity generally moves further offshore as the season progresses. The level of activity and distribution of this fishery will consequently vary depending on year and period within the season.
38. There is no recent publicly available squid specific data layers showing fishing activity around the Proposed Development, however, historic data (Kafas *et al.*, 2013 and Kafas *et al.*, 2014) suggest that squid fishing activity within the commercial fisheries study area for the most part tends to concentrate in inshore areas (Figure 12.14 and Figure 12.15). This is consistent with information collected during consultation with local fisheries stakeholders (Figure 12.11).

39. Overlap with the Proposed Development for the most part appears to be limited to nearshore areas around the Proposed Development export cable corridor. In addition, although at low levels, some activity has been recorded within the Proposed Development array area (Figure 12.11, Figure 12.14 and Figure 12.15).
40. In recent years, within the commercial fisheries study area, landings of squid have been recorded predominantly over late summer/early autumn, peaking in September (Figure 12.16). In line with this, local fishermen targeting squid in the commercial fisheries study area reported during consultation that the main squid season runs between August and December (volume 3, appendix 12.1).

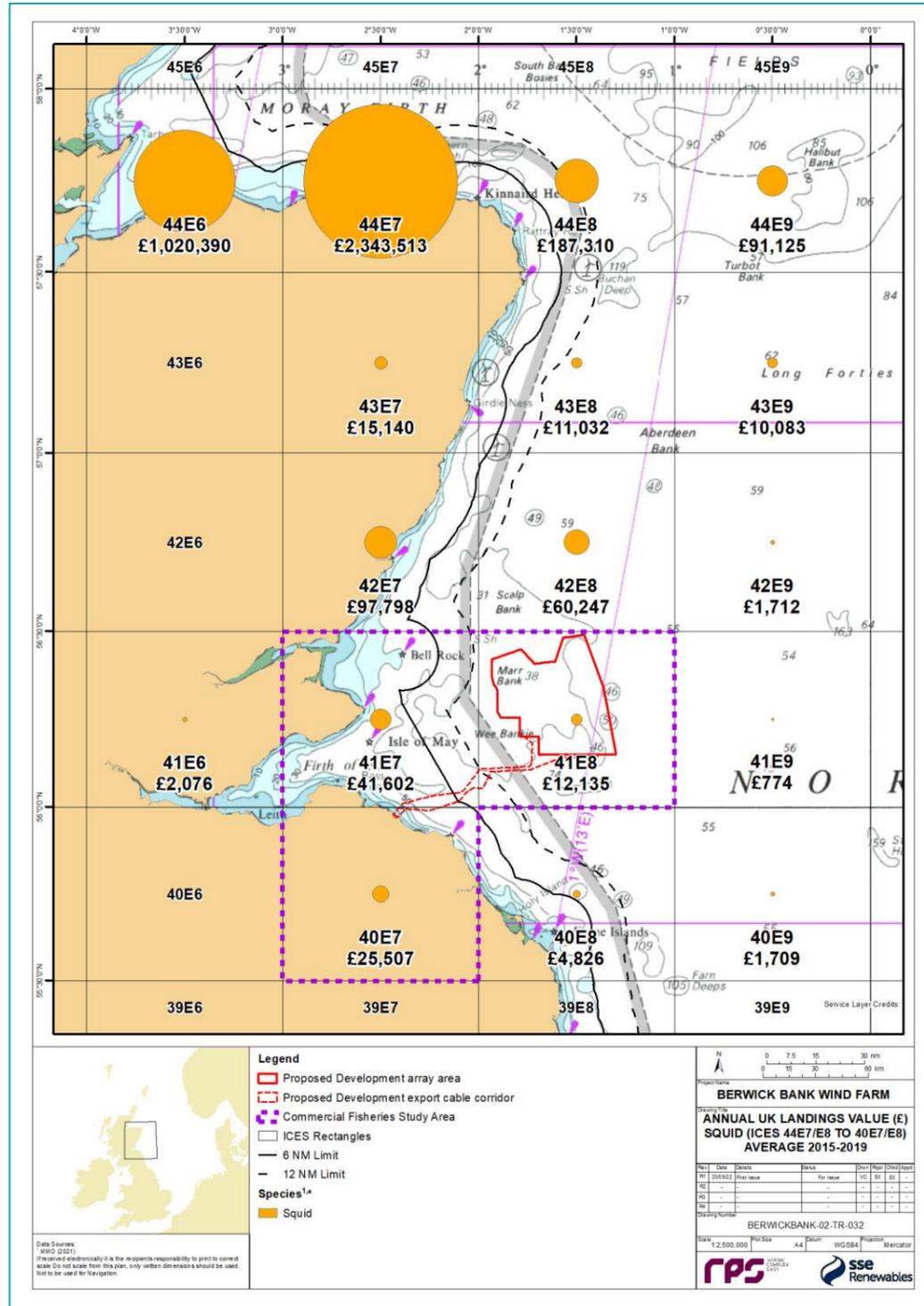


Figure 12.13: Squid Landings by Value (£) (Annual Average 2015 - 2019) (Source: MMO)

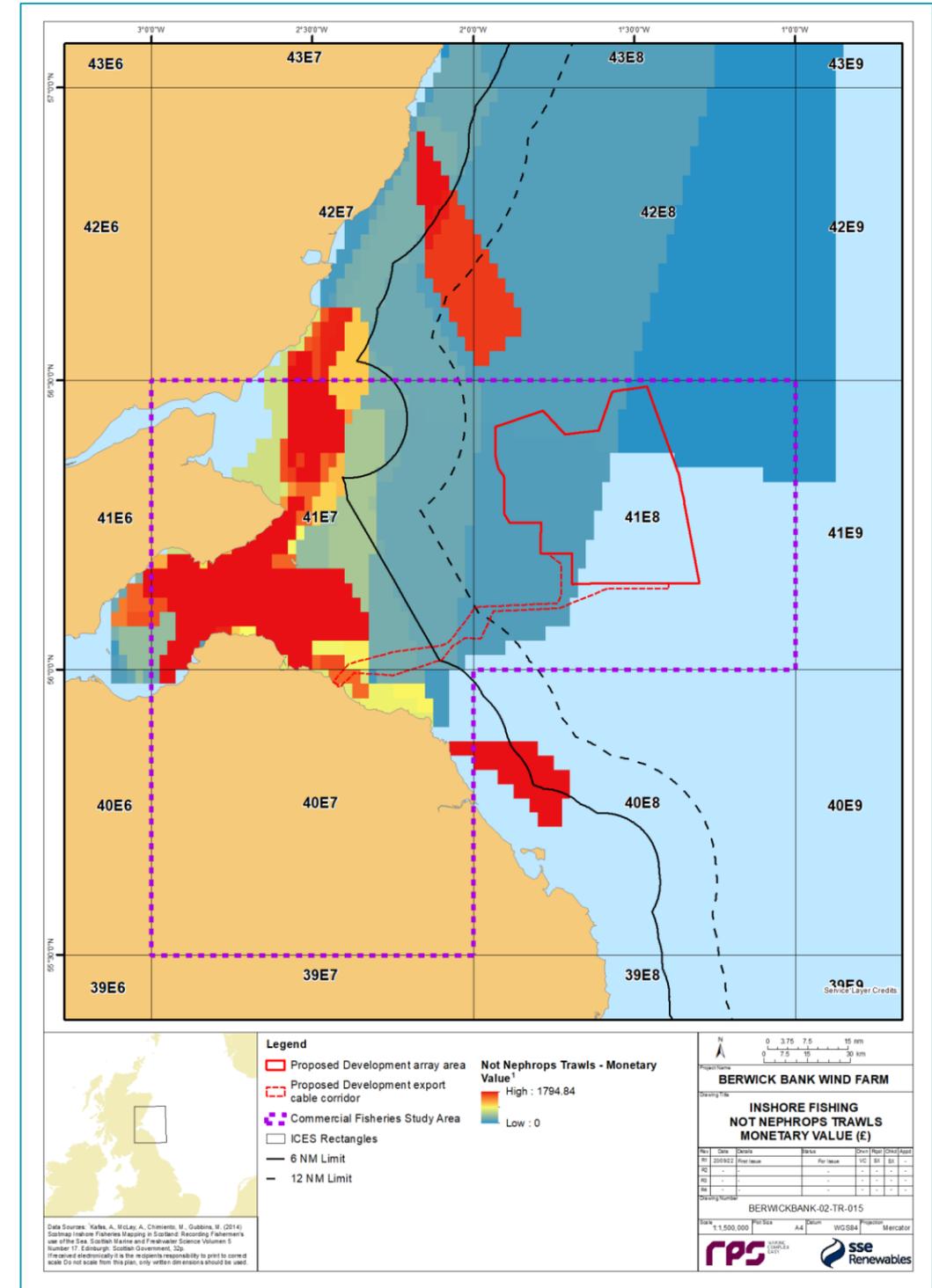


Figure 12.14: Under 15 m Trawls Excluding *Nephrops* Trawls Monetary Value (ScotMap, 2014)

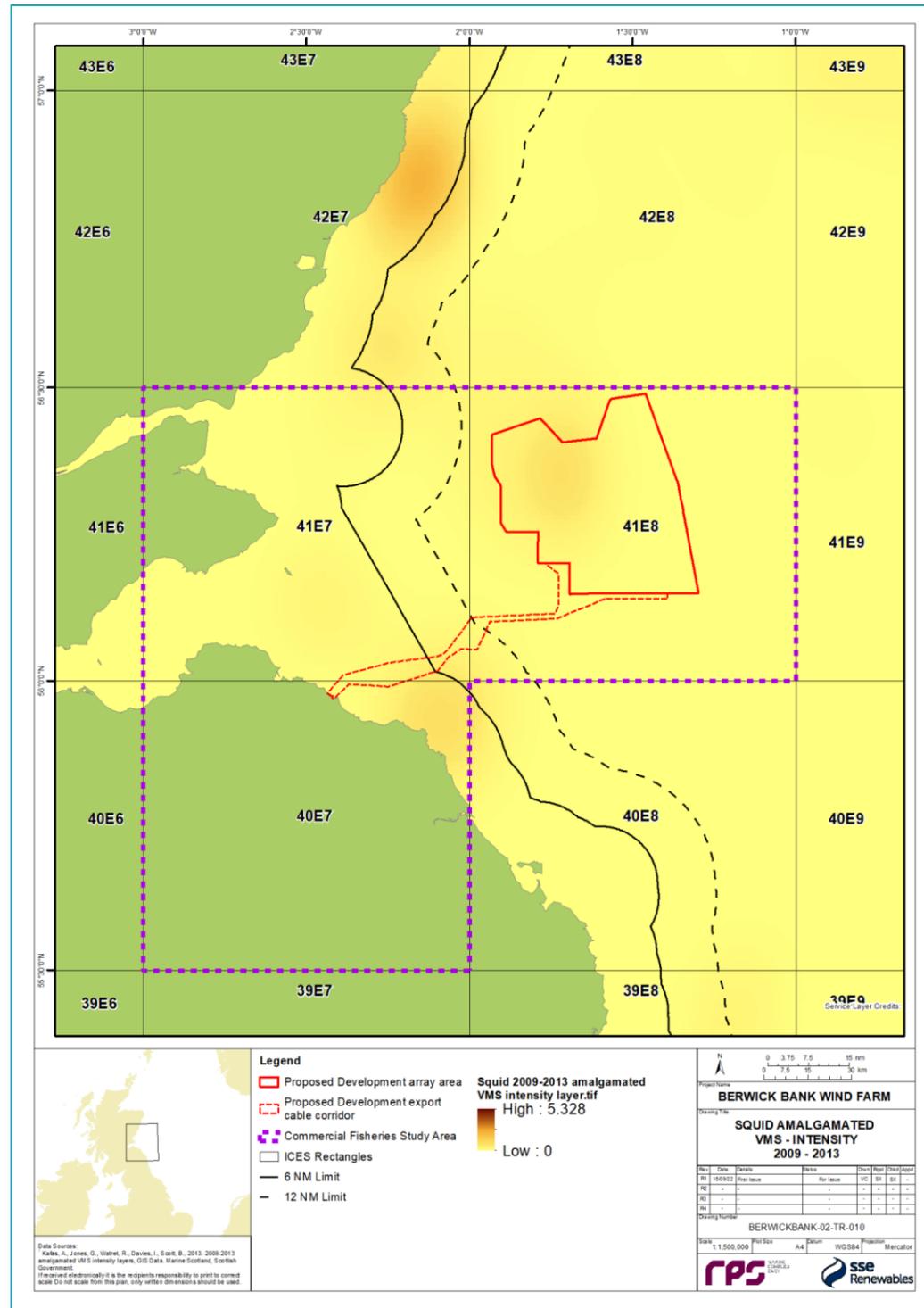


Figure 12.15: Squid – Amalgamated VMS Intensity (2009 -2013) (Kafas et al., 2013)

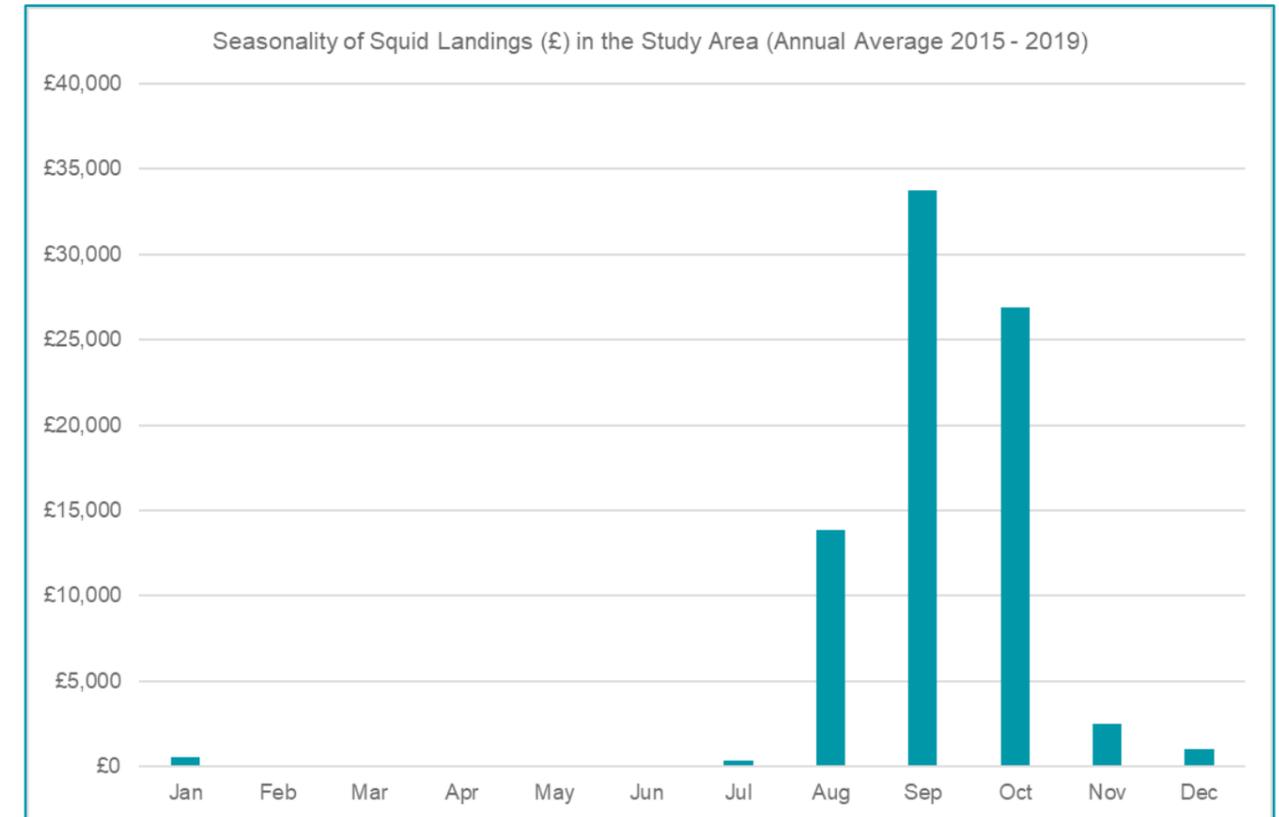


Figure 12.16: Monthly Landings of Squid by Value (£) in the Commercial Fisheries Study Area (average 2015 -2019) (Source: MMO)

12.7.3. CREELING - LOBSTER AND CRAB FISHERY

41. Creelers active in the commercial fisheries study area are generally under 10 m in length and predominantly target inshore grounds, including the nearshore section of the Proposed Development export cable corridor. Some vessels, however, are known to target grounds further offshore including areas within the Proposed Development array area (Figure 12.17 to Figure 12.22).
42. Within the commercial fisheries study area, the highest landings values for lobster and crab are recorded in inshore rectangles 41E7 and 40E7. Although at comparatively lower levels these species are also landed from rectangle 41E8, where the Proposed Development array area is located (Figure 12.18).
43. The lobster and crab fishery is active all year round, with landings reported throughout the year. Analysis of recent landings in the commercial fisheries study area (2015 - 2019), suggests that higher values are generally recorded in the summer and autumn months, peaking around August (Figure 12.23). The year-round importance of the fishery was noted by local fishermen during consultation (volume 3, appendix 12.1).

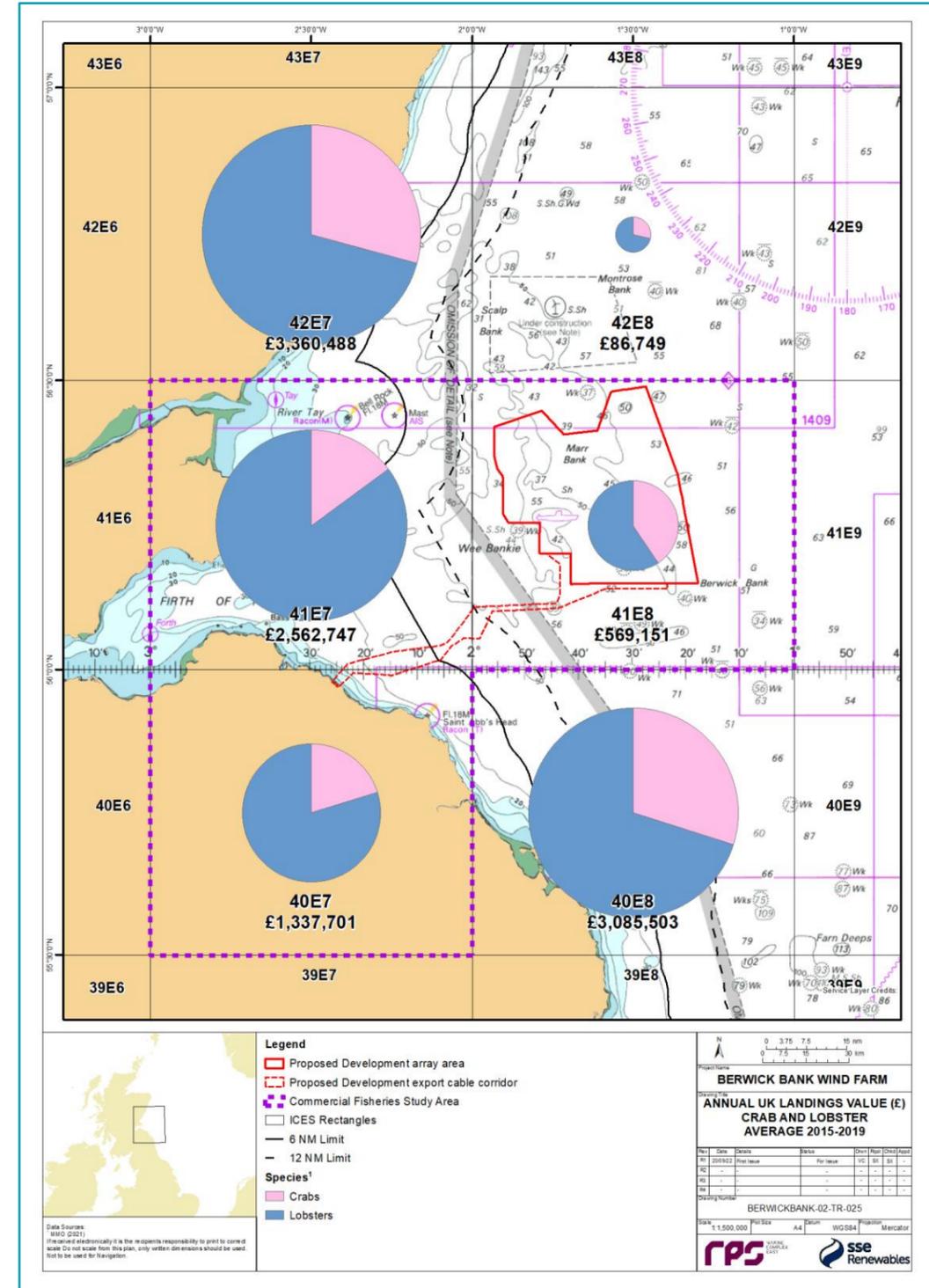
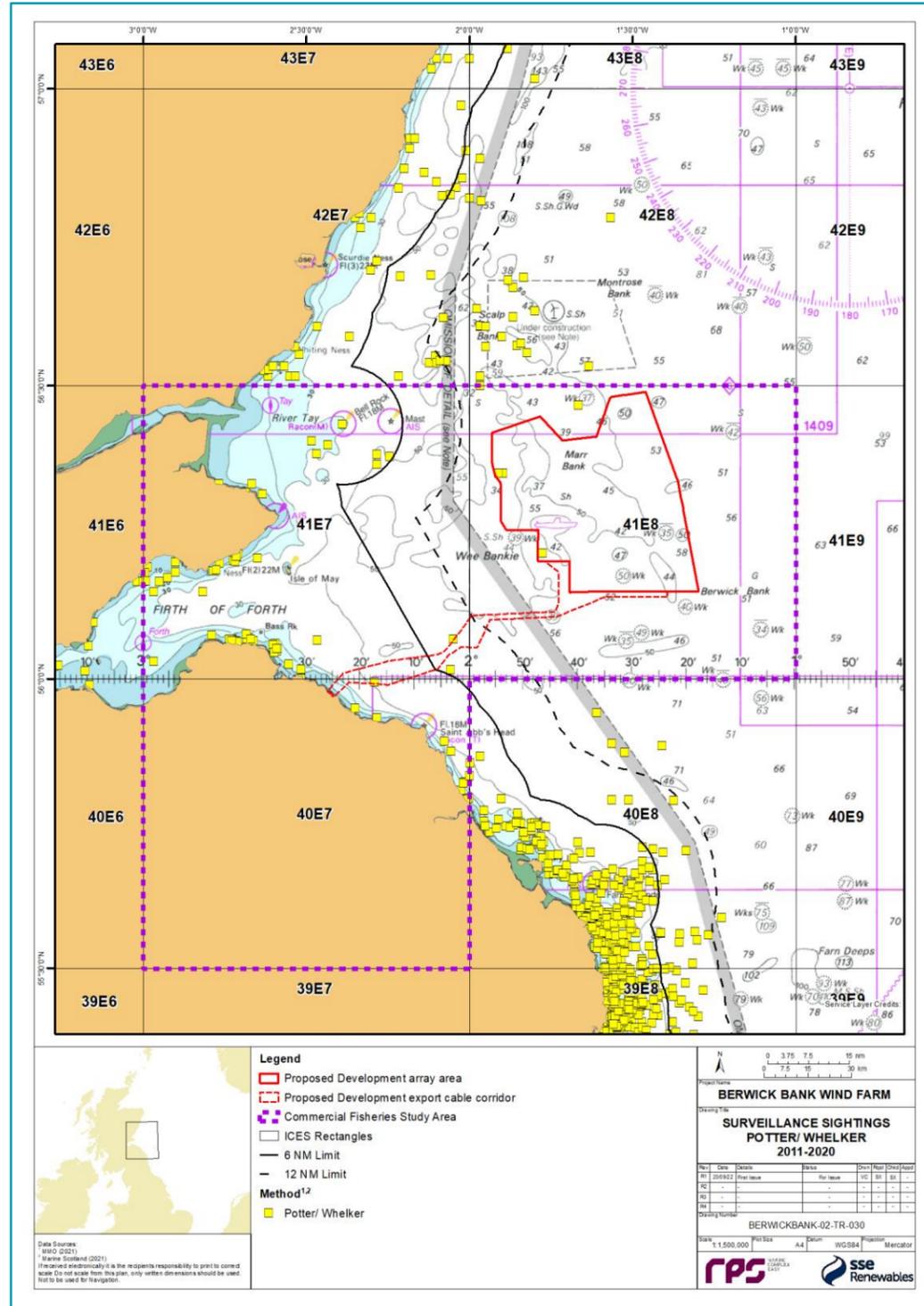


Figure 12.17: Surveillance Sightings of Creelers (2011 to 2020) (Source: MMO and Marine Scotland)

Figure 12.18: Lobster and Crab Landings by Value (£) (Annual Average 2015 – 2019) (Source: MMO)

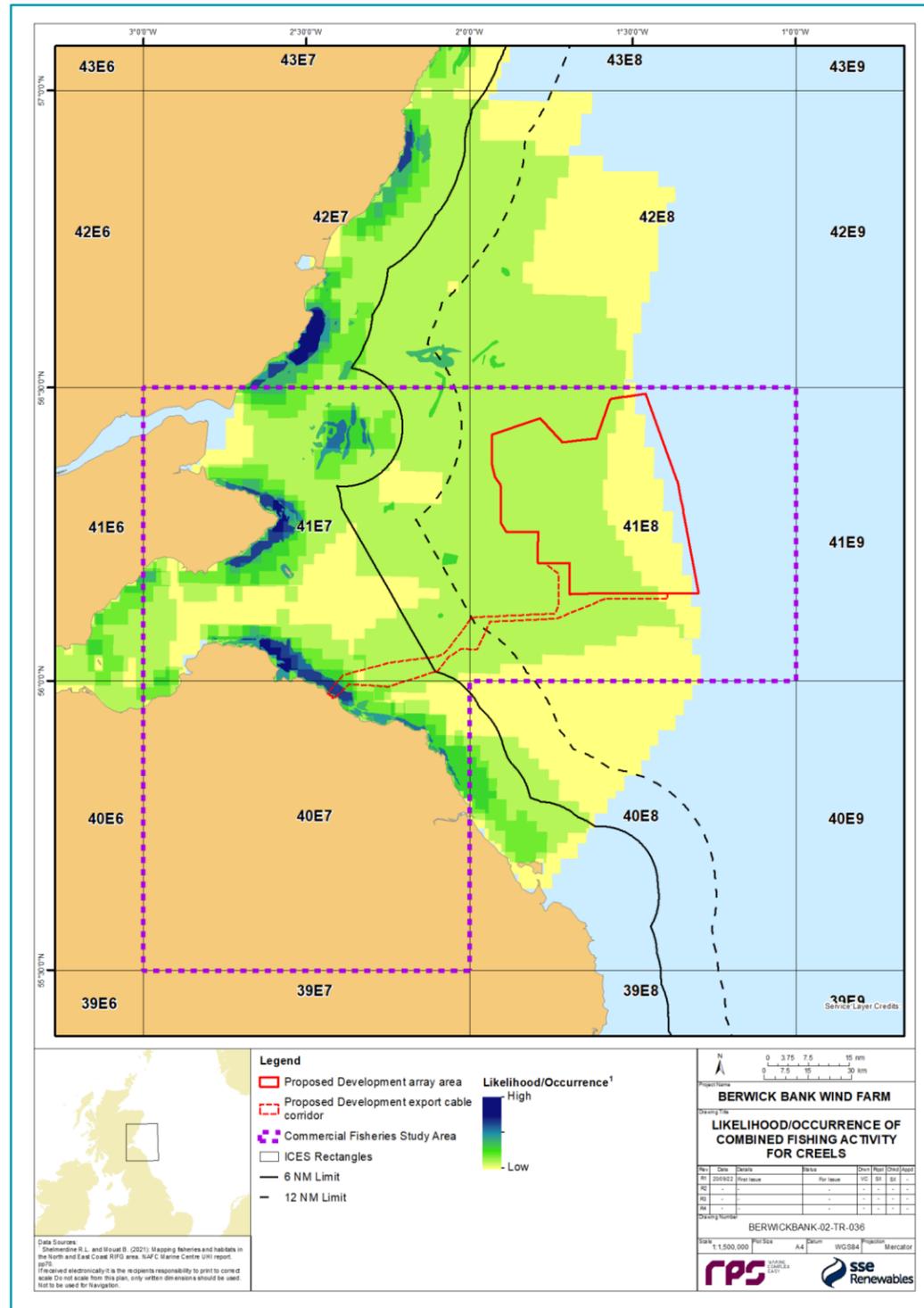


Figure 12.19: Combined Fishing Activity for Creels (Shelmerdine and Moutat, 2021)

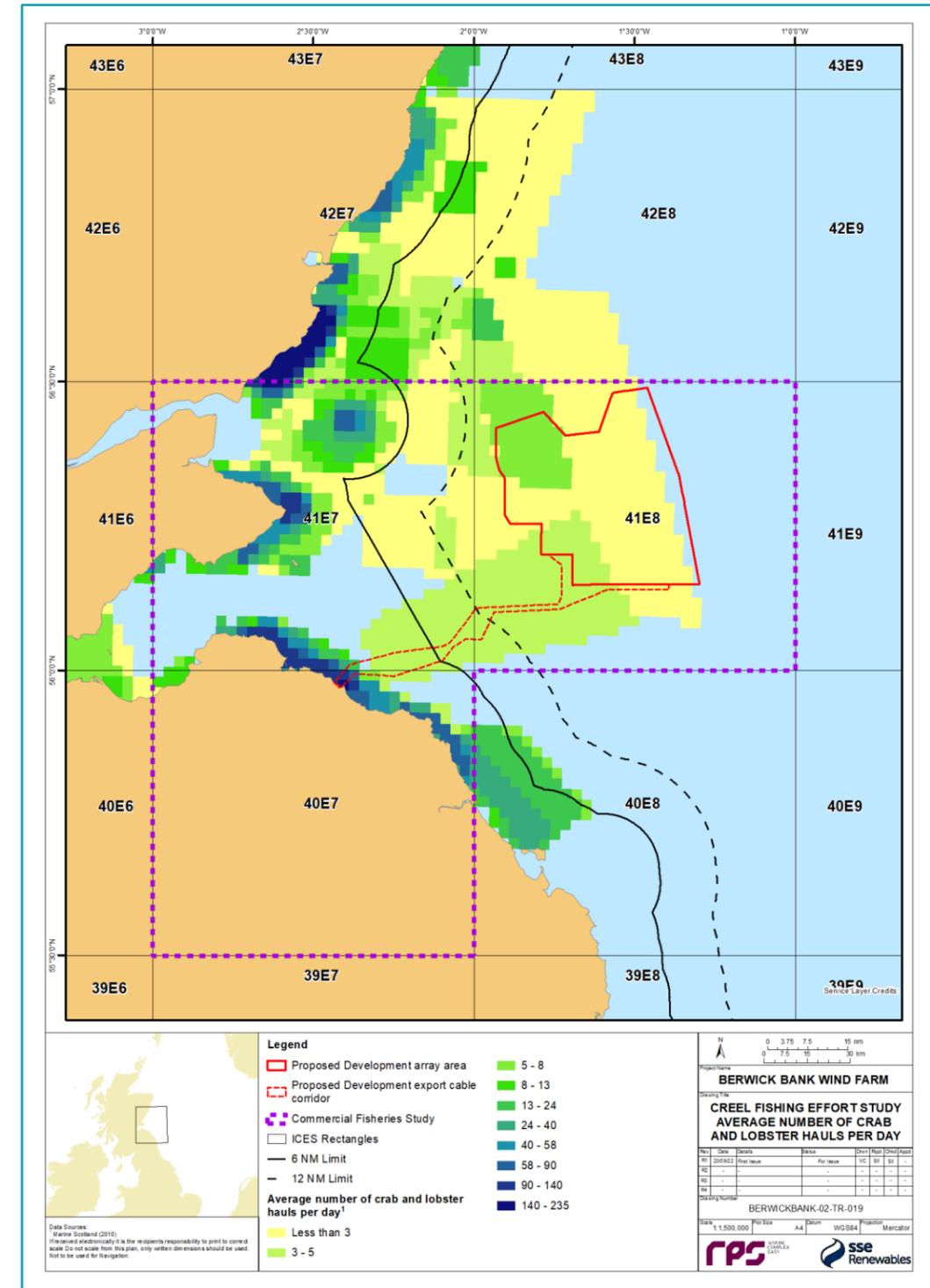


Figure 12.20: Creel Fishing Effort (Average No. of Crab and Lobster Hauls per Day) (Marine Scotland, 2017)

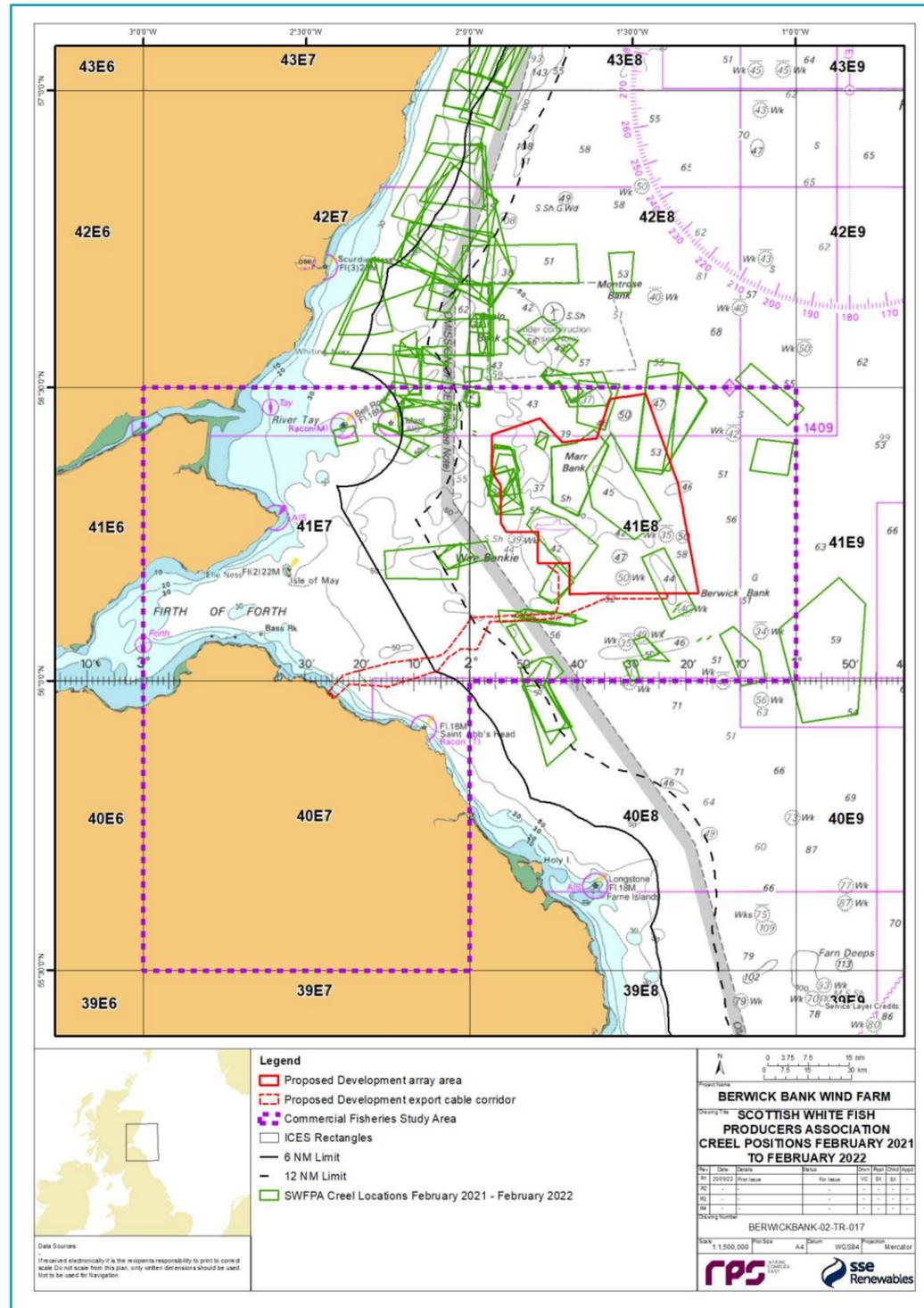


Figure 12.21: Creel Positions (2022) (SWFPA, 2022)

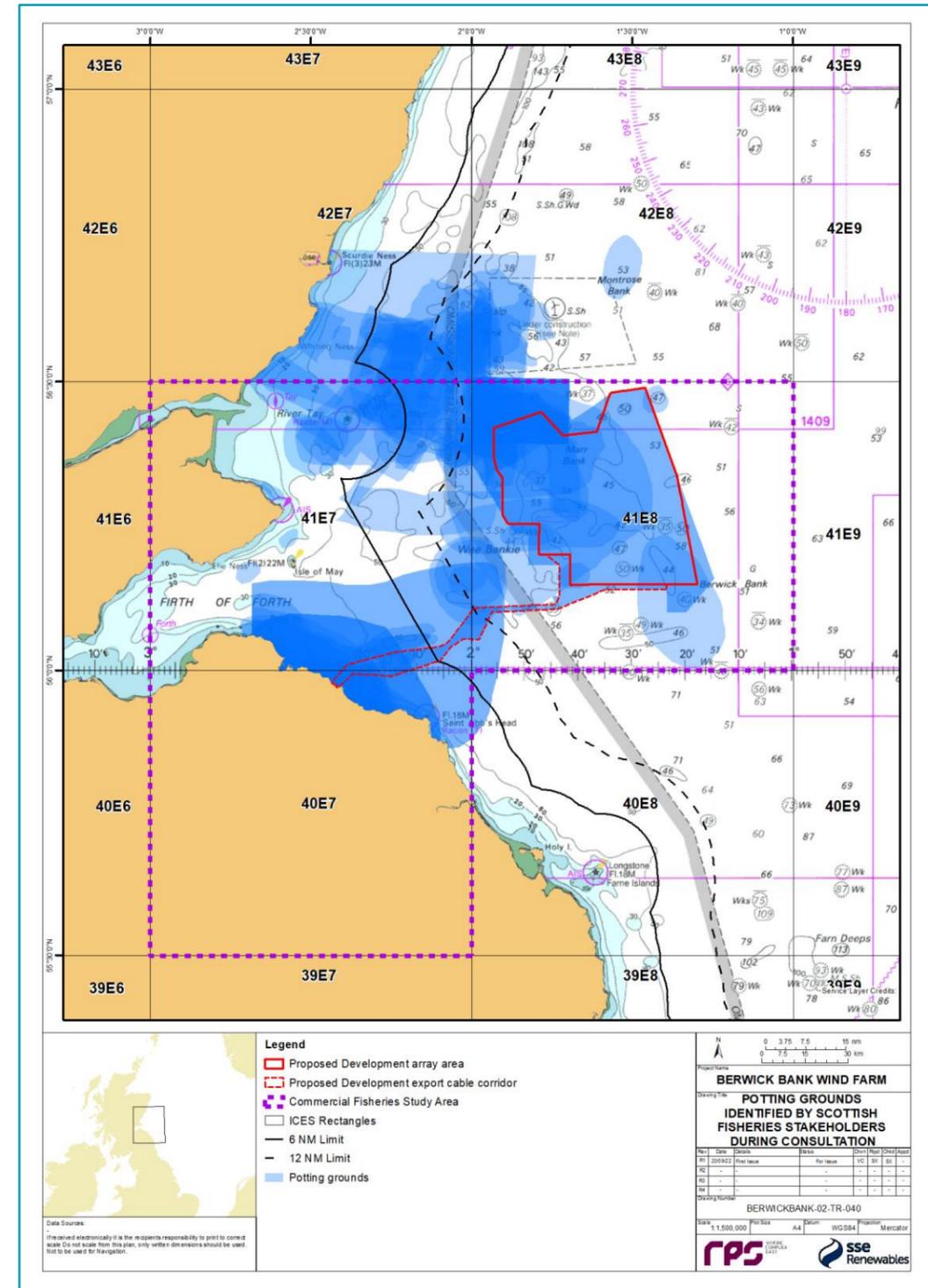


Figure 12.22: Creeling Grounds identified during Consultation

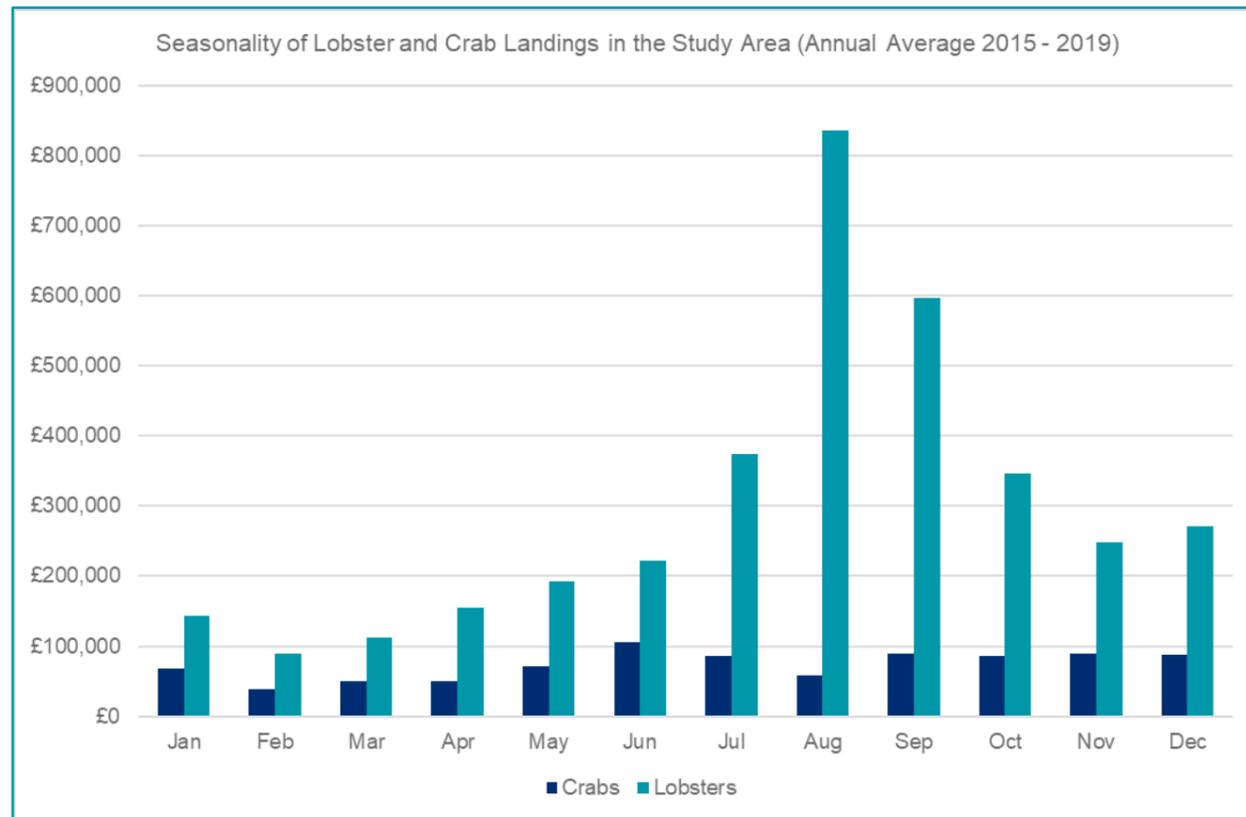


Figure 12.23: Monthly Lobster and Crab Landings in the Commercial Fisheries Study Area (Average 2015-2019) (Source: MMO)

12.7.4. DREDGING – SCALLOP FISHERY

44. The Scottish scallop fishery is split into two main fleets; a category of smaller vessels (generally under 15 m in length) that work in inshore areas, and a category of larger vessels (generally above 15 m in length) that work further offshore and are typically nomadic in nature.
45. Activity by scallop dredgers within the commercial fisheries study area occurs at moderate levels and concentrates for the most part in ICES rectangle 41E7, including the area of the Proposed Development array area, particularly along its western section (Figure 12.24, Figure 12.25, and Figure 12.27). Some activity has also been reported from ICES rectangle 41E7; however, this shows limited overlap with the Proposed Development concentrating to the west of the Proposed Development array area. Vessels active in these offshore areas are expected to be predominantly nomadic vessels. Whilst these areas support scallop dredging activity at some levels, comparatively more productive scallop grounds are found beyond the commercial fisheries study area in other areas off Scotland and the rest of the UK (Figure 12.28).
46. In addition to offshore activity by nomadic vessels, some local activity in nearshore areas has also been reported. This is expected to be undertaken by smaller local vessels and occur at very low levels, with

limited overlap with the inshore section of the Proposed Development export cable corridor (Figure 12.22, Figure 12.24 and Figure 12.27).

47. Scallop dredging is undertaken all year round. In recent years, higher landings have been recorded over the spring and summer months, peaking in May (Figure 12.30).
48. It is also important to note that the scallop fishery is cyclical in nature, and productive grounds rotate around the UK on a seven to eight-year cycle (Cappel *et al.*, 2018). An indication of the annual variation/cycle of the scallop fishery in the commercial fisheries study area is given in Figure 12.31.

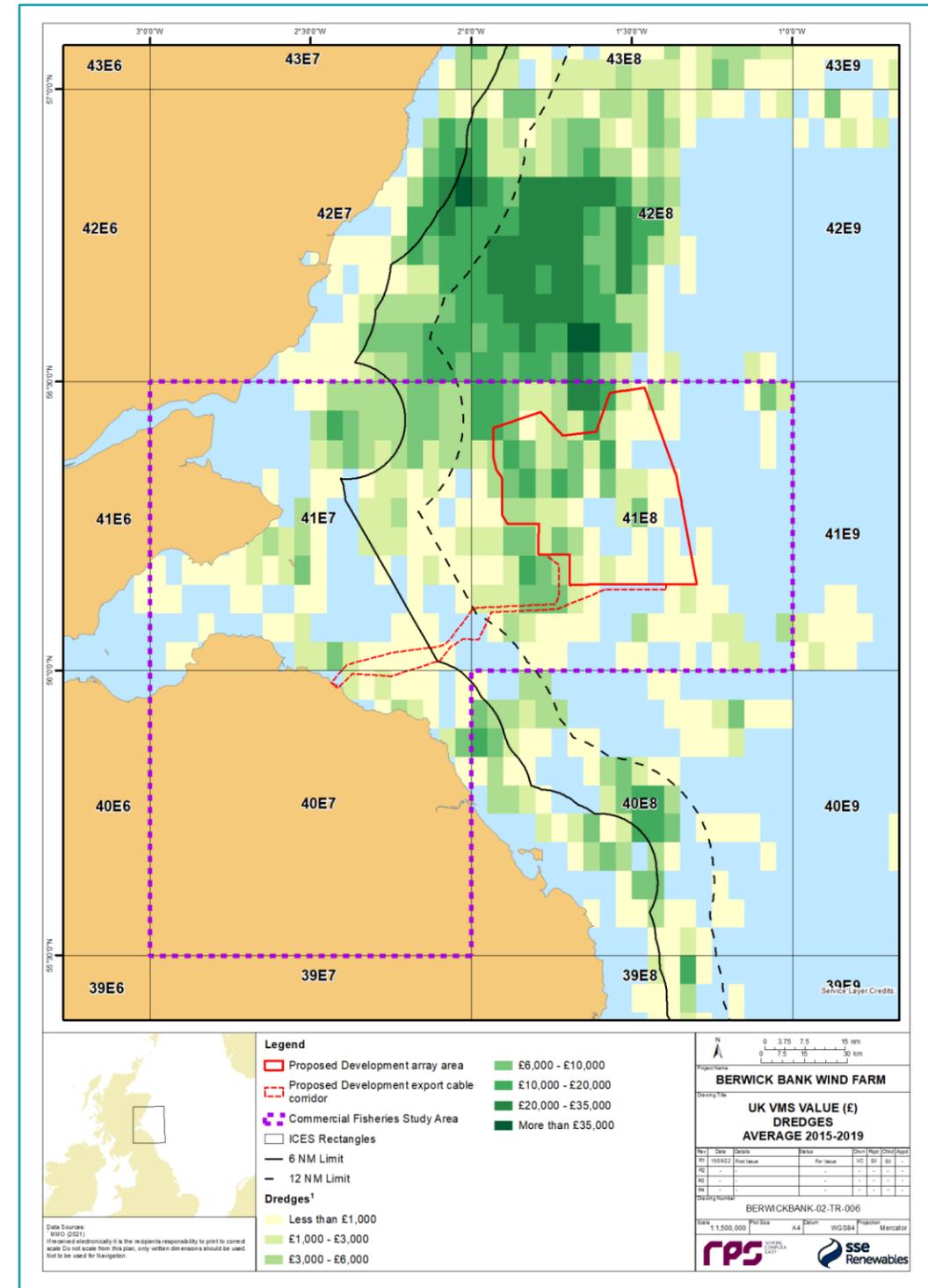
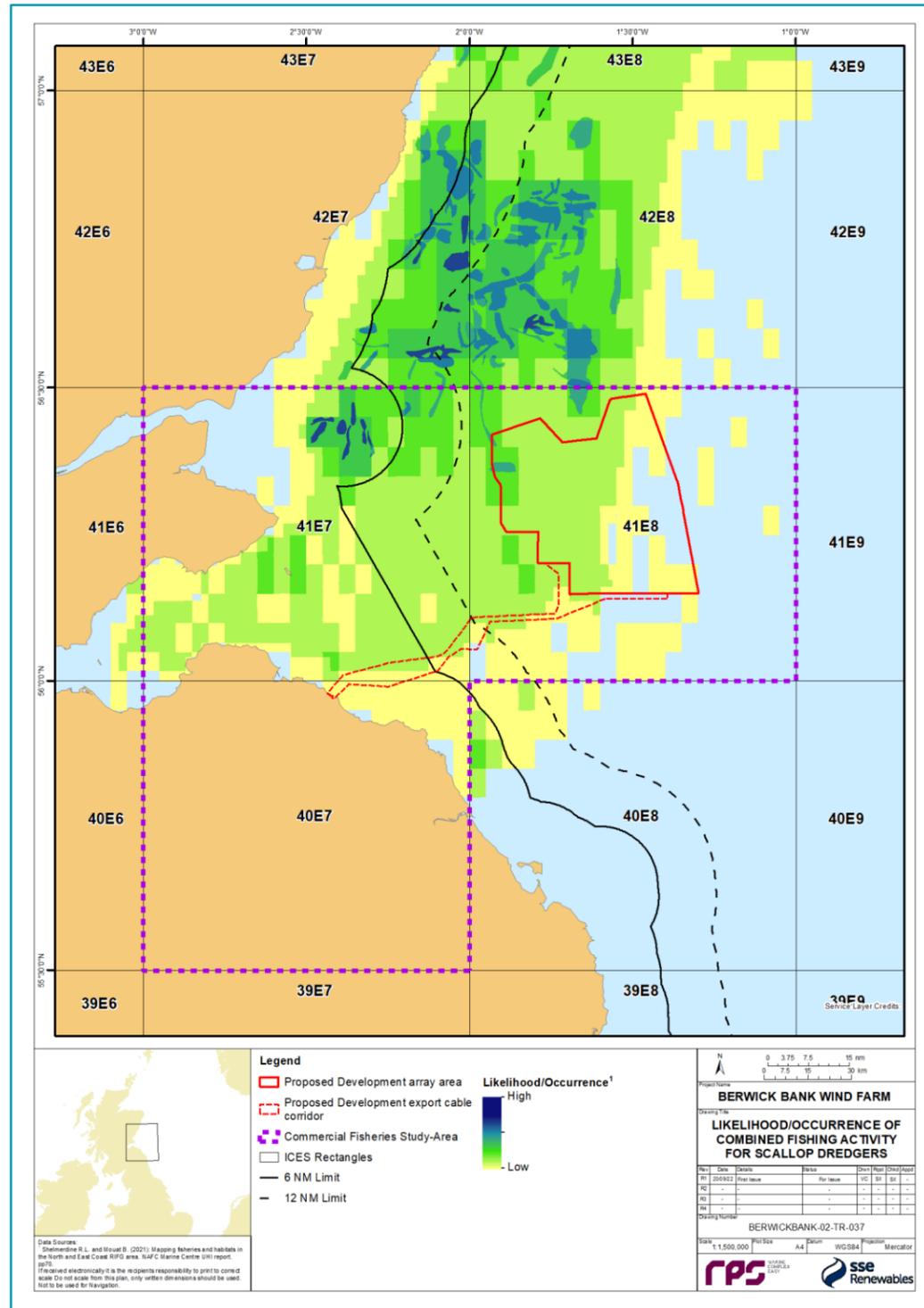


Figure 12.26: Combined Fishing Activity for Scallop Dredgers (Source: Shelmerdine and Mouat, 2021)

Figure 12.27: UK VMS Value (£) Dredges (Average 2015 – 2019) (Source: MMO)

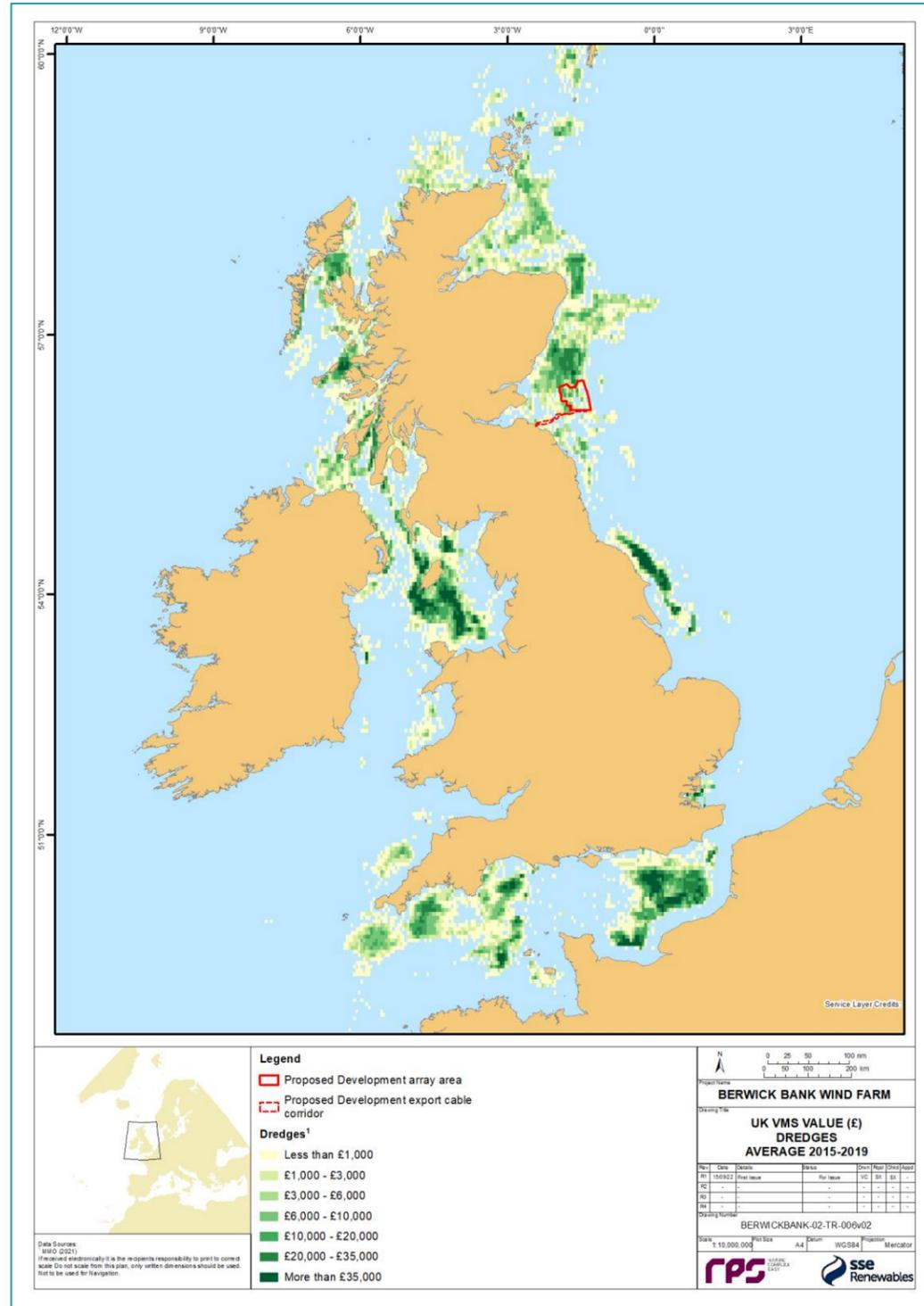


Figure 12.28: UK VMS Value (£) Dredges UK Wide (Average 2015 -2019) (Source: MMO)

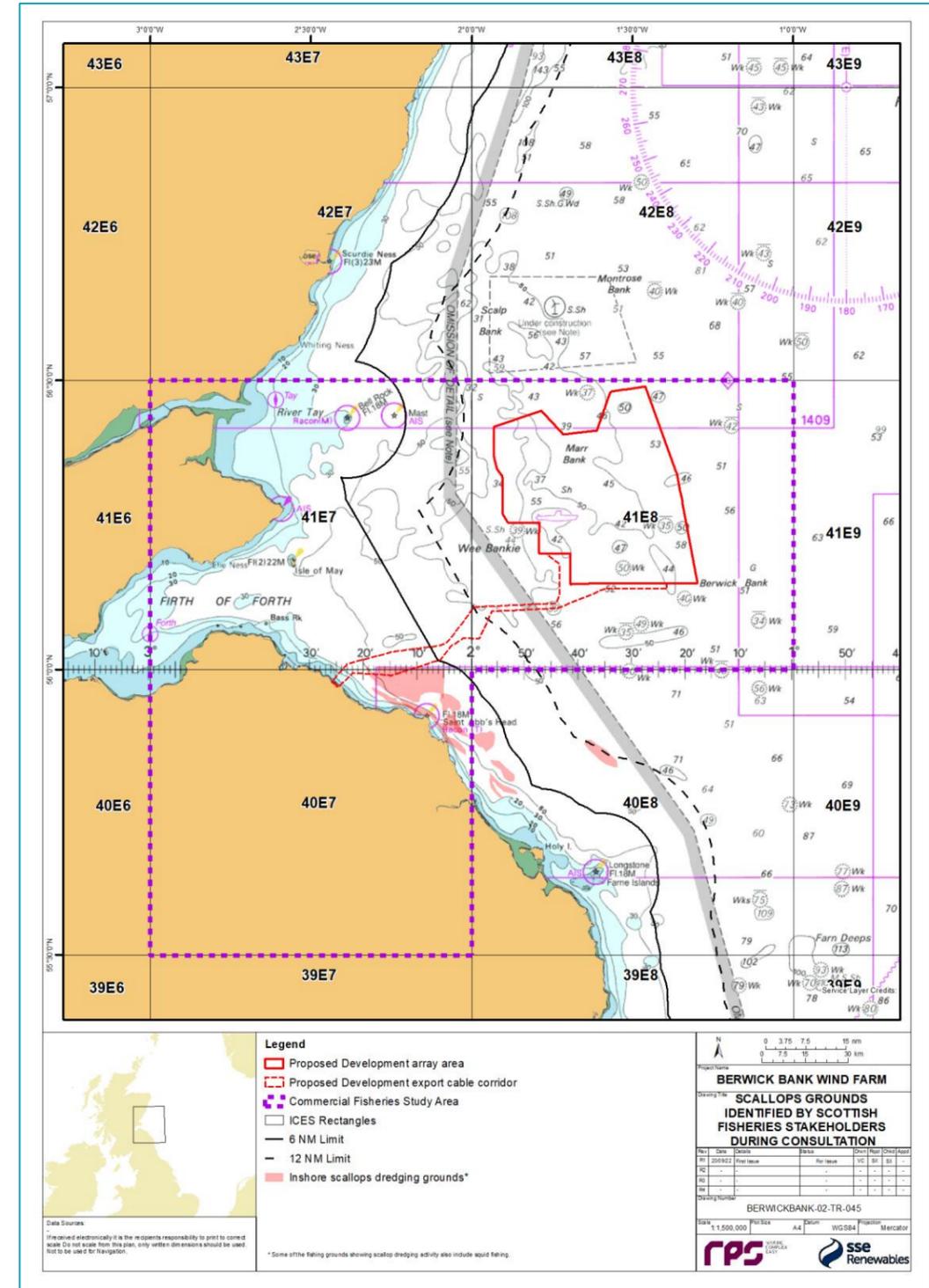


Figure 12.29: Inshore Scallop Grounds Identified during Consultation

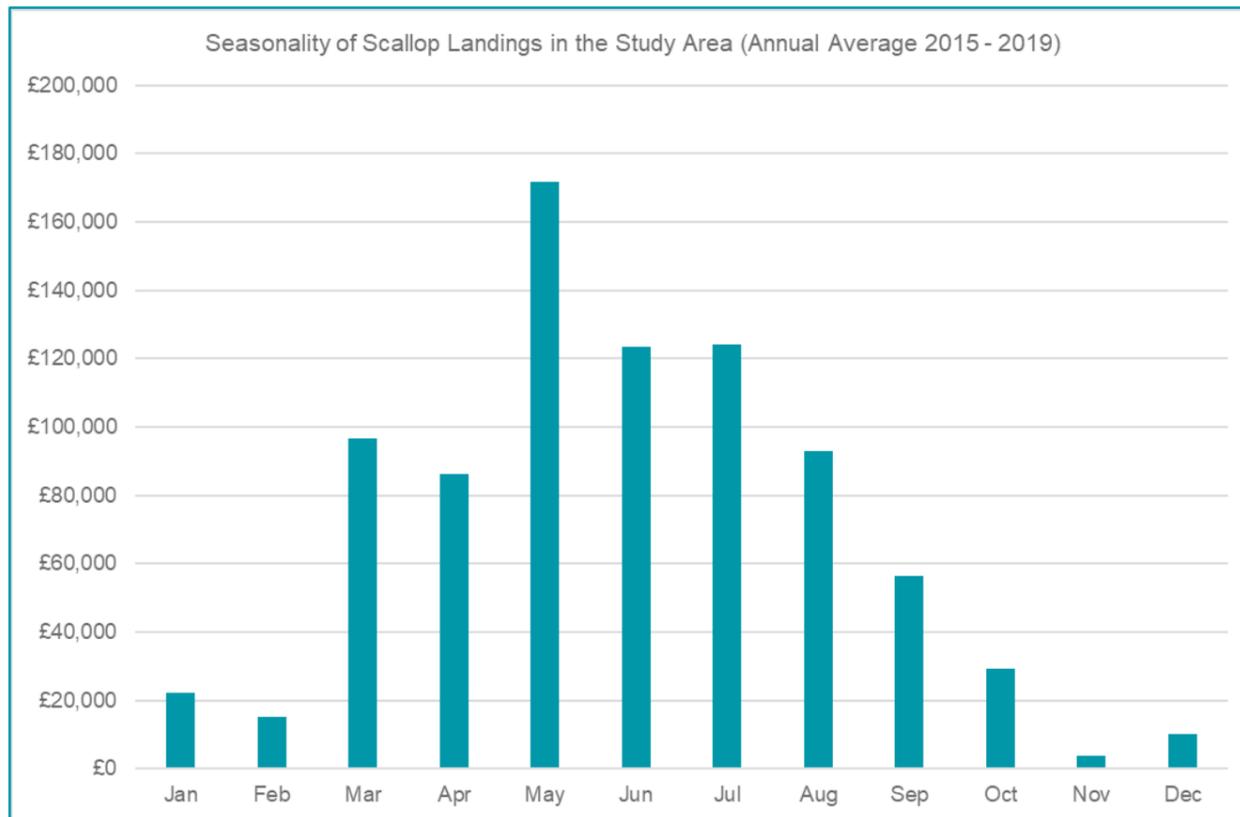


Figure 12.30: Monthly Landings of Scallop Dredgers in the Commercial Fisheries Study Area (average 2015 - 2019)

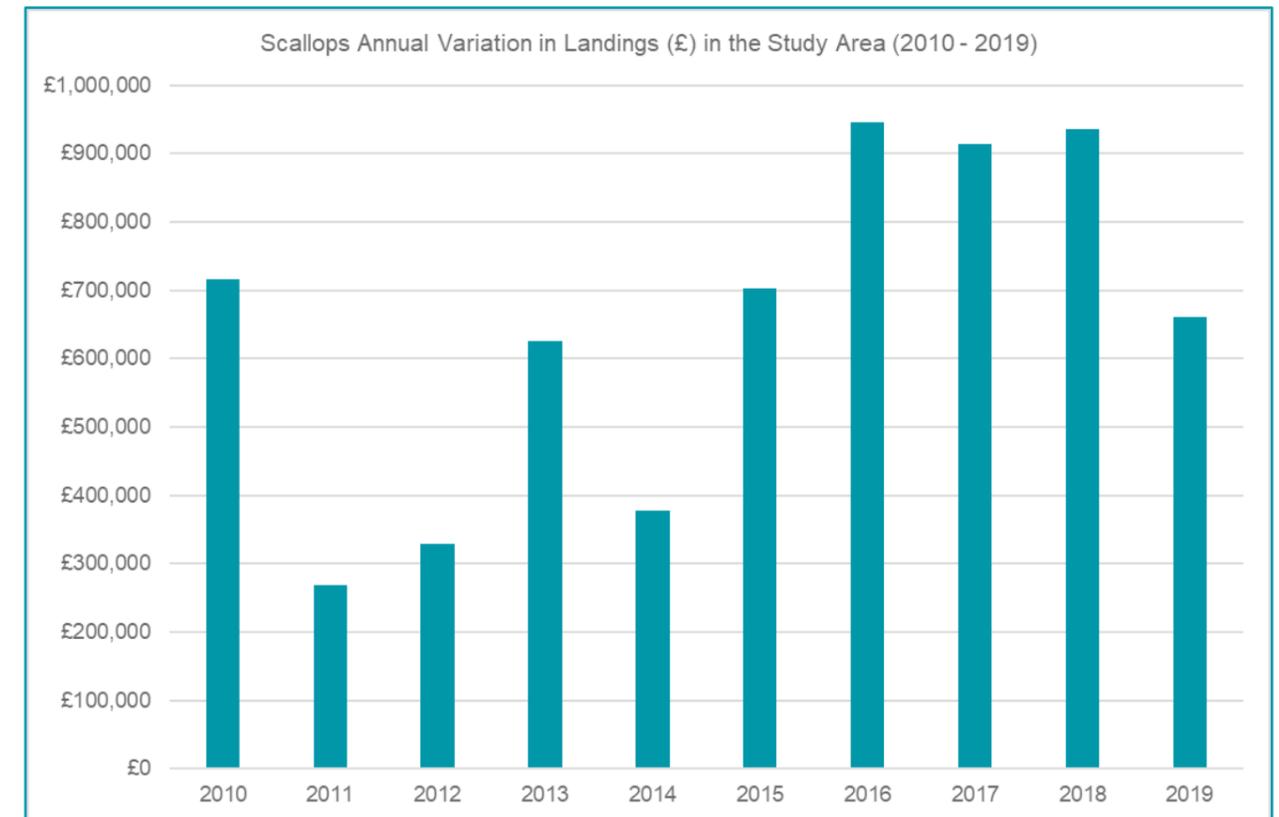


Figure 12.31: Annual Variation in the Landings of Scallops in the Commercial Fisheries Study Area (2010 to 2019)

12.7.5. FUTURE BASELINE SCENARIO

49. The EIA Regulations ((The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017, The Marine Works (Environmental Impact Assessment) Regulations 2007 and The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017)), require that a “a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without development as far as natural changes from the baseline scenario can be assessed with reasonable effort, on the basis of the availability of environmental information and scientific knowledge” is included within the Offshore EIA Report.
50. In the event that the Proposed Development does not come forward, an assessment of the future baseline conditions has been carried out and is described within this section.
51. As described in section 12.7, demersal trawling for *Nephrops* and squid, creeling for lobster and crab and scallop dredging are the main fishing activities that take place in the commercial fisheries study area. These are all well-established fisheries with well-defined fishing grounds, particularly in the case of the *Nephrops* and the scallop fishery, given the substrate requirements of the target species. Therefore, in general terms, the main fishing grounds could be expected to remain consistent in the future.

52. In the particular case of creeling, local vessels are increasingly targeting offshore areas, and therefore there may be potential for increased activity in areas offshore of the Proposed Development in the future. This will however be strongly dependent on the operational capabilities of the vessels in question and the potential for conflict with other fisheries (i.e. static gear/mobile gear conflicts).
53. In addition, the implementation of fisheries management measures within Marine Protected Areas (MPAs) such as spatial closures for certain fishing methods may affect the future distribution and levels of fishing activity in the commercial fisheries study area. Spatial management measures are currently undergoing consultation to restrict fishing activity by demersal trawlers and dredgers to protect features of the Firth of Forth Banks Complex MPA, including within areas that overlap with the Proposed Development array area. More information on these management measures is provided in volume 3, appendix 12.1).
54. Over time, global climate change will result in changes to the marine environment, including on fish and shellfish populations of commercial importance. This could result in modifications to commercial fisheries practices in response to changes in species distribution, abundance and/or seasonal trends. In addition, changes in other factors such as, fishing gear methods and efficiency, fisheries legislation and regulations, including changes associated with the UK exit from the EU, or changes in the market may also influence the baseline. 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.

12.7.6. DATA LIMITATIONS AND ASSUMPTIONS

55. As described in the UK Sea Fisheries Statistics 2020 Report (MMO, 2021), multiple factors impact fishing activity and landings tend to fluctuate considerably over time. In 2020, the ongoing COVID-19 pandemic (where effects were felt from March 2020) resulted in considerable impacts on commercial fishing. Like all parts of the UK economy, the pandemic had differential impacts on different sectors of the fishing industry. Overall, shellfish fisheries were hit most severely as shellfish species tend to be landed and sold fresh for use in the hospitality sector and demand from this sector in the UK and abroad dropped dramatically as lockdowns were being imposed across the UK and EU.
56. Whilst landings statistics for 2020 are now available, data for this year is not considered representative of normal fishing activities due to the effects of the COVID-19 pandemic, particularly in the case of shellfish fisheries. As such, 2020 data has not been included within this report. This approach was agreed with fisheries stakeholders during the meeting held on 16 November 2021 (Table 12.2). Final fisheries statistics for 2021 are not expected to be made publicly available until late 2022.
57. In addition to limitations associated with 2020 data, a number of limitations have been identified in relation to the fisheries datasets publicly available. These are described in detail in Table 12.4 and include issues associated with 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. Limitations with regards to available spatial data on fisheries is more evident for smaller vessels (under 15 m in length).
58. To address these issues, consultation with the fisheries stakeholders, including local fishermen, has been undertaken to help inform the baseline characterisation (see section 12.6.2).

12.8. KEY PARAMETERS FOR ASSESSMENT

12.8.1. MAXIMUM DESIGN SCENARIO

59. The maximum design scenarios identified in Table 12.5 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 volume 1, chapter 3 of the Offshore EIA Report. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g. different infrastructure layout), to that assessed here, be taken forward in the final design scheme.

Table 12.5: Maximum Design Scenario Considered for Each Impact as Part of the Assessment of Likely Significant Effects Commercial Fisheries

Potential Impact	Phase ¹			Maximum Design Scenario	Justification
	C	O	D		
Loss or restricted access to fishing grounds	✓	✓	✓	<p>Construction Phase Maximum fishing area lost/maximum restriction in access to fishing as a result of the following:</p> <ul style="list-style-type: none"> • installation of up to 307 wind turbines and up to ten Offshore Substation Platforms (OSPs)/Offshore converter station platforms; • installation of up to 1,225 km inter-array cables and up to 94 km of OSP/Offshore converter station platform interconnectors; • installation of up to eight offshore export cables of up to 872 km length in total; • 500 m construction safety zones and 50 m pre-commissioning safety zones; • advisory safe passing distances as defined by risk assessment, suitably promulgated to maximise awareness of ongoing construction activities; • up to 500 m advisory exclusion of fishing along vulnerable sections of cables (e.g. cables awaiting burial or protection); • offshore construction may take place over a period of up to 96 months. Within this period export cable installation (including post-commissioning) may take place over a period of up to 24 months. Site preparation activities may happen at any point during the construction phase. <p>Operation and Maintenance Phase Maximum fishing area lost/maximum restriction in access to fishing as a result of the following:</p> <ul style="list-style-type: none"> • presence of up to 307 wind turbines and up to ten OSPs/Offshore converter station platforms; • minimum spacing between wind turbines 1,000 m; • presence of up to 1,225 km inter-array cables and up to 94 km of OSP/Offshore converter station platform interconnectors with a minimum burial depth of 0.5 m. Cables protected where burial is not possible (i.e. due to hard grounds or at crossing) – up to 15% of inter-array cables and OSP/Offshore converter station platform interconnectors (183.75 km and 14.10 km, respectively) may require protection; • presence of up to eight offshore export cables of up to 872 km length in total with a minimum burial depth of 0.5 m. Cables protected where burial is not possible (i.e. due to hard grounds) – up to 15% of offshore export cables (130.80 km) may require protection; • cable protection at up to 94 cable crossings (78 for inter-array cables and 16 for the offshore export cables). • 500 m operational safety zones for major maintenance activities; • up to 500 m advisory exclusion of fishing along vulnerable sections of cables (i.e. in the event that sections of cables become exposed); and • operation and maintenance phase up to 35 years. <p>Decommissioning Phase At the end of the operational lifetime of the Proposed Development, it is anticipated that jacket (pin pile) substructures will be cut at an agreed depth below the level of the seabed for partial removal and jacket (suction caisson) foundations would be removed. All cables will be removed where it is possible and appropriate to do so. All cable protection will be fully removed where it is possible and appropriate to do so noting this will depend on the type of protection used and condition of the protection at the time of</p>	This represents the maximum duration and extent of construction, operation and maintenance and decommissioning activities, and hence the greatest potential to restrict access to fishing grounds.

¹ C = Construction, O = Operation and maintenance, D = Decommissioning

Potential Impact	Phase ¹			Maximum Design Scenario	Justification
	C	O	D		
				<p>removal. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.</p> <p>The maximum design scenario in respect of activities associated with the removal of infrastructure during decommissioning assumes that all sea surface structures will be completely removed above the seabed and all subsea cables will be left <i>in situ</i>. It is assumed to be, at worst, as described for the construction phase. With regard to infrastructure which may be left <i>in situ</i> the maximum design scenario would, at worst be as described for the operation and maintenance phase.</p>	
Displacement of fishing activity into other areas	✓	✓	✓	<p>Construction Phase As above for loss of grounds or restricted access to fishing grounds.</p> <p>Operation and Maintenance Phase As above for loss of grounds or restricted access to fishing grounds.</p> <p>Decommissioning Phase As above for loss of grounds or restricted access to fishing grounds.</p>	This represents the maximum duration and extent of construction, operation and maintenance and decommissioning activities, and hence the greatest potential for displacement of fishing activity into other areas.
Increased steaming times	✓	✓	✓	<p>Construction Phase</p> <ul style="list-style-type: none"> • installation of up to 307 wind turbines and up to ten OSPs/Offshore convertor station platforms; • 500 m construction safety zones and 50 m pre-commissioning safety zones; • advisory safe passing distances as defined by risk assessment, suitably promulgated to maximise awareness of ongoing construction activities; and • offshore construction may take place over a period of up to 96 months. Within this period offshore export cables installation (including post-commissioning) may take place over a period of up to 24 months. Site preparation activities may happen at any point during the construction phase. <p>Operation and Maintenance Phase</p> <ul style="list-style-type: none"> • presence of up to 307 wind turbines and up to ten OSPs/Offshore convertor station platforms; • minimum spacing between wind turbines of 1,000 m; • 500 m operational safety zones for major maintenance activities; and <p>Operation and maintenance phase up to 35 years.</p> <p>Decommissioning Phase</p> <p>The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and number of vessels and equipment. As such, the maximum design scenario for the decommissioning phase is assumed to be as described for the construction phase.</p>	Represents the maximum potential for disruption of established steaming routes
Snagging risk - loss or damage to fishing gear and safety issues	✓	✓	✓	<p>Construction Phase</p> <ul style="list-style-type: none"> • installation of up to 307 wind turbines and up to ten OSPs/Offshore convertor station platforms; • installation of up to 1,225 km inter-array cables and up to 94 km of OSP/Offshore convertor station platform interconnectors; • installation of up to eight offshore export cables of up to 872 km length in total; • assumes cables may be surface laid before being buried/protected; • potential for obstacles on the seabed that may represent a fastening risk to fishing gears (i.e. accidentally dropped objects); and • offshore construction may take place over a period of up to 96 months. Within this period offshore export cables installation (including post-commissioning) may take place over a period of up to 24 months. Site preparation activities may happen at any point during the construction phase. 	This represents the maximum number of structures on the seabed and spatial extent of inter array cables, interconnectors, 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	Phase ¹			Maximum Design Scenario	Justification
	C	O	D		
				<p>Operation and Maintenance Phase</p> <ul style="list-style-type: none"> presence of up to 307 wind turbines and up to ten OSPs/Offshore convertor station platforms; minimum spacing between wind turbines: 1,000 m; presence of up to 1,225 km inter-array cables and up to 94 km of OSP/Offshore convertor station platform interconnectors; presence of up to up to eight offshore export cables of up to 872 km length in total; up to 15% of inter-array cables, interconnectors and offshore export cables may require protection; cable protection at up to 94 cable crossings (78 at inter-array cables and 16 at offshore export cables); potential for obstacles on the seabed that may represent a fastening risk to fishing gears (i.e. accidentally dropped objects); and <p>Operation and maintenance phase up to 35 years.</p> <p>Decommissioning Phase</p> <p>At the end of the operational lifetime of the Proposed Development, it is anticipated that jacket (pin pile) substructures will be cut at an agreed depth below the level of the seabed for partial removal and jacket (suction caisson) foundations would be removed. All cables will be removed where it is possible and appropriate to do so and cable protection will be fully removed where it is possible and appropriate to do so noting this will depend on the type of protection used and condition of the protection at the time of removal. The maximum design scenario for the decommissioning phase assumes all subsea cables and cable protection will be left <i>in situ</i>. With regard to infrastructure which may be left <i>in situ</i> the maximum design scenario would, at worst be as described for the operation and maintenance phase.</p>	
Interference with fishing activities	✓	✓	✓	<p>Construction Phase</p> <ul style="list-style-type: none"> up to 155 vessels on site at one time; up to 11,484 vessel movements (return trips); and offshore construction may take place over a period of up to 96 months. Within this period offshore export cables installation (including post-commissioning) may take place over a period of up to 24 months. Site preparation activities may happen at any point during the construction phase. <p>Operation and Maintenance Phase</p> <ul style="list-style-type: none"> up to 12 operation and maintenance vessels on site at any one time. <p>Vessel movements (return trips):</p> <ul style="list-style-type: none"> four Crew Transfer Vessels/Workboats, one x jack-up vessel and two x Service Operating Vessel (SOV) (832, 2 and 26 trips per year, respectively); one cable repair vessel (up to five times over the operation and maintenance phase); one cable vessel survey conducting a four-week survey per year; one excavator or backhoe dredger (up to five times over the operation and maintenance phase); and two SOV daughter craft (two to four movements around the Proposed Development array area per day). operation and maintenance phase up to 35 years. <p>Decommissioning Phase</p> <p>The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and number of vessels and equipment. The maximum design scenario for the decommissioning phase is assumed to be full removal of infrastructure and as such is as described for the construction phase.</p>	The maximum number of vessel transits/vessels on site and duration of construction/operation and maintenance phase would result in the greatest potential for conflict/interference between vessels undertaking work for the Proposed Development and fishing vessels and gear.

Potential Impact	Phase ¹			Maximum Design Scenario	Justification
	C	O	D		
Potential impacts on commercially exploited species	✓	✓	✓	<p>Construction Phase Maximum design scenario as described in volume 2, chapter 9 for the construction phase.</p> <p>Operation and Maintenance Phase Maximum design scenario as described in volume 2, chapter 9 for the operation and maintenance phase.</p> <p>Decommissioning Phase Maximum design scenario as described in volume 2, chapter 9 for the decommissioning phase.</p>	The maximum potential for effects on commercially exploited species, as described in volume 2, chapter 9.

12.8.2. IMPACTS SCOPED OUT OF THE ASSESSMENT

60. On the basis of the baseline environment and the project description outlined in volume 1, chapter 3 of the Offshore EIA Report, no impacts have been proposed to be scoped out of the assessment for commercial fisheries.

12.9. METHODOLOGY FOR ASSESSMENT OF EFFECTS

12.9.1. OVERVIEW

61. The commercial fisheries assessment of effects has followed the methodology set out in volume 1, chapter 6 of the Offshore EIA Report. Specific to the commercial fisheries EIA, 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);
- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison: FLOWW (Fishing Liaison with Offshore Wind and Wet Renewables Group) (2014);
- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds. FLOWW (Fishing Liaison with Offshore Wind and Wet Renewables Group) (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.

62. Marine Scotland Science (2022). Assessing fisheries displacement by other licensed marine activities: good practice guidance, by Xodus for the Scottish Government.

12.9.2. CRITERIA FOR ASSESSMENT OF EFFECTS

63. The process for 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. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity are based on those which are described in further detail in volume 1, chapter 6 of the Offshore EIA Report.

64. The criteria for defining magnitude in this chapter are outlined in Table 12.6. In determining magnitude within this chapter, each assessment considered the spatial extent, duration, frequency and reversibility of impact and these are outlined within the magnitude section of each assessment of effects (e.g. a duration of hours or days would be considered for most receptors to be of short term duration, which is likely to result in a low magnitude of impact).

Table 12.6: Definition of Terms Relating to the Magnitude of an Impact

Magnitude of Impact	Definition
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.

65. The criteria for defining sensitivity in this chapter are outlined in Table 12.7.

Table 12.7: 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 Proposed Development, 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	Very 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

66. The significance of the effect upon commercial fisheries is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The particular method employed for this assessment is presented in Table 12.8.

67. In cases where a range is suggested for the significance of effect, there remains the possibility that this may span the significance threshold (i.e. the range is given as minor to moderate). In such cases, the final significance conclusion is based upon the author's professional judgement as to which outcome delineates the most likely effect, with an explanation as to why this is the case. Where professional judgement is applied to quantify final significance from a range, the assessment will set out the factors that result in the final assessment of significance. These factors may include the likelihood that an effect will occur, data certainty and relevant information about the wider environmental context.

68. For the purposes of this assessment:

- a level of residual effect of moderate or more will be considered a 'significant' effect in terms of the EIA Regulations; and
- a level of residual effect of minor or less will be considered 'not significant' in terms of the EIA Regulations.

69. Effects of moderate significance or above are therefore considered important in the decision-making process, whilst effects of minor significance or less warrant little, if any, weight in the decision-making process.

Table 12.8: 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

70. Please note that for the potential impact “Snagging Risk – Loss or Damage to Fishing Gear and Safety Issues” the outcome of volume 2, chapter 13 has been used to inform assessment of risk (further details also provided in paragraph 164). Therefore, for this impact only, terminology for significance of effect aligns with assessment terminology as used in volume 2, chapter 13.

12.10. MEASURES ADOPTED AS PART OF THE PROPOSED DEVELOPMENT

71. As part of the project design process, a number of measures have been proposed to reduce the potential for impacts on commercial fishing (see Table 12.9). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Proposed Development and have therefore been considered in the assessment presented in section 12.11 (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 12.9: Designed In Measures Adopted as Part of the Proposed Development

Designed In Measures Adopted as Part of the Proposed Development	Justification
Appointment of a FLO.	Provides a project specific point of contact to liaise and engage with the fishing industry.
Participation in the FTCFWG.	Provides a forum for information sharing and discussion of key issues with fisheries stakeholders and other developers in the region.
A Navigational Safety and Vessel Management Plan (NSVMP) (volume 4, appendix 25) will provide the details of the vessel management and navigational safety of the Proposed Development and mitigate the impact of project vessels and the navigational risk to other legitimate users of the sea. Under the NSVMP, the Applicant will ensure that details of the Proposed Development are promulgated in the	Facilitates awareness and helps minimising disturbance to fishing activities, timely and efficient distribution of NtM, Kingfisher notifications and other navigational warnings of the position and nature of works associated with the Proposed Development.

Designed In Measures Adopted as Part of the Proposed Development	Justification
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Kingfisher fortnightly bulletins, as soon as reasonably practicable prior to the commencement of construction of the Proposed Development to inform the commercial fishing industry of vessels routes, timing and locations of construction works, and relevant details the construction activities. Record hazards such as subsea cables.	Minimises the risk introduced due to the presence of project vessels.
Compliance of all project vessels with international marine regulations as adopted by the Flag State, notably the International Regulations for Preventing Collisions at Sea (COLREG) and International Convention for the Safety of Life at Sea (SOLAS).	Minimises the risk introduced due to the presence of project vessels.
Lighting and marking of the Proposed Development array area in agreement with the NLB and in line with IALA G1162 (IALA, 2021).	Maximises awareness of the Proposed Development both in both day and night conditions including in restricted visibility and assists with SAR operations.
Appropriate marking of structures (both within the Proposed Development array area and export cable corridor) on UKHO Admiralty Charts.	Maximises awareness of the Proposed Development allowing vessels to passage plan in advance.
Adherence to appropriate guidance with regards to fisheries liaison and mitigation (i.e. FLOWW guidance).	Facilitates the establishment of productive relationships with fisheries stakeholders and the implementation of an evidence-based approach to mitigation.
Use of guard vessels and OFLOs where required and appropriate.	Facilitates engagement with fisheries stakeholders during specific project works and minimises potential for conflict between the Proposed Development and fishing activities.
Development of a FMMS for Marine Scotland - Licensing Operations Team (MS-LOT) approval and in consultation with fisheries stakeholders.	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 minimise impacts on commercial fishing.
An outline FMMS is provided in volume 4, appendix 24.	
Outline NSVMP will be provided at Application (volume 4, appendix 25)	Details the Applicants proposed approach to navigation safety and vessel management to maximise safety considerations.
Cables will be buried to a minimum depth of 0.5 m where reasonably practicable. Where cable burial target depths are not met cable protection will be used.	Minimises potential interactions between fishing gear and cables.
The location, extent and nature of the cable protection measures used will be communicated to the fishing industry.	Prevents potential damage to and from fishing gear and associated safety risks.
Where rock placement is used for cable protection consideration will be given to designs that minimise potential gear snagging risk (i.e. used of graded rock and 1:3 profile berms).	Facilitates co-existence and minimises potential damage to and from fishing gear and associated safety risks.
Undertaking of post-lay and burial inspection surveys and, where appropriate and practicable, undertaking of rectification works.	Facilitates co-existence and prevents potential damage to and from fishing gear and minimises potential safety risks.
Undertaking of assessments to determine cable burial status (including cable protection) and identify potential changes to seabed conditions. Findings would be shared with the fishing industry to discuss requirements for any further surveys	Facilitates co-existence and prevents potential damage to and from fishing gear and minimises potential safety risks.
Anticipated vessel transit routes and shelter/holding areas for construction vessels will be identified in the NSVMP.	Facilitates co-existence and minimises potential adverse interactions between Proposed Development vessels and fishing activities.
Development of a Code of Good Practice for contracted vessels.	Facilitates co-existence between vessels undertaking works for the Proposed Development and fishing vessels and helps minimise potential adverse interactions.

Designed In Measures Adopted as Part of the Proposed Development	Justification
Development of suitable procedures to allow claims for loss or damage to gear.	Facilitates co-existence and minimises potential adverse interactions between Proposed Development vessels and fishing activities.

12.11. ASSESSMENT OF SIGNIFICANCE

72. The potential effects arising from the construction, operation and maintenance and decommissioning phases of the Proposed Development are listed in Table 12.5, along with the maximum design scenario against which each impact has been assessed. An assessment of the likely significance of the effects of the Proposed Development on commercial fisheries receptors caused by each identified impact is given below.

LOSS OR RESTRICTED ACCESS TO FISHING GROUNDS

73. During the construction, operation and maintenance and decommissioning phases there may be potential for the undertaking of Proposed Development activities and/or the presence of Proposed Development infrastructure to result in a loss of grounds or restricted access to traditional fishing grounds.

Construction Phase

Magnitude of Impact

74. The maximum design scenario is represented by the installation of up to 307 wind turbines and ten OSPs/Offshore convertor station platforms, up to 1,225 km of inter-array cables, up to 94 km of interconnector cables and up to eight offshore export cables of up to 872 km in total length, with associated safety zones and/or advisory measures around relevant infrastructure/works, over a period of up to 96 months. Within this period, offshore export cables installation (including post-commissioning) may take place over up to 24 months. Site preparation activities may happen at any point during the construction phase.

75. The need to implement safety zones and advisory measures during the construction phase may result in localised loss or restricted access to fishing grounds. As described in Table 12.5, requirements for safety zones and advisory measures are anticipated to include:

- 500 m construction safety zones and 50 m pre-commissioning safety zones;
- advisory safe passing distances as defined by risk assessment, suitably promulgated to maximise awareness of ongoing construction activities; and
- up to 500 m advisory exclusion of fishing along vulnerable sections of cables (e.g. cables awaiting burial or protection).

76. Access restrictions associated with the implementation of the safety zones and advisory safe passing distances and areas around vulnerable sections of cable as described above have the potential to exclude fishing activities from taking place within the Proposed Development array area and the Proposed Development export cable corridor as construction works progress.

77. To facilitate co-existence during this period and minimise impacts associated with loss of grounds/loss of access to grounds, the need for safety zones, advisory safe passing distances and areas where cables may be vulnerable will be minimised, where safe and practicable. In addition, information on planned construction works and safety zones, advisory safe passing distances and vulnerable sections of cables will be circulated in a timely and efficient manner through NTM.

78. The Proposed Development FLO will engage in close liaison with the fishing industry through the pre-construction and construction phases. Furthermore, where appropriate, guard vessels and OFLOs will be used to ensure good communication is maintained between construction vessels and fishing vessels active in the area of the Proposed Development and its proximity.

79. In instances where the relocation of static fishing gear may be necessary, appropriate mitigation via cooperation agreements will be established for affected vessels, using an evidence-based approach in line with FLOWW guidance.

80. An outline of the approach to co-existence with commercial fisheries set out for the Proposed Development, including reference to the measures of relevance for minimising loss or restricted access to fishing grounds during construction, is included within the Outline FMMS (volume 4, appendix 24).

Demersal Trawling – *Nephrops* and Squid Fishery

Nephrops Fishery

81. As discussed in section 12.7.2, vessels engaged in the *Nephrops* fishery in the commercial fisheries study area concentrate their activities in inshore areas (within the 12 nm limit and predominantly within the 6 nm limit) and therefore, for the most part, impacts on these vessels would be limited to construction works associated with the inshore area of the Proposed Development export cable corridor. Considerable areas of suitable *Nephrops* grounds are however available within the commercial fisheries study area in areas outside of the Proposed Development export cable corridor (Figure 12.9 and Figure 12.10).

82. The extent of the overall *Nephrops* grounds affected at any given time will be limited to inshore areas of the Proposed Development export cable corridor that overlap with *Nephrops* grounds where advisory safe passing distances are in place at a given time and/or around vulnerable sections of the offshore export cables. The impact will be short term in duration (up to 24 months for offshore export cables installation, including post-commissioning and site preparation activities may happen at any point during the construction phase.) and occur intermittently. As previously noted (paragraphs 77 to 79), a range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during construction. The magnitude of the impact is therefore considered to be low.

Squid Fishery

83. Vessels engaged in the seasonal squid fishery in the commercial fisheries study area predominantly target nearshore areas, including discrete sections of inshore area of the Proposed Development export cable corridor. In addition, there may be potential for some activity to take place in offshore areas at times, including within the Proposed Development array area (Figure 12.13, Figure 12.14 and Figure 12.15).

84. The extent of squid grounds affected at a given time will therefore be limited to the discrete sections of grounds that may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables. The impact will be short to medium term in duration (over a 96 month construction phase within which, offshore export cables installation (including post-commissioning) may take place over 24 months and site preparation activities may happen at any point during the construction phase) and will occur intermittently. As previously noted (paragraphs 77 to 79), a range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during construction. The magnitude of the impact on is therefore considered to be low.

Creeling – Lobster and Crab Fishery

85. As described in section 12.7.3, creelers active in the commercial fisheries study area predominantly target inshore areas, including nearshore areas where the Proposed Development export cable corridor is located. However, some vessels extend their activity further offshore, including within the Proposed Development array area (Figure 12.17, Figure 12.18, Figure 12.19, Figure 12.20 and Figure 12.21).
86. The extent of grounds affected at any given time will be limited to discrete sections of the creeling grounds that may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables. The impact will be short to medium term in duration (over a 96 month construction phase within which offshore export cables installation (including post-commissioning) may take place over up to 24 months and site preparation activities may happen at any point during the construction phase) and occur intermittently. As previously noted (paragraphs 77 to 79), a range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during construction.
87. With specific reference to creelers, this includes a commitment to the implementation of appropriate mitigation via co-operation agreements with affected vessels in instances where the relocation of static fishing gear cannot be avoided. The magnitude of the impact is therefore considered to be low.
- Dredging – Scallop Fishery
88. Scallop dredging activity in the study area is predominantly focused on the western section of the Proposed Development array area, with limited activity anticipated in inshore areas of the Proposed Development export cable corridor (Figure 12.24, Figure 12.27). As described in section 12.7.4, vessels active in offshore areas are typically nomadic and target productive scallop grounds around Scotland and the rest of the UK (Figure 12.28). The location of the base port would have little relevance to the magnitude of effect predicted, as all local and visiting vessels would be able to fish and transit across the whole of the Firth of Forth grounds, except around cable installation vessels. Vessels may be additionally excluded (fishing only) from areas where cables are vulnerable. However, vessels would be able transit these areas and can fish east and west of the cables.
89. The extent of scallop grounds affected at any given time would be limited to discrete sections of the grounds that may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables. The impact will be short to medium term in duration (over a 96month construction phase within which, offshore export cable installation (including post-commissioning) may take place over up to 24 months) and occur intermittently. As previously noted (paragraphs 77 to 79), a range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during construction. The magnitude of the impact is therefore considered to be low.

Sensitivity of the Receptor

Demersal Trawling – *Nephrops* and Squid Fishery

Nephrops Fishery

90. Vessels active in the *Nephrops* fishery in areas of relevance to the Proposed Development are typically between 10 m and 20 m in length. Operational ranges vary from vessel to vessel and have been reported to be from 2 nm to 60 nm during consultation (volume 3, appendix 12.1). The grounds that these vessels can target are restricted to areas of suitable *Nephrops* habitat. As illustrated in section 12.7.2, grounds actively targeted by *Nephrops* trawlers within the commercial fisheries study area, extend across the inshore section of the Firth of Forth (Figure 12.9, Figure 12.10 and Figure 12.11) including the area where the inshore section of the Proposed Development export cable corridor is located. The sensitivity of *Nephrops* trawlers is therefore considered to be medium.

Squid Fishery

91. As mentioned in section 12.7.2, some of the local vessels engaged in the *Nephrops* fishery as well as some visiting vessels target squid on a seasonal basis. Operational ranges reported during consultation with local vessels ranged from 2 nm to 60 nm. Visiting vessels, would generally be expected to have wider operational ranges. Available information on the distribution of activity suggests that there is limited overlap between squid grounds reported in the commercial fisheries study area and the Proposed Development (Figure 12.11, Figure 12.13, Figure 12.14 and Figure 12.15). The sensitivity of squid trawlers is therefore considered to be low.

Creeling – Lobster and Crab Fishery

92. Vessels active in the lobster and crab fishery are typically small in size (under 10 m in length) and have reduced operational ranges with activity generally concentrating within the 6 nm limit, including areas that overlap with the Proposed Development export cable corridor. Some vessels, are known to target areas further offshore, including areas within the Proposed Development array area (Figure 12.19, Figure 12.20, Figure 12.21 and Figure 12.22). Reported operational ranges during consultation with fisheries stakeholders typically ranged between 2 nm and 28 nm with some vessels noting greater operational ranges. Given their typically smaller operational ranges and reliance on local grounds the fishing opportunities of vessels engaged in creeling tend to be more restricted than for other methods. The sensitivity of creelers is considered to be high for vessels that are restricted to nearshore areas and medium for vessels with extended operational ranges.

Dredging – Scallop Fishery

93. Vessels active in the scallop dredging fishery within the commercial fisheries study area are typically nomadic vessels (generally over 15 m in length) with wide operational ranges, which target productive scallop grounds around Scotland and in many cases across the rest of the UK. Although some nearshore activity may be undertaken at times by smaller local vessels, this would be expected at very low levels (Figure 12.29). As discussed in section 12.7.4, the Proposed Development array area, particularly the north-western section, supports some scallop dredging activity (Figure 12.27). However, activity levels within this area, are considerably lower than in more productive grounds located immediately to the north of the Proposed Development, as well as in other areas around Scotland and the UK. The sensitivity of scallop dredgers is therefore considered to be low.

Significance of the Effect

Demersal Trawling – *Nephrops* and Squid Fishery

Nephrops Fishery

94. 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, which is not significant in EIA terms.

Squid Fishery

95. 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 **minor** adverse significance, which is not significant in EIA terms.

Creeling – Lobster and Crab Fishery

96. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be high for vessels active in nearshore area and medium for vessels with extended operational ranges. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

97. This takes account of the embedded mitigation that has been proposed, and includes a commitment to the implementation of appropriate mitigation, via co-operation agreements with affected vessels, in instances where the relocation of static fishing gear cannot be avoided.

Dredging – Scallop Fishery

98. 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 **minor** adverse significance, which is not significant in EIA terms.

Secondary Mitigation and Residual Effect

99. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Operation and Maintenance Phase

Magnitude of Impact

100. The maximum design scenario with regard to loss or restricted access to fishing grounds during the operation and maintenance phase is represented by an operational life of up to 35 years, the presence of up to 307 wind turbines and up to ten OSPs/Offshore converter station platforms, with a minimum spacing between wind turbines of 1,000 m, presence of up to 1,225 km of inter-array cables, 94 km of interconnector cables and up to eight offshore export cables (872 km in total) buried to a minimum depth of 0.5 m and protected where cable burial target depths are not met (cable protection over up to 15% of inter-array, interconnector and offshore export cables and at up to 94 cable crossings (78 for inter-array cables and 16 for offshore export cables)), and presence of safety zones and/or advisory measures during operation and maintenance.
101. As described in Table 12.5, requirements for safety zones and advisory measures are anticipated to include:
- 500 m operational safety zones around major maintenance activities; and
 - up to 500 m advisory exclusion of fishing along vulnerable sections of cables (i.e. in the event that sections of cables become exposed).
102. The potential loss of fishing grounds during the operation and maintenance phase within the Proposed Development array area will be localised around the footprint of the Proposed Development's infrastructure on the seabed and any safety zones or advisory measures which may be in place around infrastructure/works at a given time.
103. Existing legislation does not prevent fishing from occurring within operational wind farm array areas and it is expected that fishing activities will be able to resume to a certain degree in the Proposed Development array area. The level of activity which may resume in the Proposed Development array area, however, would depend on the perception of individual skippers with regard to risks associated with operating fishing gear within the Proposed Development array area at a given time. This is influenced by conditions such as minimum spacing, weather and visibility as well as operating patterns and gears specifications all of which may affect vessel manoeuvrability.
104. Whilst guidance with regard to standard parameters required to facilitate the viability of fishing within wind farms is currently not available, there is evidence of the ability of fishing to continue within operational wind farm array areas from various operational projects across the UK. This includes both static and towed gear fishing activities.

105. It is well established that creelers are able to resume activity within operational wind farms and are less constrained than other fishing methods given the size of the vessels involved and static nature of the gear used (i.e. see example of co-existence at Westermost Rough reported in Ørsted (2022) and AIS tracks of a 22 m creeler fishing within the Hornsea One array area illustrated in Figure 12.32 for reference).

106. Given the relatively small and inshore location of the majority of operational offshore wind farms in the UK to date, records of activity by vessels operating towed gear are scarcer, however, in some of the projects which supported towed gear fisheries prior to construction, there is emerging evidence of mobile fishing methods resuming activity. Examples of this are based on AIS tracks of a 30 m beam trawler fishing within Walney Extension, a 20 m trawler operating within the Beatrice array area and a 33 m scallop dredger fishing within the Moray East array area are given in Figure 12.33, Figure 12.34 and Figure 12.35 respectively. In this context it is important to note that the minimum spacing between wind turbines at these projects is comparable to that of 1,000 m currently considered for the Proposed Development (926 m at Hornsea One, 946 m at Beatrice, 913 m at Walney Extension and 1,119 m at Moray East).

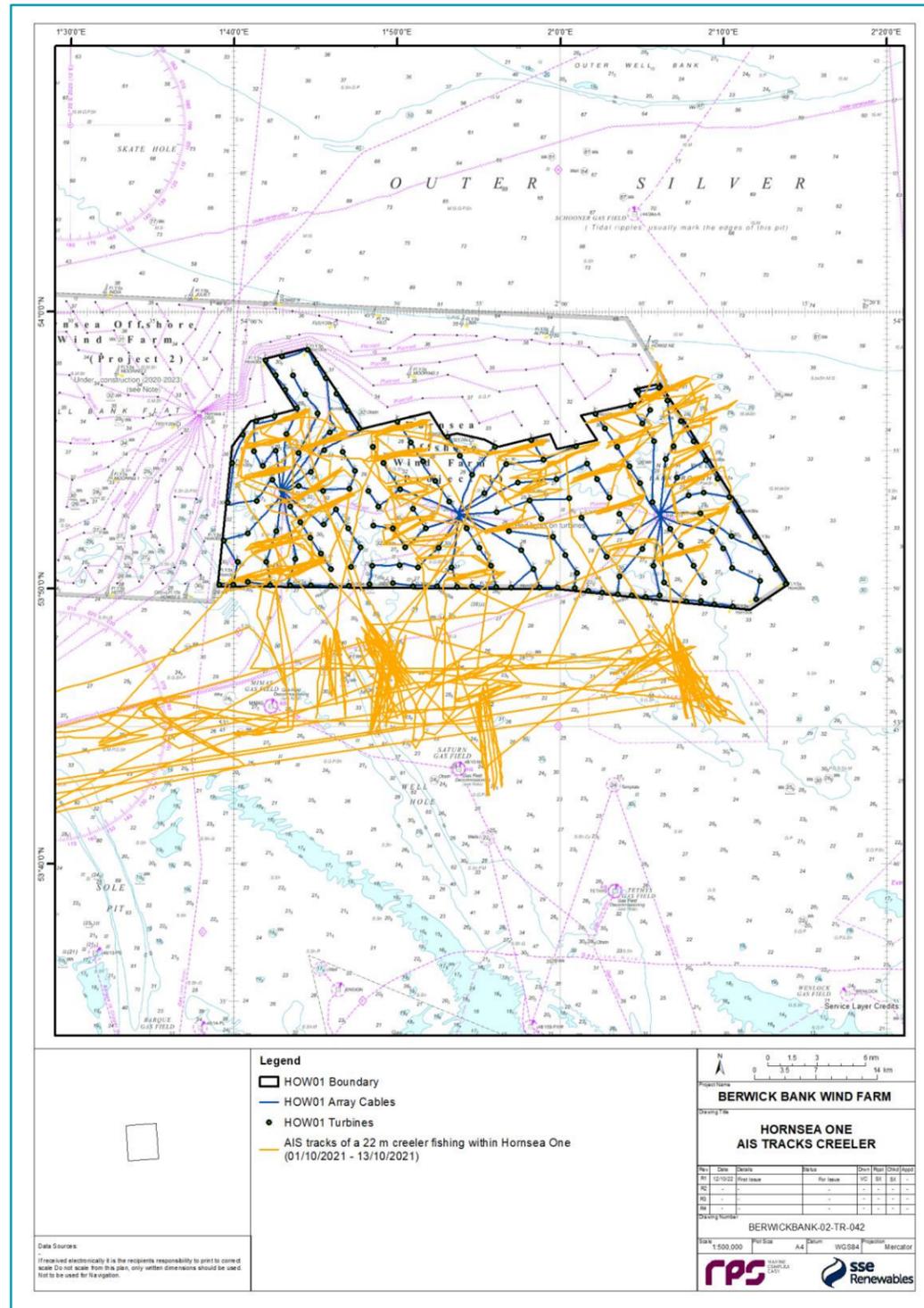


Figure 12.32: AIS Tracks of a 22 m Creeler Fishing within Hornsea One

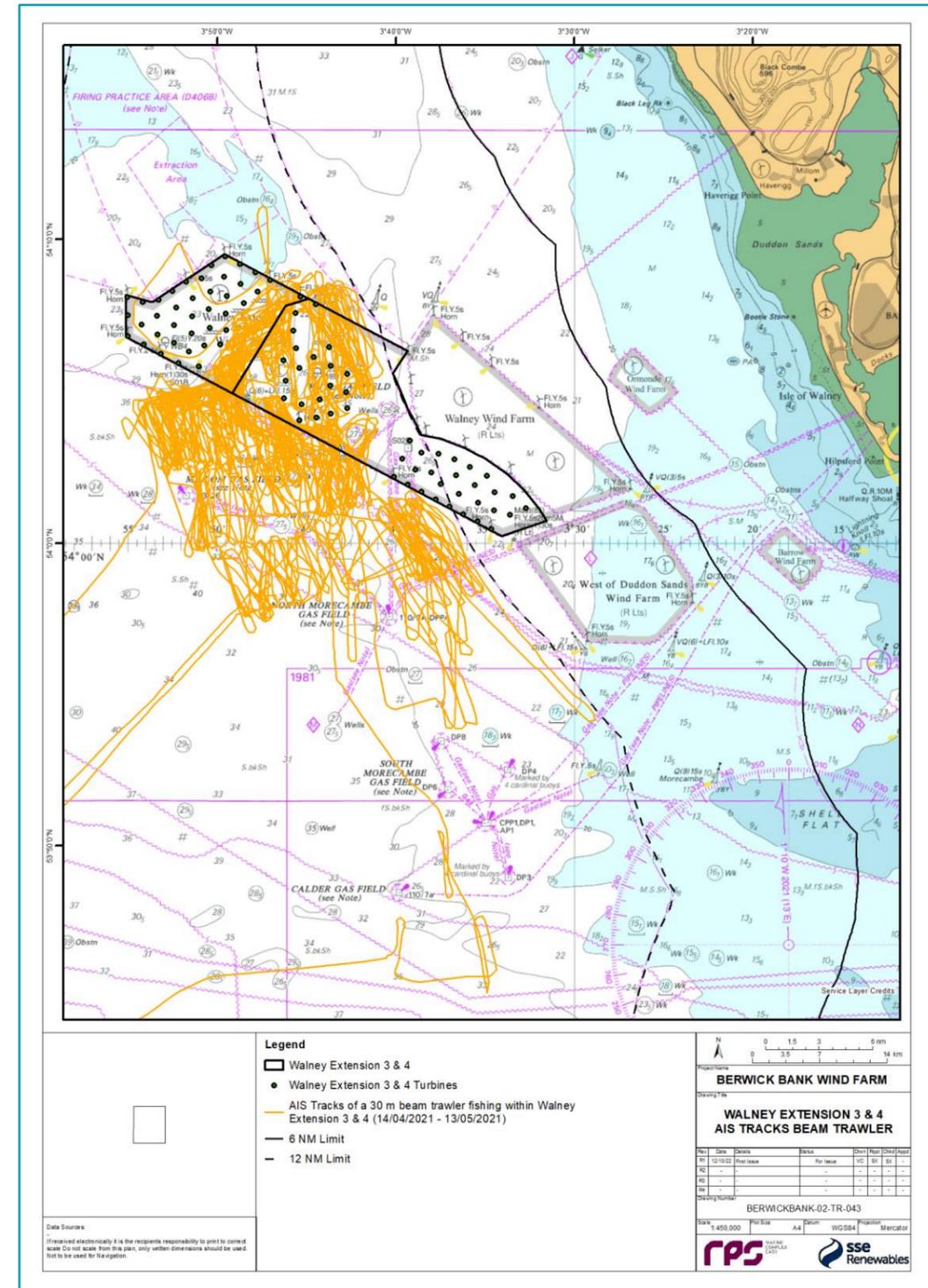


Figure 12.33: AIS Tracks of a 30 m Beam Trawler Fishing within Walney Extension

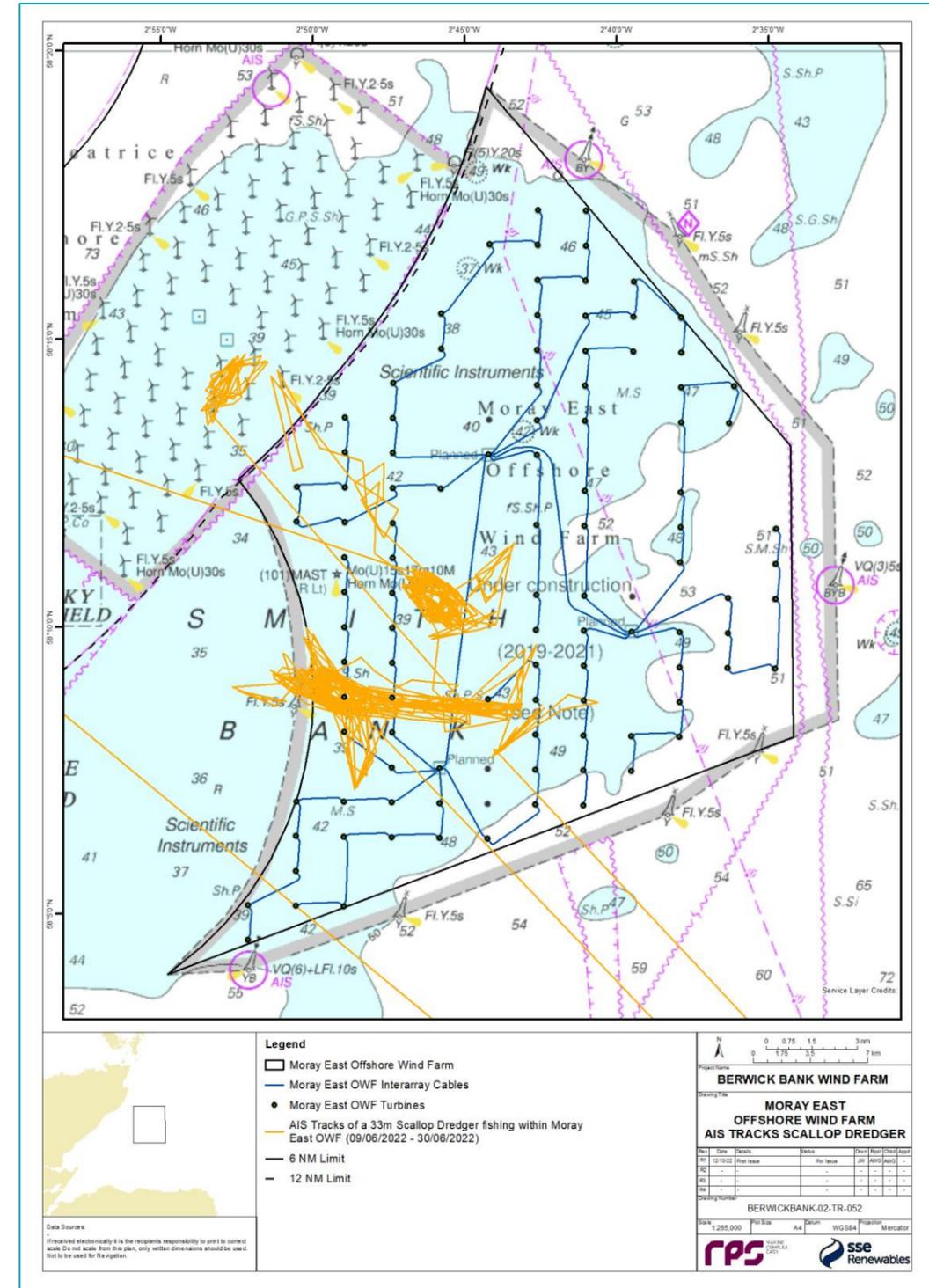
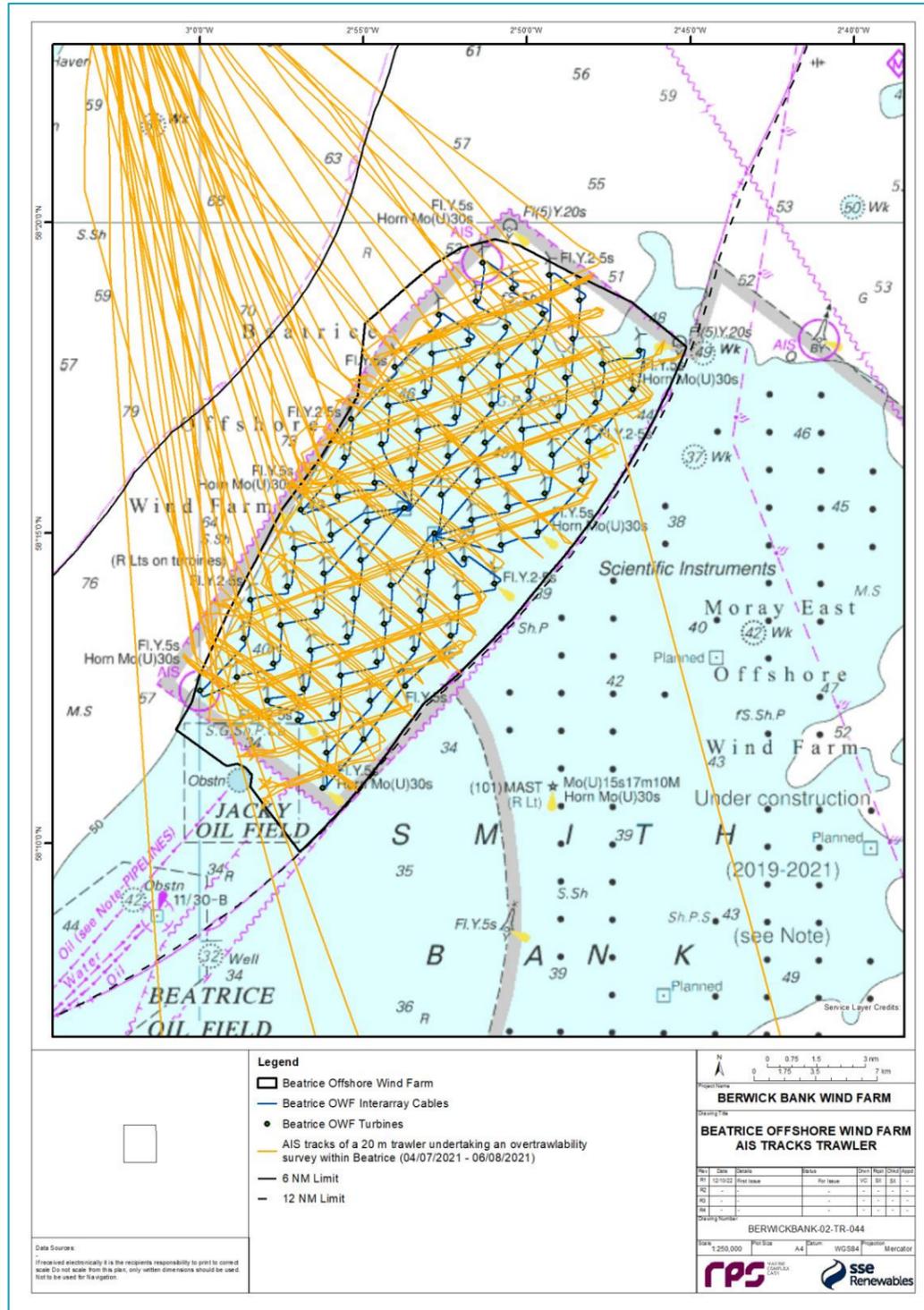


Figure 12.34: AIS Tracks of a 20 m Trawler Undertaking an Overtrawlability Survey within Beatrice

Figure 12.35: AIS Tracks of a 33 m Scallop Dredger Fishing within Moray East

107. With regard to the Proposed Development export cable corridor, loss of grounds during operation and maintenance would be limited to the discrete locations where cable protection may be introduced and any temporary advisory measures which may be in place at a given time.
108. To minimise disturbance to fishing operations during the operation and maintenance phase the Proposed Development's FLO will engage with the fishing industry as appropriate and information on relevant maintenance works will be circulated to the fishing industry in a timely and efficient manner to allow fishermen sufficient time to plan their activities.
109. The location, extent and nature of the cable protection used will be shared with fisheries stakeholders. In areas where rock placement is required, consideration will be given to designs that reduce potential snagging risk with fishing gear to facilitate co-existence with mobile fisheries, particularly demersal trawling (i.e. use of graded rocks and berms designed with 1:3 gradients). Furthermore, post-lay and burial inspections surveys will be undertaken. In addition, assessments will be carried out to determine cable burial status (including cable protection) and to identify potential changes to seabed conditions. These would be aimed at facilitating co-existence with fishing and minimising snagging risk and associated loss or damage of fishing gear and safety issues.
110. Provisions for the measures above will be included in the FMMS which will be produced for the Proposed Development (see volume 3, appendix 24).
- Demersal Trawling – *Nephrops* and Squid Fishery
- Nephrops* Fishery
111. As discussed in section 12.7.2, vessels engaged in the *Nephrops* fishery in the commercial fisheries study area concentrate their activities in inshore areas (within the 12 nm limit and predominantly within the 6 nm limit). Loss of grounds to these vessels during operation and maintenance, would be very small, being limited to discrete sections of *Nephrops* grounds which may overlap with areas of the offshore export cables where cable protection may be required and/or areas where cables may be vulnerable at a given time (i.e. in the event that cables exposures are identified during operation and maintenance).
112. The presence of cable protection will be long term, however, additional localised loss of grounds associated with the presence of vulnerable sections of cables would be short term, temporary and intermittent. Furthermore, as previously noted (paragraphs 108 to 110), 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 (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). The magnitude of the impact is therefore considered to be low.
- Squid Fishery
113. Vessels engaged in the seasonal squid fishery in the commercial fisheries study area predominantly target nearshore areas, including discrete sections of inshore area of the Proposed Development export cable corridor. In addition, there may be potential for some activity to take place in offshore areas at times, including within the Proposed Development array area. Loss of grounds to these vessels during operation and maintenance, would be very small being limited to discrete areas of squid grounds which may overlap with areas where the Proposed Development's infrastructure is located, safety zones around major operation and maintenance works, and discrete areas around vulnerable sections of cables (i.e. in the event that cable exposures are identified during operation and maintenance).
114. The presence of Proposed Development infrastructure will be long-term. However, any additional localised loss of grounds associated with the implementation of safety zones around major operation and maintenance activities and/or the presence of vulnerable sections of cables would be short term, temporary and intermittent.
115. Furthermore, as previously noted (paragraphs 108 to 110), 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 (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). The magnitude of the impact is therefore considered to be low.
- Creeling – Lobster and Crab Fishery
116. As described in section 12.7.3, creelers active in the commercial fisheries study area predominantly target inshore areas, including nearshore areas where the Proposed Development export cable corridor is located. However, some vessels extend their activity further offshore, including within the Proposed Development array area. Loss of grounds to these vessels during operation and maintenance, would be limited to small discrete areas where project infrastructure is located and areas where it is necessary to implement safety zones or other advisory measures.
117. The presence of Proposed Development infrastructure will be long-term, however, any additional localised loss of grounds associated with the safety zones around major operation and maintenance activities and/or the presence of vulnerable sections of cables would be short term, temporary and intermittent. Furthermore, as previously noted (paragraphs 108 to 110), a range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation and maintenance. The magnitude of the impact is therefore considered to be low.
- Dredging – Scallop Fishery
118. Scallop dredging activity in areas of relevance to the Proposed Development is predominantly focused on the western section of the Proposed Development array area with limited activity anticipated in inshore areas of relevance to the Proposed Development export cable corridor. As described in section 12.7.4, vessels active in offshore areas are typically nomadic and target productive scallop grounds around Scotland and the rest of the UK.
119. Loss of grounds to these vessels during operation and maintenance would be very small, being limited to discrete areas of scallop grounds which may overlap with areas where the Proposed Development's infrastructure is located, and discrete areas around vulnerable sections of cables (i.e. in safety zones around major maintenance works, the event that cable exposures are identified during operation and maintenance). In the case of nomadic vessels, this takes account of the availability of productive grounds in areas beyond the Proposed Development. For local vessels active in nearshore areas, this considers the limited overlap expected between their activity and the inshore section of the Proposed Development export cable corridor.
120. The presence of the Proposed Development's infrastructure will be long-term, however, any additional localised loss of grounds associated with the implementation of safety zones and the presence of vulnerable sections of cables would be short term, temporary and intermittent. Furthermore, as previously noted (paragraphs 108 to 110), a range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds. The magnitude of the impact is therefore considered to be low.
- Sensitivity of the Receptor
121. The sensitivity of the receptors to the loss of or restricted access to fishing grounds during the operation and maintenance phase is as previously described for the construction phase This is as follows:
- demersal trawling – *Nephrops* and squid fisheries: medium for *Nephrops* trawlers and low for squid trawlers (paragraphs 90 and 91);

- creeling – lobster and crab fishery: high for vessels restricted to nearshore areas and medium for vessels with extended operational ranges (see paragraph 92); and
- dredging – scallop fishery: low (see paragraph 93).

Significance of the Effect

Demersal Trawling – *Nephrops* and Squid Fishery

Nephrops Fishery

122. 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, which is not significant in EIA terms.

Squid Fishery

123. 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 **minor** adverse significance, which is not significant in EIA terms.

Creeling – Lobster and Crab Fishery

124. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be high for vessels restricted to nearshore areas and medium for vessel with extended operational ranges. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

Dredging – Scallop Fishery

125. 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 **minor** adverse significance, which is not significant in EIA terms.

Secondary Mitigation and Residual Effect

126. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Decommissioning Phase

127. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment. The decommissioning plan and programme will be updated during the Project lifespan to take account of changing best practice and new technologies. It may be decided, closer to the time of decommissioning, that removal will result in greater environmental impacts than leaving offshore components *in situ*.
128. 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 and therefore considered as follows:
- demersal trawlers – *Nephrops* and squid fisheries:
 - *Nephrops* fishery: **minor** adverse significance which is not significant in EIA terms; and
 - squid fishery: **minor** adverse significance which is not significant in EIA terms.
 - creeling – lobster and crab fishery: minor adverse significance which is not significant in EIA terms; and
 - dredging – scallop fishery: minor adverse significance which is not significance in EIA terms.

129. The effects of infrastructure which may be left *in situ* are anticipated to be the same or similar in nature to the effects of the operation and maintenance phase with regard to potential loss or restricted access to fishing grounds. These are as follows:

- demersal trawlers – *Nephrops* and squid fisheries:
 - *Nephrops* fishery: **minor** adverse significance which is not significant in EIA terms; and
 - squid fishery: **minor** adverse significance which is not significant in EIA terms.
- creeling – lobster and crab fishery: minor significance which is not significant in EIA terms; and
- dredging – scallop fishery: minor adverse significance which is not significance in EIA terms.

130. As noted in the Enhancement, Mitigation and Monitoring Commitments (volume 3, appendix 6.3) as part of the decommissioning plan a detailed assessment of the status of cables (and cable protection where appropriate) left *in situ* will be undertaken post-decommissioning, based on best practice at the time. In the event that cable exposures are identified, these will be marked and notified and appropriate rectification works undertaken where practicable and feasible.

Secondary Mitigation and Residual Effect

131. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

DISPLACEMENT OF FISHING ACTIVITY INTO OTHER AREAS

132. During the construction, operation and maintenance and decommissioning phases there may be potential for the undertaking of Proposed Development activities and/or the presence of the Proposed Development's infrastructure to result in a displacement of fishing activity into other areas.
133. With regard to scallop dredging, which does take place within the Proposed Development array area, the area is not a key fishing ground, with more productive grounds throughout the UK.
134. For vessels that deploy static gear, there could be potential for conflicts associated with displacement effects to arise whereby gear that have to be temporarily removed, is relocated into grounds where other static gear vessels or mobile gear vessels operate. Similarly, vessels which operate mobile gears may be displaced to grounds where other mobile gear vessels operate, also increasing conflict and competition for fishing grounds.
135. Whilst it is difficult to predict where fishing activity may be displaced to and how this may affect individual vessels, in all cases, the level of displacement would be a function of the extent of loss or restricted access to fishing grounds. In the absence of an established assessment framework, or any precedent or guidance any such assessment would be complex and unreliable. Given the social, economic and environmental variations that could influence the outcomes, any attempt to attempt an integrated assessment of supply chains is expected to be complex and unreliable. The information required for the analysis (e.g. the number and diversity of relevant fisheries, their supply chains and how resilience to unknown influences) would, if it existed, be widely dispersed and uneven. It is the Applicant's position that any such assessment would require the development of a complex assessment framework to process the data, and account for unpredictable factors such as human responses to change, environmental variations and external supply chain disruptions. In the absence of such a framework, any assessment would be at best unreliable. It is therefore considered that the magnitude of impact, sensitivity of the receptor and resulting significance of effect in respect of displacement would, at worst, be as identified in relation to loss of grounds or restricted access to fishing grounds (see paragraphs 74 to 130).

136. As such it is considered that the findings of the assessment with regards to loss or restricted access to fishing grounds also apply in relation to displacement of fishing activity and are as summarised in Table 12.10.

Table 12.10: Assessment of the Impact of Displacement of Fishing Activities into other Areas

Proposed Development Phase	Receptor	Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Additional Mitigation	Residual Effect Significance
Construction and Decommissioning	Demersal trawling - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor
	Demersal Trawling - squid fishery	Low	Low	Minor	N/A	Minor
	Creeling -vessel active nearshore	Low	High	Minor	N/A	Minor
	Creeling -vessels with extended operational ranges	Low	Medium	Minor	N/A	Minor
	Dredging- scallop fishery	Low	Low	Minor	N/A	Minor
Operation and Maintenance	Demersal trawling - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor
	Demersal Trawling - squid fishery	Low	Low	Minor	N/A	Minor
	Creeling -vessels active nearshore	Low	High	Minor	N/A	Minor
	Creeling -vessels with extended operational ranges	Low	Medium	Minor	N/A	Minor
	Dredging- scallop fishery	Low	Low	Minor	N/A	Minor
Decommissioning (activities associated with the removal of infrastructure)	Demersal trawling - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor
	Demersal Trawling - squid fishery	Low	Low	Minor	N/A	Minor
	Creeling -vessel active nearshore	Low	High	Minor	N/A	Minor
	Creeling -vessels with extended operational ranges	Low	Medium	Minor	N/A	Minor
	Dredging- scallop fishery	Low	Low	Minor	N/A	Minor
Decommissioning (effects associated with infrastructure left <i>in situ</i>)	Demersal trawling - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor
	Demersal Trawling - squid fishery	Low	Low	Minor	N/A	Minor
	Creeling -vessels active nearshore	Low	High	Minor	N/A	Minor
	Creeling -vessels with extended operational ranges	Low	Medium	Minor	N/A	Minor
	Dredging- scallop fishery	Low	Low	Minor	N/A	Minor

INCREASED STEAMING TIMES

137. The implementation of safety zones, and advisory measures during the construction, operation and maintenance and decommissioning phases could result in some short term increases in steaming distances and times to fishing vessels active in the commercial fisheries study area.

Construction Phase

Magnitude of Impact

All Fisheries

138. The maximum design scenario is represented by the installation of up to 307 wind turbines and ten OSPs/Offshore convertor station platforms, up to 1,225 km of inter-array cables, up to 94 km of interconnector cables and up to eight offshore export cables of up to 872 km in total length, with associated safety zones and/or advisory measures around relevant infrastructure/works, over a period of up to 96 months. Within this period, export cable installation (including post-commissioning) may take place over up to 24 months and site preparation activities may happen at any point during the construction phase.

139. As described in volume 2, chapter 13, there will be no restrictions on entry into the buoyed construction area other than those associated with construction and pre-commissioning safety zones. In addition, vessels will be able to transit the area of the Proposed Development export cable corridor during installation works. Fishing vessels in transit would only be affected by localised areas where safety zones may be in place at a given time and where advisory safe passing distances may be recommended.

140. 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 Proposed Development, including the location and extent of safety zones and advisory measures, in a timely and efficient manner.

141. The impact is predicted to be very small in spatial extent, being limited to the location of safety zones and/or advisory measures. Impacts would be temporary and intermittent and occur over a short to medium duration (short duration associated with 500 m construction safety zones and advisory measures and medium duration in the case of 50 m pre-commissioning safety zones). In addition, appropriate fisheries liaison and management measures will be implemented to minimise impacts. The magnitude is therefore considered to be low.

Sensitivity of the Receptor

Demersal Trawling – *Nephrops* and Squid Fishery

142. Vessels active in the *Nephrops* and squid fishery in the Commercial Fisheries Study area are typically between 10 m and 20 m in length and their operational ranges have been reported ranging from 2 nm to 60 nm (volume 3, appendix 12.1). Given their size and range of operation they have some capability to adapt to potential small changes in steaming routes to/from fishing grounds. The sensitivity of these vessels is considered to be low.

Creeling – Lobster and Crab Fishery

143. The majority of creelers active in the commercial fisheries study area are under 10 m in length and concentrate their activities in nearshore areas. Some vessels however have extended operational ranges and target grounds further offshore including the area of the Proposed Development array area. Smaller

vessels which operate in nearshore areas would have limited capability to adapt to changes in steaming routes to/from fishing grounds, whilst vessels that operate in offshore areas would be more adaptable. The sensitivity is considered to be medium for smaller creelers that operate in nearshore areas, and low for vessels that have the ability to target areas further offshore.

Dredging – Scallop Fishery

144. Vessels active in the scallop dredging fishery within the commercial fisheries study area are typically nomadic vessels (generally over 15 m in length) with wide operational ranges, which target productive scallop grounds around Scotland and in many cases across the rest of the UK. Although some nearshore activity may be undertaken at times by smaller local vessels, this would be expected at very low levels.
145. Smaller local vessels which operate in nearshore areas would have limited capability to adapt to changes in steaming routes to/from fishing grounds, whilst nomadic vessels that operate in offshore areas would be more adaptable. The sensitivity is considered to be medium for small local scallop dredgers that operate in nearshore areas, and low for nomadic vessels.

Significance of the Effect

Demersal Trawling – *Nephrops* and Squid Fishery

146. 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 **minor** adverse significance, which is not significant in EIA terms.

Creeling – Lobster and Crab Fishery

147. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium for small vessels active in nearshore areas and low for vessels that have extended operational ranges. The effect will, therefore, be of **minor** adverse significance for both types of vessels which is not significant in EIA terms.

Dredging – Scallop Fishery

148. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low for nomadic vessels and medium for local vessels that target nearshore areas. The effect will, therefore, be of **minor** adverse significance for both types of vessels, which is not significant in EIA terms.

Secondary Mitigation and Residual Effect

149. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Operation and Maintenance Phase

Magnitude of Impact

All Fisheries

150. The maximum design scenario is represented by the presence of up to 307 wind turbines and up to ten OSPs/Offshore convertor station platforms, with a minimum spacing between wind turbines of 1,000 m, presence of inter-array cables, interconnector cables and offshore export cables, with associated safety zones as required over the operation and maintenance phase (35 years).

151. Requirements for safety zones of relevance to fishing vessels in transit (steaming) are anticipated to include 500 m operational safety zones around major maintenance activities.
152. Whilst the impact could occur across the operational lifetime of the Proposed Development, fishing vessels would not be restricted from transiting through the Proposed Development array area and Proposed Development export cable corridor, with the exception of areas subject to safety zones at a given time.
153. Furthermore, appropriate liaison would be undertaken with fisheries stakeholders to ensure that they are informed of the nature, timing and location of major maintenance activities associated with the Proposed Development, including the location and extent of safety zones, in a timely and efficient manner.
154. The impact is predicted to be of very small spatial extent localised and intermittent in nature and a range of fisheries liaison and management measures will be implemented to minimise impacts on fishing. The magnitude is therefore considered to be negligible.

Sensitivity of the Receptor

155. The sensitivity of the receptors to increased steaming times during the operation and maintenance phase is as previously described for the construction phase. This is as follows:
- demersal trawling – *Nephrops* and squid fisheries: low (paragraphs 142);
 - creeling – lobster and crab fishery: medium for small vessels which operate in nearshore areas and low for vessels with extended operational ranges (see paragraph 143); and
 - dredging – scallop fishery: low for nomadic vessels and medium for smaller local vessels that operate nearshore (see paragraphs 144 and 145).

Significance of the Effect

Demersal Trawling – *Nephrops* and Squid Fishery

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

Creeling – Lobster and Crab Fishery

157. Overall, the magnitude of the impact is deemed to be negligible and the sensitivity of the receptor is considered to be medium for vessels that operate in nearshore areas and low for vessels with extended operational ranges. For both types of vessels, the effect will, therefore, be of **negligible** adverse significance which is not significant in EIA terms.

Dredging – Scallop Fishery

158. Overall, the magnitude of the impact is deemed to be negligible and the sensitivity of the receptor is considered to be low for nomadic vessels and medium for local vessels that operate in nearshore areas. For both types of vessels, the effect will, therefore, be of **negligible** adverse significance, which is not significant in EIA terms.

Secondary Mitigation and Residual Effect

159. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Decommissioning Phase

160. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.
161. The effects of decommissioning activities with regard to increased steaming times are therefore expected to be the same or similar in nature to the effects of construction (paragraphs 146 to 148) and therefore considered as follows:
- demersal trawling – *Nephrops* and squid fisheries: minor adverse significance which is not significant in EIA terms;
 - creeling – lobster and crab fishery: minor adverse significance which is not significant in EIA terms; and
 - dredging – scallop fishery: **minor** adverse significance which is not significant in EIA terms.

SNAGGING RISK – LOSS OR DAMAGE TO FISHING GEAR AND SAFETY ISSUES

162. The sections below provide an assessment of snagging risk and potential associated damage or loss of fishing gear and safety issues as a result of Proposed Development infrastructure and potential seabed obstacles resulting from the Proposed Development construction, operation and maintenance and decommissioning phase.
163. Safety risks associated with navigation (including for fishing vessels) are assessed in volume 2, chapter 13.
164. The assessment presented here follows the standard methodology described in section 12.9 with regard to loss or damage to fishing gear. For assessment of safety issues, a risk assessment approach based on the methodology presented in the shipping and navigation assessment (volume 2, chapter 13) has been followed. This assigns risk ratings based on the probability of occurrence (negligible, extremely unlikely, remote, reasonably probable or frequent) and the severity of the effect (negligible, minor, moderate, serious or major). Effects of unacceptable significance are considered important in the decision-making process, whilst effects broadly acceptable or tolerable significance warrant, little, if any, weight in the decision-making process. Further detail on the risk assessment methodology is provided in the shipping and navigation chapter (volume 2, chapter 13).

Construction Phase

Magnitude of Impact and Probability of Occurrence

All Fisheries

165. As construction progresses, the increasing presence of subsea Proposed Development infrastructure such as wind turbine and OSP/Offshore converter station platform foundations would have potential to represent a snagging risk for fishing gear. Similarly, the potential presence of sections of offshore export cables, inter-array and interconnector cables temporarily awaiting burial or protection as well as seabed obstacles (e.g. dropped objects) which may be present as a result of construction works may also pose a snagging risk.
166. The maximum design scenario is represented by the installation of up to 307 wind turbines and ten OSPs/Offshore converter station platforms, up to 1,225 km of inter-array cables, up to 94 km of interconnector cables and up to eight offshore export cables of up to 872 km in total length, over a period of up to 96 months. Within this period, offshore export cable installation (including post-commissioning) may take place over up to 24 months and site preparation activities may happen at any point during the construction phase in addition, it assumes that cables may be surface laid before being buried/protected

and that there is potential for obstacles on the seabed to arise from the construction phase which may represent a fastening risk to fishing gears.

167. A number of liaison and management measures will be implemented to ensure that loss or damage to fishing gear and associated safety issues is minimised and mitigated appropriately. This will include the circulation of the required information with regard to construction works, including on the location of safety zones and advisory measures. In addition, guard vessels and OFLOs will be used during construction as appropriate.
168. All contractors undertaking works will be contractually obliged to ensure compliance with standard offshore safety policies, including those that prohibit the discarding of objects or material overboard and that require the rapid recovery of accidentally dropped objects.
169. Provisions for the measures above will be included in the FMMS which will be produced for the Proposed Development (see Outline FMMS in volume 4, appendix 24).
170. The impact is predicted to be of very small spatial extent (being localised around the immediate footprint of Proposed Development infrastructure) and of short to medium term duration. In addition, as described above a range of fisheries liaison and management measures will be implemented. The magnitude is therefore considered to be low and the frequency of occurrence of safety issues remote.

Sensitivity of the Receptor and Severity of Consequence

All Fisheries

171. In the event that fishing gear snags with Proposed Development infrastructure or associated seabed obstacles, there is potential for the gear to be damaged or lost. As such, all fisheries are considered to have limited adaptability to the potential impact. The sensitivity of the receptor is therefore considered to be medium. Fishing vessels operating in and around the area of the Proposed Development would be made aware of applicable safety zones as well as any advisory measures which may apply at a given time. In the event of fishing gear becoming fast with infrastructure or seabed obstacles associated with the Proposed Development, 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. Provided the required safety guidance and emergency procedures are followed, the severity of a snagging incident is considered to be moderate.

Significance of the Effect

All Fisheries

172. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The probability of occurrence is deemed to be remote and the severity of consequence moderate. The effect will, therefore, be of **minor** adverse significance and **tolerable**, which is not significant in EIA terms.

Secondary Mitigation and Residual Effect

173. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Operation and Maintenance Phase

Magnitude of Impact and Probability of Occurrence

All Fisheries

174. During the operation and maintenance phase of the Proposed Development the presence of subsea infrastructure such as wind turbine and OSP/Offshore convertor station platform foundations and cable protection (where required) has potential to represent a snagging risk for fishing gear. Similarly, the potential presence of discrete sections of offshore export cables and/or inter-array cables which may become exposed as well as seabed obstacles which may arise as a result of maintenance works (i.e. dropped objects, sediment berms, etc) may also pose a snagging risk.
175. The maximum design scenario with regard to snagging risk during the operation and maintenance phase is represented by and operational life of up to 35 years, the presence of up to 307 wind turbines and up to ten OSPs/Offshore convertor station platforms, with a minimum spacing between wind turbines of 1,000 m, presence of up to 1,225 km of inter-array cables, 94 km of interconnector cables and up to eight offshore export cables (872 km in total) buried to a minimum depth of 0.5 m and protected where burial is not possible (cable protection in up to 15% of inter-array, interconnector and offshore export cables and at up to 94 cable crossings (78 for inter-array cables and 16 for offshore export cables)).
176. A number of liaison and management measures will be implemented to ensure that snagging risk and associated loss or damage to fishing gear and safety issues are minimised and mitigated appropriately. This will include the circulation of appropriate information, including on the location of safety zones and advisory measures which may need to be implemented during the operation and maintenance phase. The location, extent and nature of the cable protection used will be shared with fisheries stakeholders. In areas where rock placement is required, consideration will be given to designs that reduce potential snagging risk with fishing gear to facilitate co-existence with mobile fisheries, particularly demersal trawling (i.e. use of graded rocks and berms designed with 1:3 gradients). Furthermore, post-lay and burial surveys will be undertaken and rectification works where appropriate and practicable. Assessments will be undertaken to determine cable burial status (including cable protection) and identify potential changes to seabed conditions. Findings would be shared with the fishing industry to discuss requirements for any further surveys. In addition, a procedure for claim of loss or damage to fishing gear will be implemented.
177. All contractors undertaking works will be contractually obliged to ensure compliance with standard offshore safety policies, including those that prohibit the discarding of objects or material overboard and that require the rapid recovery of accidentally dropped objects.
178. Provisions for the measures above will be included in the FMMS which will be produced for the Proposed Development (see Outline FMMS in volume 4, appendix 24).
179. The impact is predicted to be of long-term but intermittent and it will occur over a very small spatial extent (being localised around the immediate footprint of Proposed Development infrastructure or associated seabed obstacle) and a range of fisheries liaison and management measures will be implemented. The magnitude is therefore considered to be low and the probability of occurrence of safety issues is considered to be remote.

Sensitivity of the Receptor and Severity of Consequence

All Fisheries

180. The sensitivity of the receptors to snagging risk and associated loss or damage to fishing gear and the severity of consequence of safety issues related to this during operation and maintenance is as previously identified for the construction phase. This is as follows:
- all fisheries: medium sensitivity for loss or damage to fishing gear and moderate severity of safety issues (see paragraph 171).

Significance of the Effect

All Fisheries

181. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The probability of occurrence is deemed to be remote and the severity of consequence moderate. The effect will, therefore, be of **minor** adverse significance and **tolerable**, which is not significant in EIA terms.

Secondary Mitigation and Residual Effect

182. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Decommissioning Phase

183. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.
184. The effects of decommissioning activities associated with the removal of infrastructure with regard to snagging risk and associated loss or damage to fishing gear are therefore expected to be the same or similar in nature to the effects of construction (paragraphs 172) and are therefore considered to be as follows:
- all fisheries: minor adverse significance and tolerable which is not significant in EIA terms.
185. The effects of infrastructure which may be left *in situ* is anticipated to be the same or similar in nature to the effects of the operation and maintenance phase with regard to gear snagging risks. These are as follows:
- all fisheries: minor adverse significance and tolerable which is not significant in EIA terms.
186. As noted in the Enhancement, Mitigation and Monitoring Commitments (volume 3, appendix 6.3) as part of the decommissioning plan a detailed assessment of the status of cables (and cable protection where appropriate) left *in situ* will be undertaken post-decommissioning, based on best practice at the time. In the event that cable exposures are identified, these will be marked and notified and appropriate rectification works undertaken where practicable and feasible.

INTERFERENCE WITH FISHING ACTIVITIES

187. The transiting of vessels associated with the Proposed Development has potential to cause interference with fishing activities during the construction, operation and maintenance and decommissioning phases.

Interference in this context makes reference to fishing vessels engaged in fishing potentially having to change their normal operations due to the presence of transiting project vessels. In addition, for creelers, it considers interference due to the potential fouling of static gear marker lines by transiting project vessels.

Construction Phase

Magnitude of Impact

188. The maximum design scenario is represented by up to 10,238 vessel return trips per year, up to 116 vessels on site at one time and offshore construction taking place over a period of up to 96 months. Within this period, offshore export cable installation, including post-commissioning, may take place over a period of up to 24 months and site preparation activities may happen at any point during the construction phase (Table 12.5).

Static gear fisheries – creeling

189. In the case of fishing vessels that use static gear such as creelers, the main potential cause of interference would be the fouling of static gear surface marker lines by transiting construction vessels.
190. Appropriate liaison would be undertaken with fisheries stakeholders to ensure that they are informed of the nature, timing and location of Proposed Development construction activities. This will include provisions for enabling awareness of construction vessel crews of the location of static gears and fishermen's awareness of construction vessel operations. In addition, as noted in Table 12.9, a Code of Good Practice for contracted vessels will be produced and OFLOs will be used as appropriate. In addition, a procedure for the claim of loss or damage to fishing gear will be developed and anticipated vessel transit routes and shelter/holding areas for construction vessels will be identified in the NSVMP.
191. Provisions for the measures above which will be produced for the Proposed Development (see Outline FMMS in volume 4, appendix 24).
192. The impact is predicted to be of local spatial extent, medium term duration and intermittent in nature. A range of fisheries liaison and management measures will be implemented to minimise potential interference between construction vessels and static gear fisheries. The magnitude of the impact is therefore, considered to be low.

Mobile fisheries – demersal trawling and scallop dredging

193. Appropriate liaison would be undertaken with fisheries stakeholders to ensure that they are informed of the nature, timing and location of Proposed Development construction activities. This will include provisions for enabling fishermen's awareness of construction vessel transit routes. In addition, transiting construction vessels will fully comply as required under the COLREGS. Such compliance would negate the requirement for fishing vessels engaged in fishing to alter course or pose any risk to gear being towed. In addition, as noted in Table 12.9, a Code of Good Practice for contracted vessels will be produced, FLOs will be used as required and anticipated vessel transit routes and shelter/holding areas for construction vessels will be identified in the NSVMP.
194. Provisions for the measures above will be included in the FMMS which will be produced for the Proposed Development (see Outline FMMS in volume 4, appendix 24).
195. The impact is predicted to be of local spatial extent, medium term duration and intermittent in nature. A range of fisheries liaison and management measures will be implemented. The magnitude of the impact is therefore, considered to be low.

Sensitivity of the Receptor

Static gear fisheries – creeling

196. Considering the static nature of the gear used by vessels that operate creels, they would have limited capability to avoid interactions between gear and transiting construction vessels. The sensitivity of the receptor is, therefore, considered to be medium.

Towed gear fisheries – demersal trawling and scallop dredging

197. In the case of fishing vessels operating towed gears, given their mobility, the potential for conflict with construction vessels would be limited. The sensitivity of the receptor is, therefore, considered to be low.

Significance of the Effect

Static gear fisheries – creeling

198. 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, which is not significant in EIA terms.

Towed gear fisheries – demersal trawling and scallop dredging

199. 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** adverse significance, which is not significant in EIA terms.

Secondary Mitigation and Residual Effect

200. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Operation and Maintenance Phase

Magnitude of Impact

201. The maximum design scenario is represented by an operation and maintenance phase of up to 35 years, up to 12 operation and maintenance vessels on site and any one time and the following vessel movements during operation and maintenance (Table 12.13):
- Four Crew Transfer Vessels/Workboats, one jack-up vessel and two SOV (832, 2 and 26 trips per year, respectively);
 - one cable repair vessel (up to five times over the operation and maintenance phase);
 - one cable vessel survey conducting a four-week survey per year;
 - one excavators or backhoe dredger (up to 5 times over the operation and maintenance phase); and
 - two SOV daughter craft (two to four movements around the Proposed Development array area per day).

Static gear fisheries

202. As described above for the construction phase (paragraph 189), in the case of fishing vessels that use static gear such as creelers, the main potential cause of interference would be the fouling of static gear surface marker lines by transiting maintenance vessels.
203. The same fisheries liaison and management measures outlined for the construction phase, to minimise risk of interference with static gears, would also apply during the operation and maintenance phase (paragraph 190).
204. The impact is predicted to be of local spatial extent, long term duration and intermittent in nature and a range of fisheries liaison and management measures will be implemented. The magnitude of the impact is therefore, considered to be low.
- Towed gear fisheries
205. As previously described in respect of the construction phase (paragraph 193), the potential for interactions between vessels using towed gear and maintenance vessels to occur would also be very limited. Transiting maintenance vessels will fully comply as required under COLREGS. Such compliance would negate the requirement for fishing vessels engaged in fishing to alter course or pose any risk to fishing gear being towed.
206. The impact is predicted to be of local spatial extent, long term duration and intermittent in nature and a range of fisheries liaison and management measures will be implemented. The magnitude of the impact is therefore, considered to be low.

Sensitivity of the Receptor

207. The sensitivity of the receptors to interference with fishing activities due to the presence of transiting vessels during the operation and maintenance phase is as previously described for the construction phase: This is as follows:
- static gear fisheries – creeling: medium (paragraphs 196); and
 - towed gear fisheries – demersal trawling and scallop dredging: low (paragraph 197).

Significance of the Effect

Static gear fisheries – creeling

208. 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, which is not significant in EIA terms.

Towed gear fisheries – demersal trawling and scallop dredging

209. 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** adverse significance, which is not significant in EIA terms.

Secondary Mitigation and Residual Effect

210. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Decommissioning Phase

211. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.
212. The effects of decommissioning activities with regard to interference with fishing activities are therefore expected to be the same or similar in nature to the effects of construction (paragraphs 198 to 199) and therefore considered as follows:
- static gear fisheries – creeling: **minor** adverse significance, which is not significant in EIA terms; and
 - towed gear fisheries – demersal trawling and scallop dredging: **negligible** adverse significance, which is not significant in EIA terms.

POTENTIAL IMPACTS ON COMMERCIALLY EXPLOITED SPECIES

Construction Phase

213. There is potential for the construction phase of the Proposed Development to result in impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that depend on them.
214. The potential impacts of the construction of the Proposed Development on fish and shellfish species, including those of commercial importance, are assessed in volume 2, chapter 9 including consideration of the following:
- temporary habitat loss/disturbance;
 - long-term subtidal habitat loss;
 - injury and/or disturbance to fish and shellfish from underwater noise and vibration; and
 - increased suspended sediment concentrations and associated sediment deposition.
215. 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 in the study area. 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.

Operation and Maintenance Phase

216. There is potential for the operation and maintenance phase of the Proposed Development to result in impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that depend on them.
217. The potential impacts of the operation and maintenance phase of the Proposed Development on fish and shellfish species, including those of commercial importance in the commercial fisheries study area are assessed in volume 2, chapter 9 including consideration of the following:
- long-term subtidal habitat loss;
 - temporary habitat loss/disturbance;
 - increased suspended sediment concentrations and associated sediment deposition;
 - injury and/or disturbance to fish and shellfish from underwater noise and vibration;
 - electromagnetic fields (EMFs) from subsea electrical cabling;
 - changes in physical process due to the presence of foundations; and
 - colonisation of foundations, scour protection and cable protection.

218. 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 in the commercial fisheries study area. Consequently, any impacts associated with this on the commercial fisheries that target them are also not expected to exceed **minor** adverse significance which is not significant in EIA terms.

Decommissioning Phase

219. There is potential for the decommissioning phase of the Proposed Development to result in impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that depend on them.

220. The potential impacts of the decommissioning phase of the Proposed Development on fish and shellfish species, including those of commercial importance in the commercial fisheries study area, are assessed in volume 2, chapter 9 including consideration of the following:

- temporary habitat loss/disturbance;
- long-term subtidal habitat loss; and
- increased suspended sediment concentrations and associated sediment deposition.

221. 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 in the commercial fisheries study area. Consequently, any impacts associated with this on the commercial fisheries that target them are also not expected to exceed **minor** adverse significance which is not significant in EIA terms.

12.11.1. PROPOSED MONITORING

222. This section outlines the proposed monitoring proposed for commercial fisheries. Proposed monitoring measures are outlined in Table 12.11.

Table 12.11: Monitoring Commitments for Commercial Fisheries

Potential Environmental Effect	Monitoring Commitment	Means of Implementation
Loss of or restricted access to fishing grounds and associated displacement	Review of fisheries data in the Commercial Fisheries study area.	To be implemented through the FMMS
Snagging risk and associated loss or damage to fishing gear and safety issues	Assessment of burial status of cables (including cable protection) and of potential changes to seabed.	To be implemented through the FMMS

12.12. CUMULATIVE EFFECTS ASSESSMENT

12.12.1. METHODOLOGY

223. The Cumulative Effects Assessment (CEA) assesses the impact associated with the Proposed Development together with other relevant plans, projects and activities. Cumulative effects are therefore the combined effect of the Proposed Development in combination with the effects from a number of different projects, on the same receptor or resource. Please see volume 1, chapter 6 for detail on CEA methodology.

224. The projects and plans selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise (see volume 3, appendix 6.4 of the Offshore EIA Report). Volume 3, appendix 6.4 further provides information regarding how information pertaining to other plans and projects is gained and applied to the assessment. Each project or plan 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.

225. In undertaking the CEA for the Proposed Development, it is important to bear in mind that other projects and plans under consideration will have differing potential for proceeding to an operational stage and hence a differing potential to ultimately contribute to a cumulative impact alongside the Proposed Development. Therefore, a tiered approach has been adopted. This provides a framework for placing relative weight upon the potential for each project/plan to be included in the CEA to ultimately be realised, based upon the project/plan's current stage of maturity and certainty in the projects' parameters. The tiered approach which will be utilised within the Proposed Development CEA employs the following tiers:

- tier 1 assessment – Proposed Development (Berwick Bank Wind Farm offshore) with Berwick Bank Wind Farm onshore;
- tier 2 assessment – All plans/projects assessed under Tier 1, plus projects which became operational since baseline characterisation, those under construction, those with consent and submitted but not yet determined;
- tier 3 assessment – All plans/projects assessed under Tier 2, plus those projects with a Scoping Report; and
- tier 4 assessment – All plans/projects assessed under Tier 3, which are reasonably foreseeable, plus those projects likely to come forward where an Agreement for Lease (AfL) has been granted.

226. The specific projects scoped into the CEA for commercial fisheries are outlined in Table 12.12. These include plans, project and activities in Tier 2 and Tier 3. No projects of relevance to commercial fishing have been screened in under Tier 1 and Tier 4. ScotWind proposals have been screened out as there is insufficient data to make a fair and robust assessment of any overlap and therefore of cumulative effects with the Proposed Development.

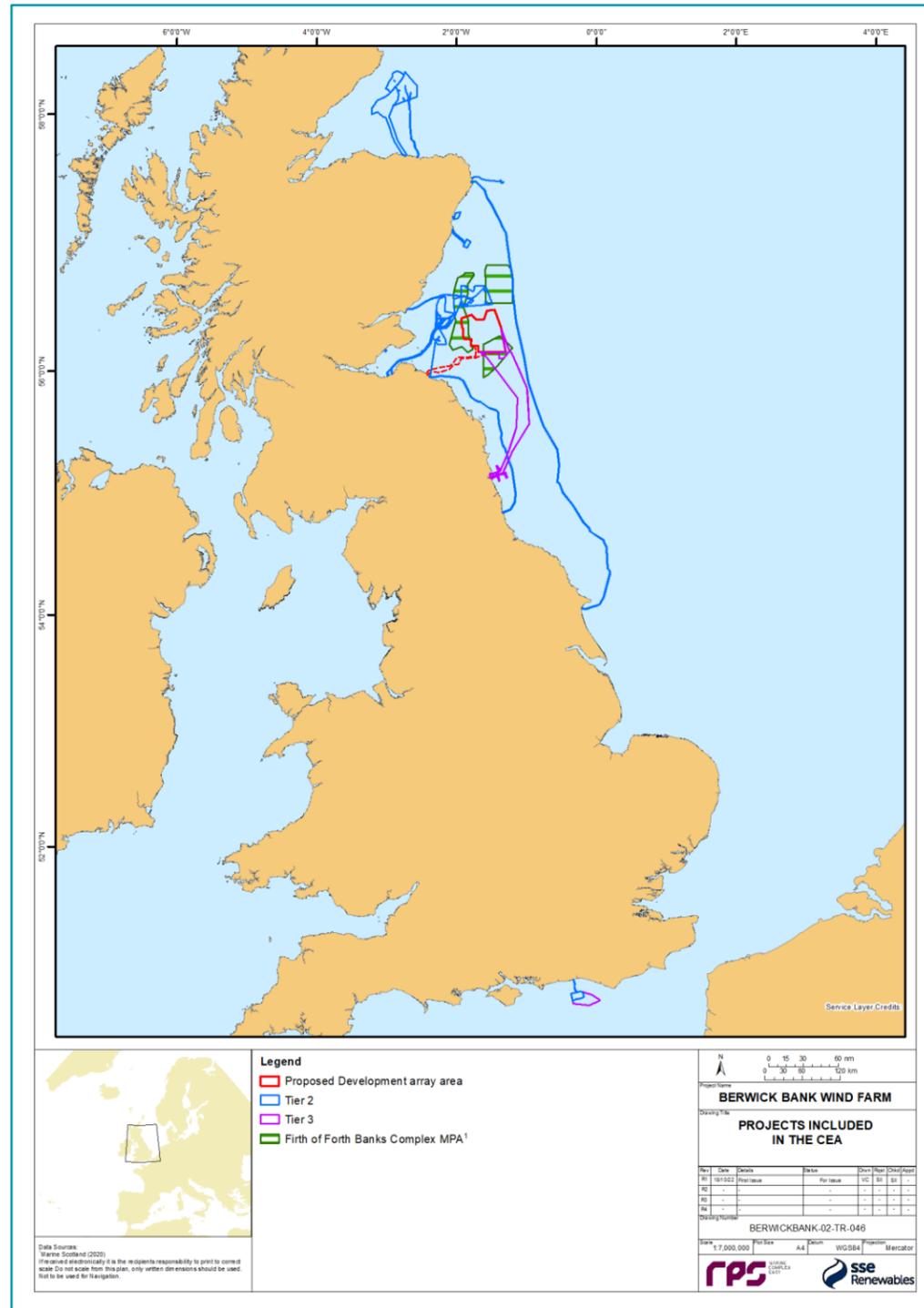
227. As described in volume 1, chapter 3, the Applicant is developing an additional export cable grid connection to Blyth, Northumberland (the Cambois connection). Applications for necessary consents (including marine licences) will be applied for separately. The CEA for the Cambois connection is based on information presented in the Cambois connection Scoping Report (SSER, 2022s), submitted in October 2022. The Cambois connection has been scoped into the CEA for commercial fisheries on the basis that Cambois connection will overlap spatially and temporally with the Proposed Development and the project will engage in activities such as cable burial and installation of cable protection which will impact commercial fisheries receptors.

228. Only projects found off the east coast of Scotland for which there is potential interactions with the commercial fisheries receptors of relevance to the Proposed Development have been scoped into the assessment. In the case of scallop dredging, consideration has been given to projects further afield, given the wide operational range of nomadic vessels, to include distant projects such as Rampion offshore wind farm and Rampion 2 as these are located in areas of importance to the UK scallop fishery. The projects identified under Tier 2 and Tier 3 in Table 12.12 are shown in Figure 12.36.

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

Development	Status [i.e. Application, Consented, Under Construction, Operational]	Distance from Array Area (km)	Distance from Export Cable Corridor (km)	Overlap with the Proposed Development [e.g. Project Construction Phase Overlaps with Proposed Development Construction Phase]
Tier 1				
N/A - Tier 1 projects (Berwick Bank onshore) have no potential interactions with commercial fishing				
Tier 2				
Offshore Wind Projects and Associated Cables				
Beatrice Offshore Wind Farm	Operational	196	236	Project operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases.
Moray Offshore Wind Farm (East)	Operational	185	225	Project operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases.
Moray Offshore Wind Farm (West)	Pre-planning Application	185	224	Project construction phase and operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases.
Hywind	Operational	108	146	Project operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases. Project decommissioning phase overlaps with operation and maintenance phase of the Proposed Development.
European Offshore Wind Deployment Centre (EOWDC)	Operational	80	120	Project operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases. Project decommissioning phase overlaps with Proposed Development operation and maintenance phase.
Kincardine Offshore Wind Farm	Operational	55	93	Project operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases. Project decommissioning phase overlaps with Proposed Development operation and maintenance phase.
Forthwind Demonstration Project	Submitted	65	41	Project construction phase and operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases.
Methil Offshore Wind Farm	Operational	65	42	Project operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases. Project decommissioning phase overlaps with Proposed Development operation and maintenance phase.
Inch Cape Offshore Wind Farm	Consented	15	39	Project construction phase and operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phase.
Neart na Gaoithe (NnG)	Under Construction	14	15	Project operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases.
Seagreen 1	Under Construction	5	35	Operation and maintenance phase overlaps with Proposed Development operation and maintenance phase.
Seagreen 1A Project	Consented	5	36	Project operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases.
Seagreen 1A Export Cable Corridor	Consented	6	26	Project operation and maintenance phase overlaps with Proposed Development construction and operation and maintenance phases.
Rampion	Operational	605	603	Project operation and maintenance phase overlaps with construction and operation and maintenance phases of the Proposed Development
Subsea Cables (Telecommunications and Interlinks)				
Eastern Link 1	Scoping	28	2	Project operation and maintenance phase overlaps with construction and operation and maintenance phases of Proposed Development
Eastern Link 2	Scoping	14	21	Project operation and maintenance phase overlaps with construction and operation and maintenance phases of Proposed Development

Development	Status [i.e. Application, Consented, Under Construction, Operational]	Distance from Array Area (km)	Distance from Export Cable Corridor (km)	Overlap with the Proposed Development [e.g. Project Construction Phase Overlaps with Proposed Development Construction Phase]
Tier 3				
Offshore Wind Projects and Associated Cables				
Cambois connection	Scoping (October 2022)	0	0	Project construction phase overlaps with Proposed Development construction and operation and maintenance phases
Rampion 2	Scoping (July 2022)	606	604	Unknown
Fisheries Management Measures in MPAs				
Fisheries Management Measures in MPAs	Possible Marine Conservation Order (MCO)	0	7.5	
Tier 4				
No projects screened in.				



12.12.2. MAXIMUM DESIGN SCENARIO

228. The maximum design scenarios identified in Table 12.13 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. The cumulative effects presented and assessed in this section have been selected from the details provided in volume 1, chapter 3 of the Offshore EIA Report as well as the information available on other projects and plans (see volume 3, appendix 6.4), to inform a 'maximum design scenario'. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g. different wind turbine layout), to that assessed here, be taken forward in the final design scheme.

Figure 12.36: Other Developments Screened into the Cumulative Effects Assessment for Commercial Fisheries

Table 12.13: Maximum Design Scenario Considered for Each Impact as Part of the Assessment of Likely Significant Cumulative Effects on Commercial Fisheries

Potential Cumulative Effect	Phase ²			Maximum Design Scenario	Justification
	C	O	D		
Cumulative loss of grounds or restricted access to fishing grounds	✓	✓	✓	Maximum design scenario as described for the Proposed Development (Table 12.5) assessed cumulatively with the following other projects/plans: Tier 2: <ul style="list-style-type: none"> • Beatrice Offshore Wind Farm: up to 750 MW (up to 140 wind turbines); • Moray Offshore Wind (East): up to 1,116 MW (up to 186 wind turbines); • Moray Offshore Wind (West): up to 950 MW (up to 85 wind turbines); • Hywind: Up to 30 MW (up to 5 wind turbines); • EOWDC: Up to 100 MW (up to 11 wind turbines); • Kincardine Offshore Wind Farm: Up to 48 MW (up to 8 wind turbines); • Forthwind Demonstration Project: up to 20 MW (1 wind turbine); • Methil Offshore Wind Farm: Up to 7 MW (1 wind turbine); • Inch Cape: Up to 1,000 MW (up to 72 wind turbines); • NnG: Up to 450 MW (up to 75 wind turbines); • Seagreen 1: Up to 114 wind turbines; • Seagreen 1A Project: Up to 36 wind turbines; • Seagreen 1A Export Cable Corridor; and • Rampion (scallop dredging only); 400 MW (116 wind turbines). Up to 1,200 MW (up to 116 wind turbines); • Eastern Link 1; subsea HVDC cable connection from Torness in Scotland to County Durham in England; and • Eastern Link2; subsea HVDC connection between Peterhead in Scotland and Drax in England; Tier 3: <ul style="list-style-type: none"> • Cambois connection; subsea HVDC cable connection; • Rampion 2 (scallop dredging only). Up to 1,200 MW (up to 116 wind turbines); and • fisheries management measures within the Firth of Forth Banks Complex MPA. 	The assessment gives consideration to Plans or projects with potential to affect the commercial fisheries receptors identified in respect of the Proposed Development.
Cumulative displacement of fishing activity into other areas	✓	✓	✓		
Cumulative increased steaming times	✓	✓	✓		
Cumulative snagging risk – loss or damage to fishing gear	✓	✓	✓		
Cumulative interference with fishing activities					
Potential cumulative impacts on commercially exploited species	✓	✓	✓		

² C = Construction, O = Operation and maintenance, D = Decommissioning

12.12.3. CUMULATIVE EFFECTS ASSESSMENT

229. A description of the significance of cumulative effects of the Proposed Development upon commercial fisheries receptors arising from each identified impact is given in the following sections.

CUMULATIVE LOSS OR RESTRICTED ACCESS TO FISHING GROUNDS

Tier 2 and 3

Construction phase

Magnitude of impact

230. The construction of the Proposed Development, together with the projects identified under Tier 2 and Tier 3 in Table 12.12, may result in loss of grounds or restricted access to traditional fishing grounds. These projects would be expected to implement similar safety zones and advisory measures during their construction/decommissioning and operation and maintenance phase to those described in respect of the Proposed Development, which could add to the temporary loss of grounds/restricted access to fishing grounds identified for the Proposed Development alone.

Demersal trawling – *Nephrops* and squid fishery

Nephrops fishery

231. Of the projects identified under Tier 2, it would only be those located in areas of relevance to *Nephrops* grounds, predominantly Seagreen 1A Project, Seagreen 1A Export Cable Corridor, Eastern Link 1 and Eastern Link 2 and the offshore export cables of Inch Cape, NnG, and Seagreen 1 that would have potential to add to cumulative impacts (Figure 12.37). In this context it is important to note that NnG and Seagreen 1 are currently under construction. The construction phase of NnG and Seagreen 1 is not expected to overlap with the construction of the Proposed Development.

232. The cumulative impact 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 in respect to the Proposed Development in areas of the Proposed Development export cable corridor (up to 24 months for installation and post-commissioning and site preparation activities may happen at any point during the construction phase) and intermittent. The magnitude is therefore, considered to be low.

233. Of the Tier 3 projects considered in the assessment there is no potential for projects to add cumulatively to loss of fishing grounds on the Firth of Forth *Nephrops* grounds. As shown in Figure 12.37 the Cambois connection, and the proposed closures to trawling within the Firth of Forth Banks Complex MPA, avoid the Firth of Forth *Nephrops* grounds. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.

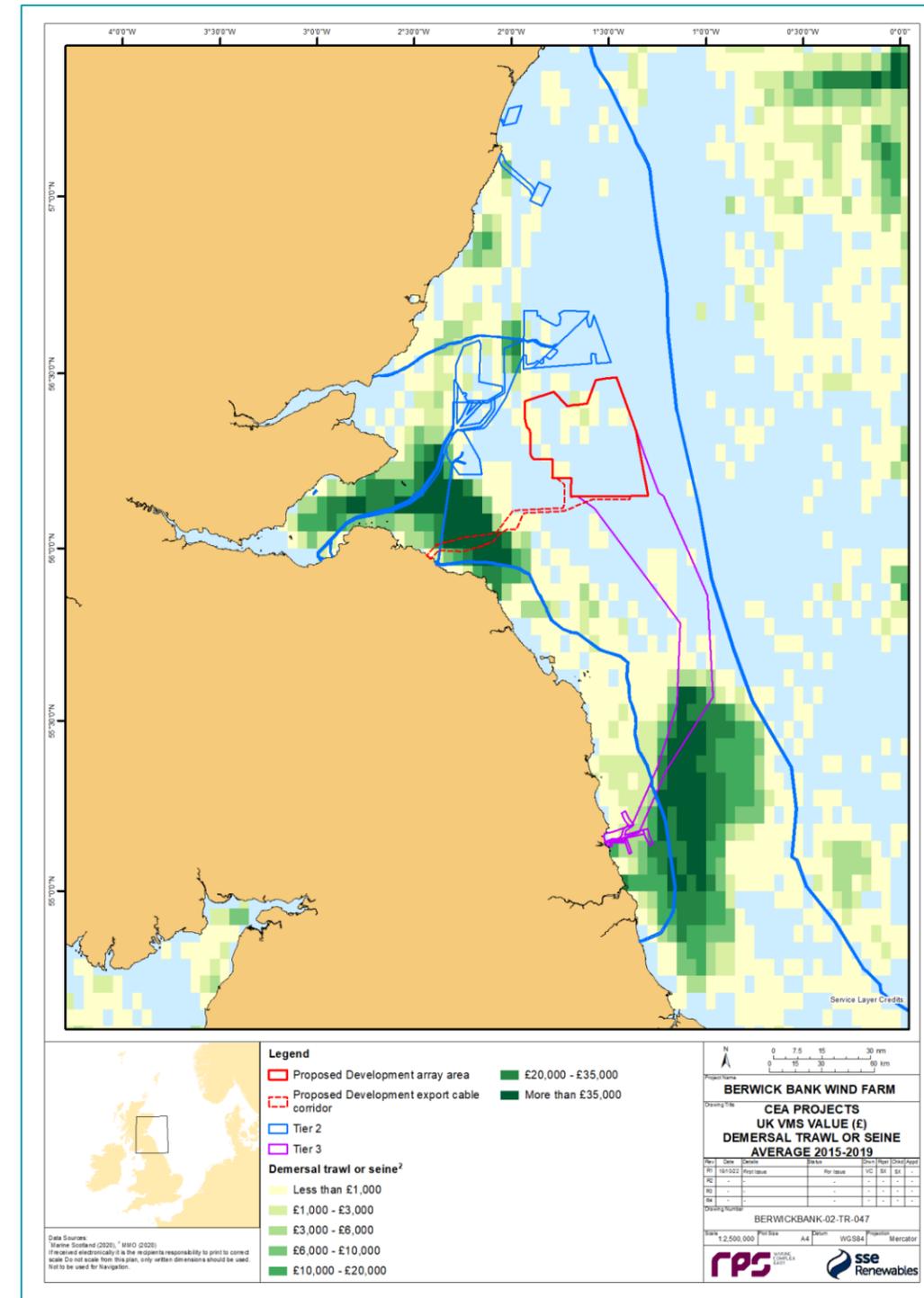


Figure 12.37: VMS by Value (£) Demersal Trawls/Seines (average 2015-2019) and Cumulative Projects

Squid fishery

- 234. In the case of the squid fishery, as the fishery extends over the east coast Scotland, including in the Moray Firth area, all the projects under Tier 2 (except Rampion) are considered to have potential to add to cumulative impacts. This would apply to visiting squid vessels that work grounds across the whole east coast (Figure 12.38). Local demersal trawlers that concentrate their squid fishing in the local area would be only potentially affected by construction works at Seagreen 1A Project, Seagreen 1A Export Cable corridor, Eastern Link 1 and Eastern Link 2 and Inch Cape (Figure 12.40).
- 235. The remaining projects under Tier 2, with the exception of Moray Offshore Wind (west) and the Forthwind Demonstration Project, are all already operational and therefore fishing can resume within their boundaries. Moray offshore Wind (west) may show some overlap during construction with the construction phase of the Proposed Development.
- 236. The cumulative impact will be of small spatial extent, being limited to discrete areas of squid grounds that overlap with the footprint of operational infrastructure and areas where safety zones and advisory passage distances may in place at a given time.
- 237. The duration of the impact will be short to medium term (up to 96 months construction phase within which offshore export cables installation (including post-commissioning) may take place over up to 24 months and site preparation activities may happen at any point during the construction phase) and occur intermittently. The magnitude of the impact is therefore considered to be low.
- 238. Of the Tier 3 projects considered in the assessment there are no projects that are likely to add cumulatively to loss of fishing grounds, particularly for vessels that operate nearshore. As shown in Figure 12.37 proposed closures to trawling within the Firth of Forth Banks Complex MPA support very low levels of demersal trawling activity and the potential for the Cambois connection to affect squid fisheries would be very small. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.

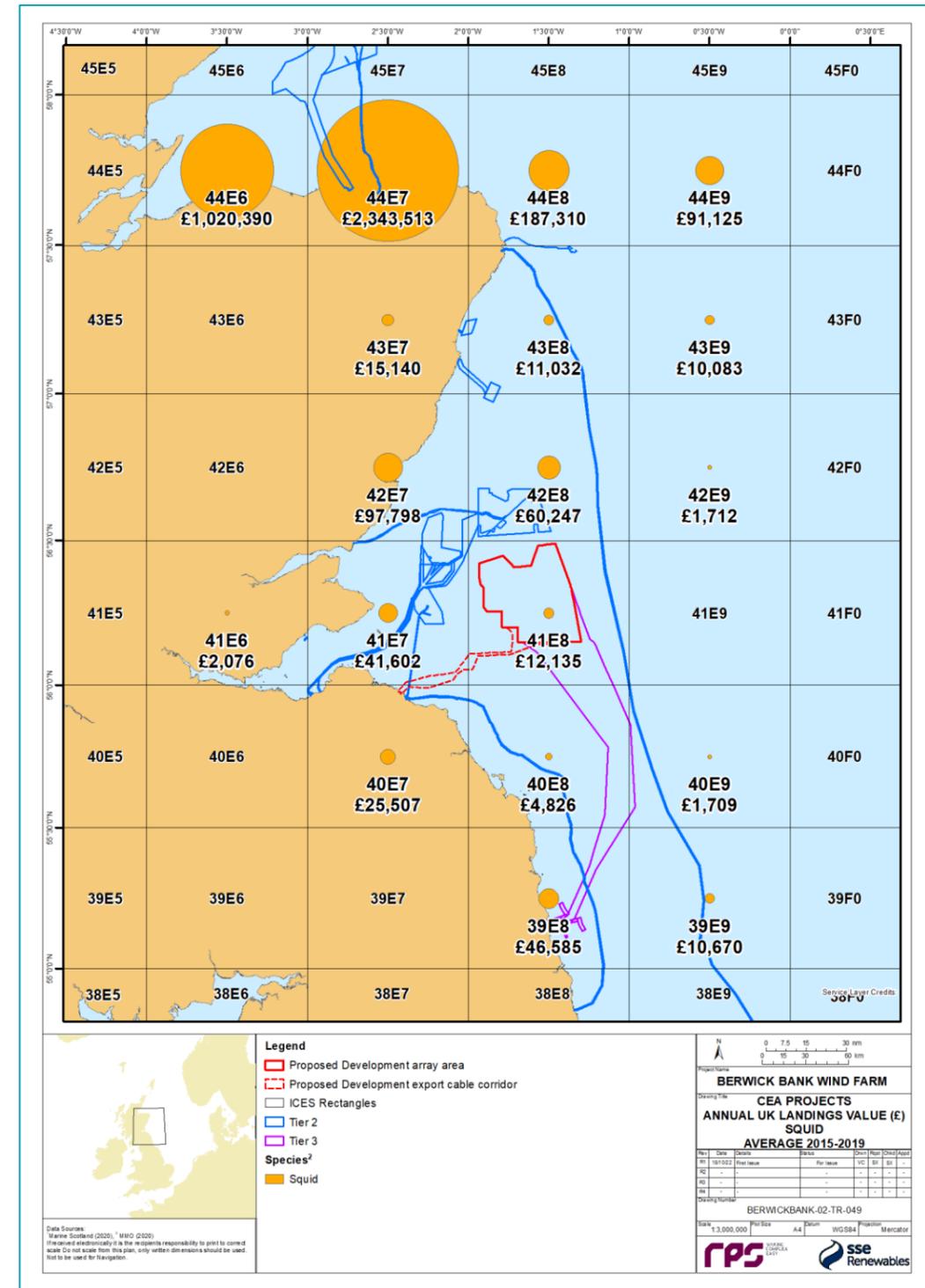


Figure 12.38: Squid Landings (£) Average 2015 -2019 and Cumulative Projects

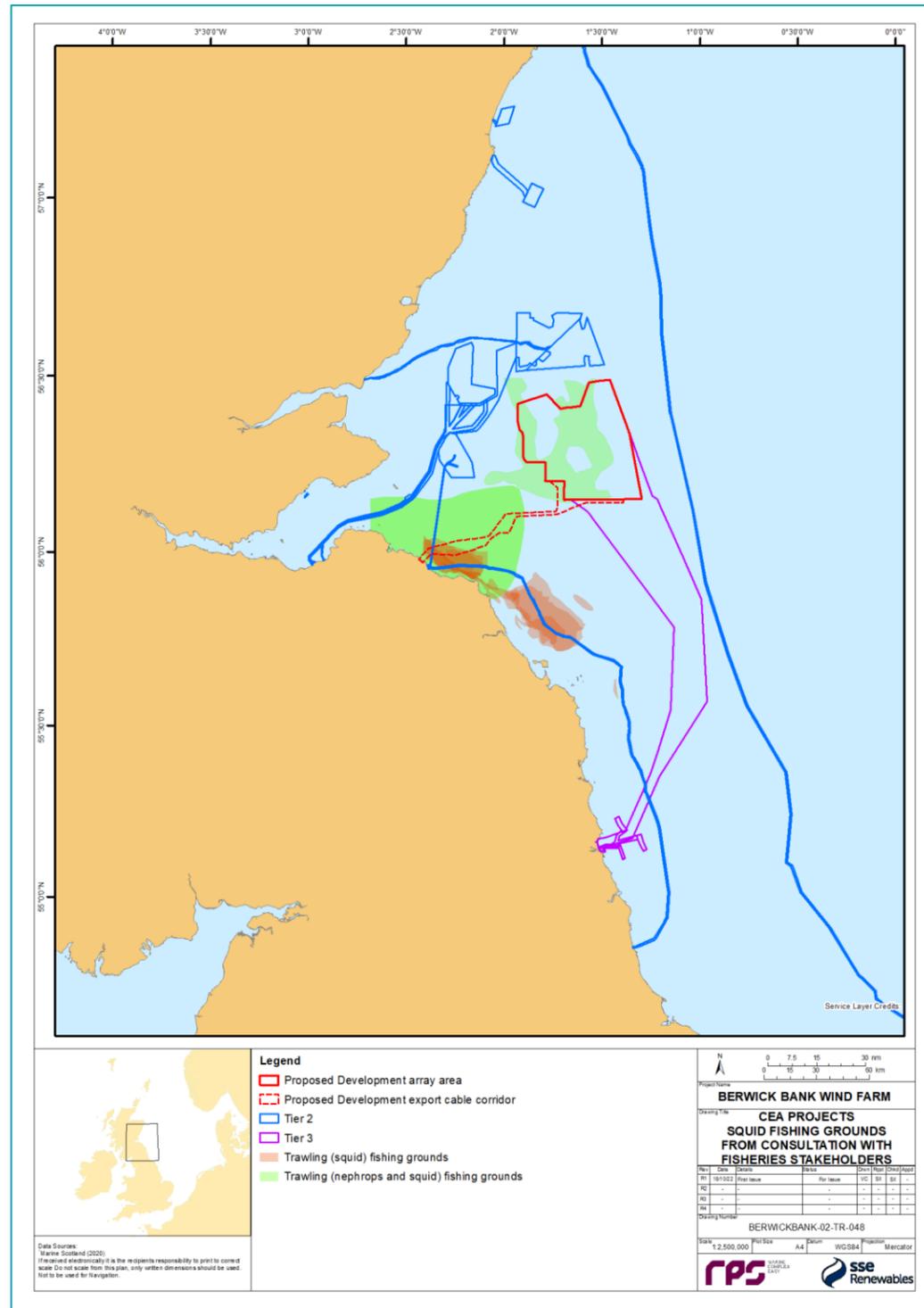


Figure 12.39: Squid Grounds from Consultation with Fisheries Stakeholders and Cumulative Projects

Creeling – Lobster and Crab Fishery

239. Local creelers that limit their activity to nearshore areas would only be potentially affected by Tier 2 projects of relevance to the inshore area, namely Seagreen 1A Export Cable Corridor, and the offshore export cables of Inch Cape and NnG.
240. In the case of vessels that have extended operational ranges, there may be potential for cumulative impacts to additionally arise from the Inch Cape and NnG array areas, Eastern Link 1 as well as Seagreen 1 (Figure 12.40).
241. As previously mentioned, NnG is currently under construction and it is expected to be operational by the time that construction starts the Proposed Development. For the remaining projects, however, there could be potential overlap between their construction phases and construction at the Proposed Development.
242. 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 to medium term (up to 96 months construction phase within which offshore export cables installation (including post-commissioning) may take place over up to 24 months Site preparation activities may happen at any point during the construction phase) and occur intermittently. The magnitude of the impact is therefore considered to be low.
243. As previously noted for the Proposed Development alone, a range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during construction. With specific reference to creelers, this includes a commitment to the implementation of appropriate mitigation via the establishment of cooperation agreements for affected vessels, in instances where the relocation of static fishing gear cannot be avoided. Similar measures are expected to be implemented by the rest of projects included in the CEA assessment.
244. Of the Tier 3 projects considered in the assessment there is no potential for projects to add cumulatively to loss of fishing grounds, particularly for vessels that operate nearshore. As shown in Figure 12.37 the Cambois connection has little potential to affect local creelers significantly. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.

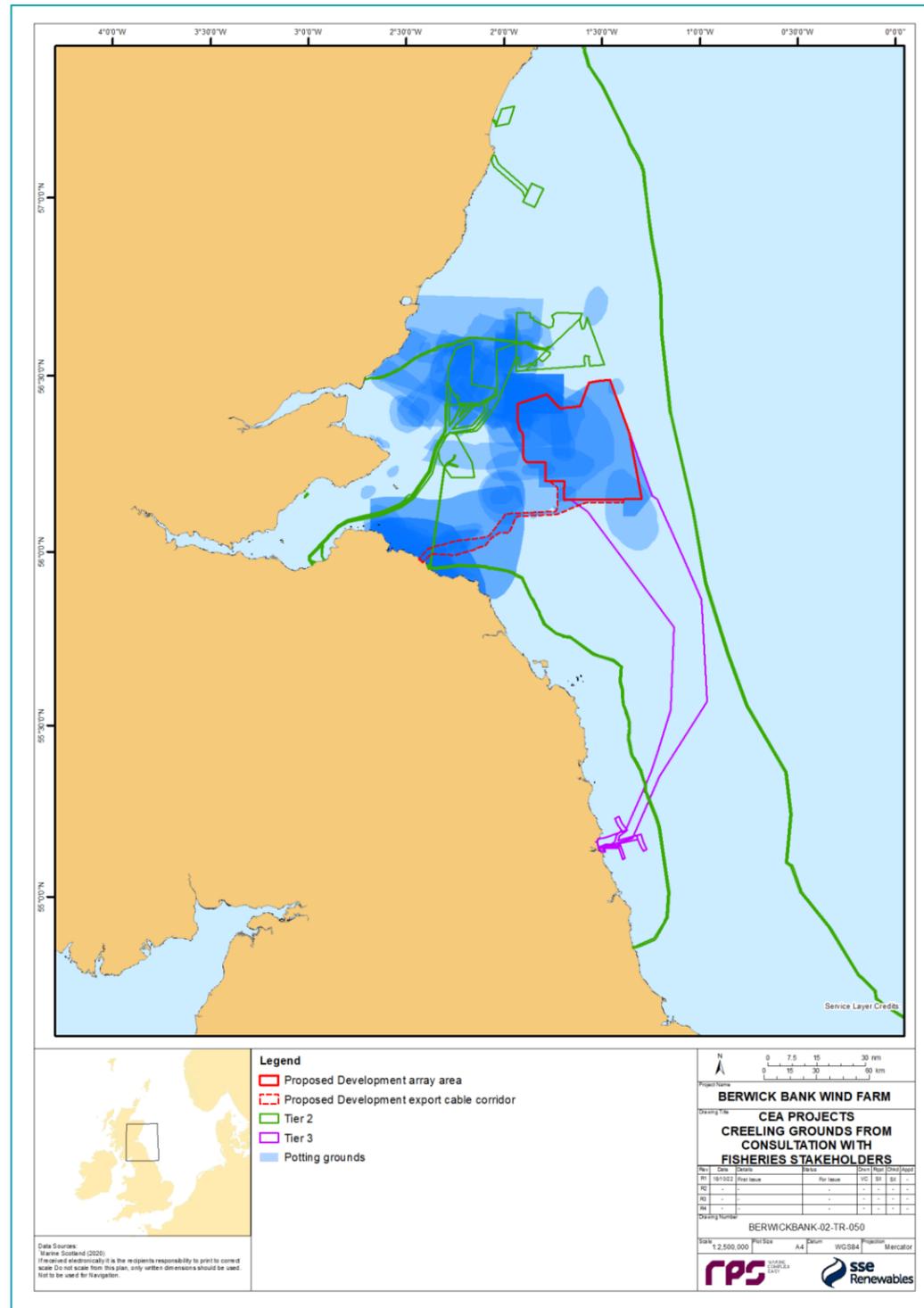


Figure 12.40: Creeling Grounds from Consultation with Fisheries Stakeholders and Cumulative Projects

Dredging – Scallop Fishery

245. As described in section 12.7.4, scallop dredging activity in areas of relevance to the Proposed Development is predominantly focused around the western section of the Proposed Development array area with limited activity anticipated in inshore areas of relevance to the Proposed Development export cable corridor. Vessels active in offshore areas are typically nomadic and target productive scallop grounds around Scotland and the rest of the UK.
246. Given the operational extent of scallop dredging activities, particularly in the case of nomadic vessels, there may be potential for all the projects included under Tier 2 to add cumulatively to the magnitude of the impact identified for the Proposed Development alone (Figure 12.41). All the projects, with the exception of Seagreen 1A Project, Seagreen 1A Export Cable Corridor, the Forthwind Demonstration Project, Inch Cape, Eastern Link 1, Eastern Link 2 and Moray Offshore Wind (West) are already operational or currently under construction. During the construction phase of the Proposed Development, fishing vessels will have access to Tier 2 projects for fishing with the exception of discrete areas associated with the project's infrastructure footprint and where safety zones and advisory passage distances may in place at a given time. Considering the distribution of fishing activity in relation to the location of the Proposed Development and the extent of grounds available to the fishery, the impact is considered to be moderate in extent. The duration of the impact will be short to medium term (up to 96 months construction phases within which offshore export cables installation (including post-commissioning) may take place over up to 24 months and site preparation activities may happen at any point during the construction phase) and occur intermittently. The magnitude of the impact is therefore considered to be medium.
247. Of the Tier 3 projects considered in the assessment there may be potential for Rampion 2, to add cumulatively to loss of fishing grounds. As shown in Figure 12.41, the Cambois connection have little potential to affect scallop dredgers and areas potentially closed to dredging within the Firth of Forth Banks Complex MPA show limited overlap with scallop dredging activity.
248. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, medium.

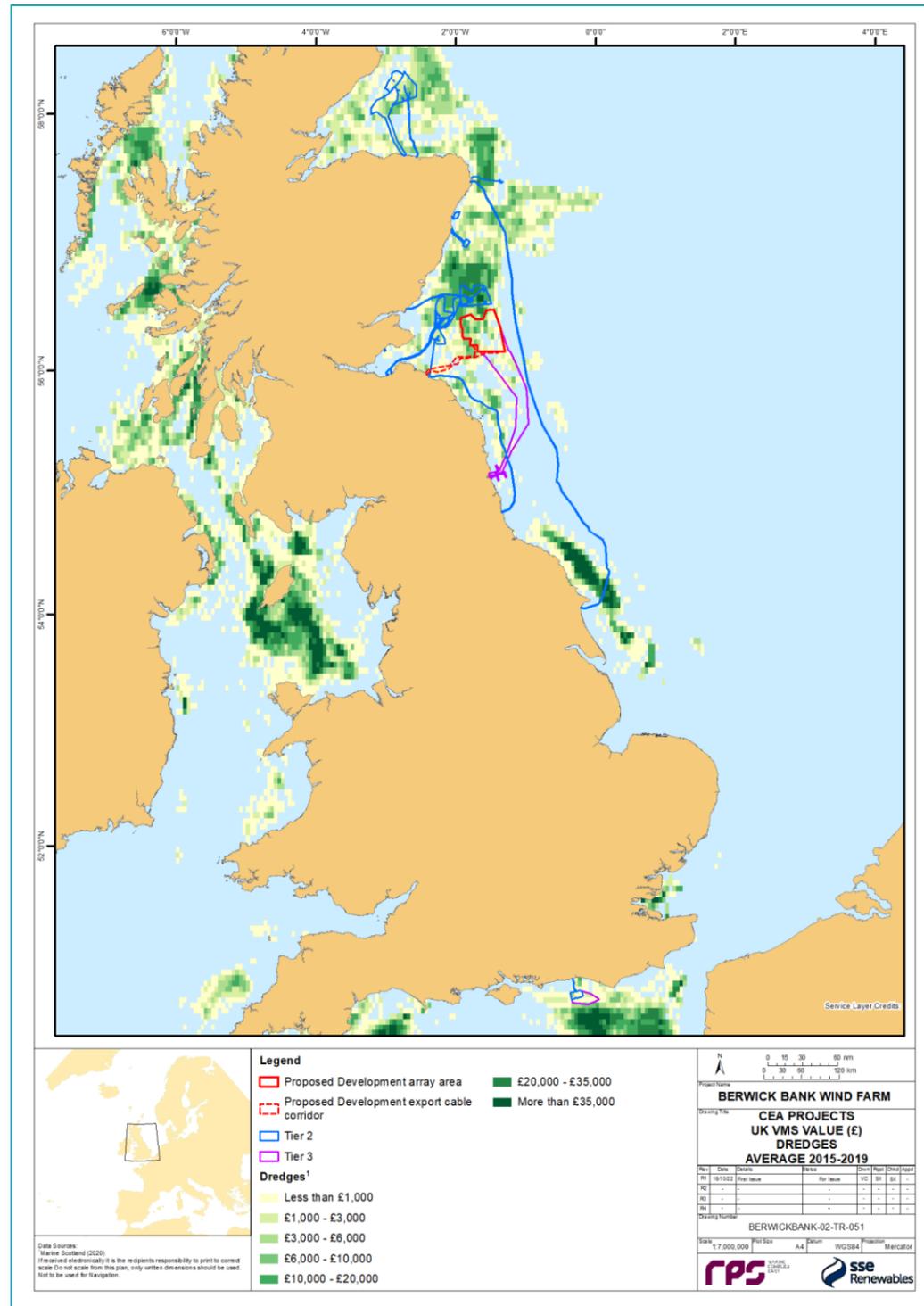


Figure 12.41: VMS (£) Scallop Dredgers (average 2015 -2019) and Cumulative Projects

Sensitivity of receptor

249. The sensitivity of the receptors to loss or restricted access to fishing grounds during the construction phase in a cumulative context is as previously described for the construction phase for the Proposed Development alone. This is as follows:

- demersal trawling – *Nephrops* and squid fisheries: medium for *Nephrops* trawlers and low for squid trawlers;
- creeling – lobster and crab fishery: high for vessels restricted to nearshore areas and medium for vessels with extended operational ranges; and
- dredging – scallop fishery: low.

Significance of effect

Demersal Trawling – *Nephrops* and Squid Fishery

Nephrops Fishery

250. 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, which is not significant in EIA terms.

Squid Fishery

251. 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 **minor** adverse significance, which is not significant in EIA terms.

Creeling – Lobster and Crab Fishery

252. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be high for vessels active in nearshore area and medium for vessels with extended operational ranges. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

253. For vessels operating in nearshore areas a minor to moderate significance would apply based on the significance matrix, whilst for vessels with extended operational ranges impact significance would be minor. Based on expert judgement, the final significance for both vessels are however considered to be minor which not significant in EIA terms. This takes account of the designed in mitigation that has been proposed (e.g. the commitment to implement appropriate mitigation for affected vessels, via cooperation agreements, in instances where the relocation of static fishing gear cannot be avoided) and considers that similar measures would be implemented by the rest of projects included in the CEA assessment.

Dredging – Scallop Fishery

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

Further Mitigation and Residual Effect

255. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Operation and maintenance phase

Magnitude of impact

256. The Proposed Development, together with the projects identified under Tier 2 and Tier 3 in Table 12.12, may result in loss of grounds or restricted access to fishing grounds during the operation and maintenance phase of the Proposed Development. These projects 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 Proposed Development and could therefore add to the loss of grounds/restricted access to fishing grounds identified for the Proposed Development alone.
257. It has been assumed that the impacts from the presence of these projects will be similar in nature to those described for the Proposed Development alone (e.g. presence of project infrastructure and safety zones and advisory measures where appropriate (i.e. around vulnerable cables)).
258. As described for assessment of the impact of the Proposed Development alone, existing legislation does not prevent fishing from occurring within operational wind farm sites. As such, fishing activity would be expected to resume to some levels in the projects included for cumulative assessment.
- Demersal Trawling – *Nephrops* and Squid Fishery
- Nephrops* Fishery
259. As described for the construction phase, of the projects identified under Tier 2, it would only be those located in areas of relevance to *Nephrops* grounds, predominantly Seagreen 1A Export Cable Corridor, and the offshore export cables of Inch Cape, NnG, Seagreen 1, and Eastern Link 1 that would have potential to add to cumulative impacts on the *Nephrops* fishery (Figure 12.37). The operation and maintenance phase of these projects will overlap with the operation and maintenance phase of the Proposed Development. During this phase, however, fishing would be able to resume across the offshore export cables of these projects.
260. The cumulative impact is predicted to be of small spatial extent, being limited to areas of cable protection and potential discrete vulnerable sections of cables (i.e. in the event that cable exposures are identified in these projects). The presence of cable protection will be long term, however, any additional localised loss of grounds associated with safety zones or advisory measures would be short term, temporary and intermittent. Furthermore, as previously noted, 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 Proposed Development, 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 projects. The magnitude of the impact is therefore considered to be low.
261. Of the Tier 3 projects considered in the assessment there is no potential to add cumulatively to loss of fishing grounds on the Firth of Forth *Nephrops* grounds. Similar measures to those proposed for the Proposed Development are expected to be implemented by these projects. As shown in Figure 12.37 the Cambois connection, and the proposed closures to trawling within the Firth of Forth Banks Complex MPA, avoid the Firth of Forth *Nephrops* grounds.
262. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.

Squid Fishery

263. As previously mentioned for construction, in the case of the squid fishery, as the fishery extends over the east coast of Scotland, including in the Moray Firth area, all the projects under Tier 2 are considered to have potential to add to cumulative impacts (Figure 12.38 and Figure 12.39). The operation and maintenance phase of these projects would overlap with that of the Proposed Development.
264. During operation and maintenance, squid trawlers would however be able to fish to resume fishing within the boundaries of Tier 2 projects.
265. The cumulative impact will be of small spatial extent, being limited to discrete areas of squid grounds that overlap with the footprint of the infrastructure of these projects or with areas where safety zones and vulnerable sections of cables may be in place at a given time.
266. The presence of project infrastructure will be long term, however, any additional localised loss of grounds associated with the implementation of safety zones or other measures would be short term, temporary and intermittent. Furthermore, as previously mentioned, a range of fisheries liaison and management measures will be implemented for the Proposed Development to minimise loss of access to fishing grounds during the operation and maintenance phase, 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). The other projects included in the assessment would be expected to implement similar approaches to co-existence. The magnitude of the impact is therefore considered to be low.
267. Of the Tier 3 projects considered in the assessment there is no potential to add cumulatively for loss of fishing grounds, particularly for vessels that operate nearshore. As shown in Figure 12.37, proposed closures to trawling within the Firth of Forth Banks Complex MPA support very low levels of demersal trawling activity and the potential for the Cambois connection to affect squid fisheries would be very small.
268. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.
- Creeling – Lobster and Crab Fishery
269. Local creelers that limit their activity to inshore areas would only be potentially affected by Tier 2 project of relevance to this area, namely Seagreen 1A Export Cable Corridor, Eastern Link 1 and the offshore export cables of Inch Cape and NnG.
270. In the case of vessels that have extended operational ranges, there may be potential for cumulative impacts to additionally arise from the Inch Cape and NnG array areas as well as Seagreen 1 (Figure 12.40).
271. It is anticipated that the operation and maintenance phase of all the projects in Tier 2 identified above will overlap with that of the Proposed Development. Creeling activity will be able to resume within these projects during the operation and maintenance phase.
272. 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 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. 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 Proposed Development. Both, for creelers that limit their activity to inshore areas and those with extended operational ranges, the magnitude of the impact is therefore considered to be low.

273. Of the Tier 3 projects considered in the assessment there is no potential for projects to add cumulatively to loss of fishing grounds, particularly for vessels that operate nearshore. As shown in Figure 12.37 the Cambois connection has little potential to affect local creelers significantly.
274. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.
Dredging – Scallop Fishery
275. As previously mentioned, given the operational extent of scallop dredging activities, particularly in the case of nomadic vessels, there may be potential for all the projects included under Tier 2 to add cumulatively to the magnitude of the impact identified for the Proposed Development alone (Figure 12.41). There is potential for the operation and maintenance phase of all these projects to overlap with the operation and maintenance phase at the Proposed Development. Fishing would be able to resume to some extent within these projects during this phase.
276. During the construction phase of the Proposed Development, fishing vessels will have access to these projects for fishing with the exception of discrete areas associated with the footprint of the infrastructure of these projects and areas where safety zones or advisory restrictions around vulnerable sections of cable are in place at a given time. Considering the distribution of fishing activity in relation to the location of the Proposed Development and other projects in Tier 2 and the extent of grounds available to the fishery, the impact is considered to be moderate in extent.
277. The presence of project infrastructure 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 Proposed Development. The magnitude of the impact is therefore considered to be medium.
278. Of the Tier 3 projects considered in the assessment there may be potential for Rampion 2 to add cumulatively to loss of fishing grounds. As shown in Figure 12.41 the Cambois connection has little potential to affect scallop dredgers and areas potentially closed to dredging within the Firth of Forth Banks Complex MPA show limited overlap with the main scallop grounds.
279. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, medium.

Sensitivity of the receptor

280. The sensitivity of the receptors to loss or restricted access to fishing grounds during the operation and maintenance phase in a cumulative context is as previously described for the construction phase (paragraph 249). This is as follows:
- demersal trawling – *Nephrops* and squid fisheries: medium for *Nephrops* trawlers and low for squid trawlers;
 - creeling – lobster and crab fishery: high for vessels restricted to nearshore areas and medium for vessels with extended operational ranges; and
 - dredging – scallop fishery: low.

Significance of the effect

- Demersal Trawling – *Nephrops* and Squid Fishery
- Nephrops* Fishery
281. 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, which is not significant in EIA terms.
- Squid Fishery
282. 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 **minor** adverse significance, which is not significant in EIA terms.
- Creeling – Lobster and Crab Fishery
283. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium both for vessels active in nearshore area and vessels with extended operational ranges. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.
- Dredging – Scallop Fishery
284. Overall, the magnitude of the impact is deemed to be medium and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

Further mitigation and residual effect

285. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Decommissioning phase

286. The cumulative effects of decommissioning activities associated with the removal of infrastructure with regard to potential loss or restricted access to fishing grounds are expected to be the same or similar in nature to the effects of construction and therefore considered as follows:
- demersal trawlers – *Nephrops* and squid fisheries:
 - *Nephrops* fishery: **minor** adverse significance which is not significant in EIA terms; and
 - squid fishery: **minor** adverse significance which is not significant in EIA terms.
 - creeling – lobster and crab fishery: minor adverse significance which is not significant in EIA terms; and
 - dredging – scallop fishery: minor adverse significance which is not significant in EIA terms.
287. The cumulative effects of infrastructure which may be left *in situ* are anticipated to be the same or similar in nature to the effects of the operation and maintenance phase with regard to potential loss or restricted access to fishing grounds. These are as follows:
- demersal trawlers – *Nephrops* and squid fisheries:
 - *Nephrops* fishery: **minor** adverse significance which is not significant in EIA terms; and
 - squid fishery: **minor** adverse significance which is not significant in EIA terms.
 - creeling – lobster and crab fishery: minor adverse significance which is not significant in EIA terms; and
 - dredging – scallop fishery: **minor** adverse significance which is not significant in EIA terms.

288. As noted in the Enhancement, Mitigation and Monitoring Commitments (volume 3, appendix 6.3) as part of the decommissioning plan a detailed assessment of the status of cables (and cable protection where appropriate) left *in situ* will be undertaken post-decommissioning, based on best practice at the time. In the event that cable exposures are identified, these will be marked and notified and appropriate rectification works undertaken where practicable and feasible. Similar approach would be expected from other projects included in the CEA.

CUMULATIVE DISPLACEMENT OF FISHING ACTIVITY INTO OTHER AREAS

Tiers 2 and 3

289. As previously described for the Proposed Development alone, whilst it is difficult to predict where fishing activity may be displaced to and how this may affect individual vessels, in all cases, the level of displacement would be a function of the extent of loss or restricted access to fishing grounds. It is therefore considered that the magnitude of impact, sensitivity of the receptor and resulting significance of effect in respect of displacement would, at worst, be as identified in relation to loss of grounds or restricted access to fishing grounds. This would apply for the Proposed Development alone, but also in a cumulative context.

290. As such it is considered that the findings of the cumulative assessment with regards to loss or restricted access to fishing grounds also apply in relation to cumulative displacement of fishing activity and are therefore as summarised in Table 12.14.

Table 12.14: Assessment of the Cumulative Effect of Displacement of Fishing Activities into Other Areas

Proposed Development Phase	Receptor	Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Additional Mitigation	Residual Effect Significance
Construction	Demersal trawling - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor
	Demersal Trawling -squid fishery	Low	Low	Minor	N/A	Minor
	Creeling -vessel active nearshore	Low	High	Minor	N/A	Minor
	Creeling -vessels with extended operational ranges	Low	Medium	Minor	N/A	Minor
	Dredging- scallop fishery	Medium	Low	Minor	N/A	Minor
Operation and Maintenance	Demersal trawling - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor
	Demersal Trawling -squid fishery	Low	Low	Minor	N/A	Minor
	Creeling -vessels active nearshore	Low	High	Minor	N/A	Minor
	Creeling -vessels with extended operational ranges	Low	Medium	Minor	N/A	Minor
	Dredging- scallop fishery	Medium	Low	Minor	N/A	Minor
Decommissioning (activities associated with the removal of infrastructure)	Demersal trawling - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor
	Demersal Trawling -squid fishery	Low	Low	Minor	N/A	Minor
	Creeling -vessel active nearshore	Low	High	Minor	N/A	Minor
	Creeling -vessels with extended operational ranges	Low	Medium	Minor	N/A	Minor
	Dredging- scallop fishery	Medium	Low	Minor	N/A	Minor
Decommissioning (effects associated with infrastructure left <i>in situ</i>)	Demersal trawling - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor
	Demersal Trawling -squid fishery	Low	Low	Minor	N/A	Minor
	Creeling -vessels active nearshore	Low	High	Minor	N/A	Minor
	Creeling -vessels with extended operational ranges	Low	Medium	Minor	N/A	Minor
	Dredging- scallop fishery	Medium	Low	Minor	N/A	Minor

CUMULATIVE INCREASED STEAMING TIMES

Tiers 2 and 3

Construction phase

Magnitude of impact

All Fisheries

291. The construction of the Proposed Development, together with projects identified under Tier 2 in Table 12.12, may result in increased steaming times to fishing vessels. These projects would be expected to implement similar safety zones and advisory measures during their construction/decommissioning and operation and maintenance phase to those described in respect of the Proposed Development and could add to the magnitude of the impact in respect of increased steaming times identified for the Proposed Development alone.
292. 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 Proposed Development, including the location and extent of safety zones and advisory measures, in a timely and efficient manner. Other projects included in the assessment would be expected to implement similar measures. The majority of projects included in Tier 2 are either already operational or currently under construction (with the exception of the Forthwind Demonstration Project, Seagreen 1A Project, Seagreen 1A Export Cable Corridor, Inch Cape, Eastern Link 1, Eastern Link 2 and Moray Offshore Wind (West)). Therefore, during the construction phase of the Proposed Development these will be for the most part already operational.
293. The impact is considered to be very small in spatial extent, short to medium term and intermittent. In addition, appropriate fisheries liaison and management measures will be implemented to minimise impacts. The magnitude is therefore considered to be low.
294. Of the Tier 3 projects considered in the assessment there may be only potential for the Cambois connection to add to cumulative impacts. Similar measures to those proposed for the Proposed Development are expected to be implemented by these projects. The closures to fishing within the Firth of Forth Banks Complex MPA currently under consultation, if finally implemented, would not affect the ability of fishing vessels to steam through the area.
295. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.

Sensitivity of the receptor

296. The sensitivity of the receptors to increased steaming times during the construction phase in a cumulative context is as previously described for the construction phase for the Proposed Development alone. This is as follows:
- demersal trawling – *Nephrops* and squid fisheries: low;
 - creeling – lobster and crab fishery: medium for small vessels which operate in nearshore areas and low for vessels with extended operational ranges and
 - dredging – scallop fishery: low for nomadic vessels and medium for smaller local vessels that operate nearshore.

Significance of the effect

Demersal Trawling – *Nephrops* and Squid Fishery

297. 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 **minor** adverse significance, which is not significant in EIA terms.

Creeling – Lobster and Crab Fishery

298. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium for small vessels active in nearshore areas and low for vessels that have extended operational ranges. The effect will, therefore, be of **minor** adverse significance, for both types of vessels which is not significant in EIA terms.

Dredging – Scallop Fishery

299. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low for nomadic vessels and medium for local vessels that target nearshore areas. The effect will, therefore, be of **minor** adverse significance for both types of vessels, which is not significant in EIA terms.

Further mitigation and residual effect

300. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Operation and decommissioning phase

Magnitude of impact

All Fisheries

301. The presence of infrastructure and safety zones in place during the operation and maintenance phase at the projects in Tier 2 could result in additional short term increases in steaming distances and times for fishing vessels.
302. The majority of projects included in Tier 2 are either already operational or currently under construction (with the exception of the Forthwind Demonstration Project, Seagreen 1A Project, Seagreen 1A Export Cable Corridor, Inch Cape, Eastern Link 1, Eastern Link 2, and Moray Offshore Wind (West)). Therefore, during the operation and maintenance phase of the Proposed Development these will be operational.
303. Whilst the impact could occur across the operational lifetime of the Proposed Development (up to 35 years), fishing vessels would not be restricted from transiting through the Proposed Development array area and offshore export cables, with the exception of areas subject to temporary 500 m safety zones or advisory measures.
304. Furthermore, appropriate liaison would be undertaken with fisheries stakeholders to ensure that they are informed of the nature, timing and location of major maintenance activities associated with the Proposed Development, including the location and extent of safety zones, in a timely and efficient manner. Similarly, measures are also expected to be implemented at the other projects included in the assessment.
305. The impact is predicted to be of small spatial extent, localised and intermittent in nature and a range of fisheries liaison and management measures will be implemented to minimise impacts on fishing. The magnitude is therefore considered to be low.
306. Of the Tier 3 projects considered in the assessment there may be only potential for the Cambois connection to add to cumulative impacts. Closures to fishing within the Firth of Forth Banks Complex MPA currently under consultation, if finally implemented, would not affect the ability of fishing vessels to steam through the area.

307. The magnitude of effect considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.

Sensitivity of the receptor

308. The sensitivity of the receptors to increased steaming times during the operation and maintenance in a cumulative context is as previously described for the construction phase for the Proposed Development (paragraph 296). This is as follows:

- demersal trawling – Nephrops and squid fisheries: low;
- creeling – lobster and crab fishery: medium for small vessels which operate in nearshore areas and low for vessels with extended operational ranges; and
- dredging – scallop fishery: low for nomadic vessels and medium for smaller local vessels that operate nearshore.

Significance of the effect

Demersal Trawling – *Nephrops* and Squid Fishery

309. 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 **minor** adverse significance, which is not significant in EIA terms.

Creeling – Lobster and Crab Fishery

310. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium for small vessels active in nearshore areas and low for vessels that have extended operational ranges. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

Dredging – Scallop Fishery

311. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low for nomadic vessels and medium for local vessels that target nearshore areas. The effect will, therefore, be of **minor** adverse significance for both types of vessels, which is not significant in EIA terms.

Further mitigation and residual effect

312. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Decommissioning phase

313. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.

314. The effects of decommissioning activities associated with the Proposed Development in a cumulative context with regard to increased steaming times are therefore expected to be the same or similar in nature to the cumulative effects of construction and therefore considered as follows:

- demersal trawlers – Nephrops and squid fisheries: minor adverse significance which is not significant in EIA terms;
- creeling – lobster and crab fishery: minor adverse significance which is not significant in EIA terms; and
- dredging – scallop fishery: minor adverse significance which is not significant in EIA terms.

CUMULATIVE SNAGGING RISK – LOSS OR DAMAGE TO FISHING GEAR AND SAFETY ISSUES

Tiers 2 and 3

Construction phase

Magnitude of impact

All Fisheries

315. The construction of the Proposed Development, together with projects identified under Tier 2 and Tier 3 in Table 12.12, may result in increased snagging risk and associated loss or damage to fishing gears.
316. As construction progresses wind turbine and OSP/Offshore converter station platform foundations would have potential to represent a snagging risk for fishing gear. Similarly, the potential presence of sections of offshore export cables, inter-array and interconnector cables temporarily awaiting burial or protection as well as seabed obstacles (e.g. dropped objects) which may arise as a result of construction works may also pose a snagging risk. In addition, in projects which may be operational at the time that the Proposed Development is under construction, the potential presence of discrete sections of offshore export cables and/or inter-array cables which may become exposed as well as seabed obstacles which may arise as a result of maintenance works (i.e. dropped objects, sediment berms, etc) may also pose a snagging risk.
317. As previously described under the assessment for the Proposed Development alone, a number of liaison and management measures will be implemented to ensure that snagging risk and associated loss or damage to fishing gear and safety issues are minimised and mitigated appropriately. This will include the circulation of appropriate information, including on the location of safety zones and advisory measures which may need to be implemented during the construction and operation and maintenance phase and the use of guard vessels and OFLOs as appropriate. The location, extent and nature of the cable protection used will be shared with fisheries stakeholders. In areas where rock placement is required, consideration will be given to designs that reduce potential snagging risk with fishing gear to facilitate co-existence with mobile fisheries, particularly demersal trawling (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 and a procedure for the claim of loss or damage to fishing gear will be developed.
318. All contractors undertaking works will be contractually obliged to ensure compliance with standard offshore policies, including those that prohibit the discarding of objects or material overboard and that require the rapid recovery of accidentally dropped objects.
319. It is anticipated that the other projects included under Tier 2 and Tier 3 would also apply similar procedures to those proposed for the Proposed Development to minimise snagging risk.
320. The impact is predicted to affect small areas (being localised around the immediate footprint of project infrastructure and potential seabed obstacles), to be of short to medium term duration and a range of fisheries liaison and management measures will be implemented. The magnitude is therefore considered to be low and the frequency of occurrence of safety issues remote.

Sensitivity of the receptor and severity of consequence

All Fisheries

321. The sensitivity of the receptors to snagging risk and associated loss or damage to fishing gear and the severity of consequence of safety issues during the construction phase in a cumulative context is as previously described for the construction phase for the Proposed Development alone. This is as follows:

- all fisheries: medium sensitivity and moderate severity.

Significance of the Effect

All Fisheries

322. 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 and **tolerable**, which is not significant in EIA terms.

Further mitigation and residual effect

323. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Operation and maintenance phase

Magnitude of impact

All Fisheries

324. The operation and maintenance phase of the Proposed Development, together with that of projects identified under Tier 2 and Tier 3 in Table 12.12, may result in increased snagging risk and associated damage to fishing gears.
325. This would be a result of the increased presence of wind turbine and OSP/Offshore convertor station platform foundations as well as the potential discrete sections of offshore export cables, interconnector and/or inter-array cables which may become exposed as well as seabed obstacles which may be present during the operation and maintenance phase (i.e. dropped objects) may also pose a snagging risk.
326. As previously described under the assessment for the Proposed Development alone, a number of liaison and management measures will be implemented to ensure that snagging risk and associated loss or damage to fishing gear is minimised and mitigated appropriately. This will include the circulation of appropriate information, including on the location of safety zones and advisory measures which may need to be implemented during operation and maintenance phase and the use of guard vessels and FLOs as appropriate. The location, extent and nature of the cable protection used will be shared with fisheries stakeholders. In areas where rock placement is required, consideration will be given to designs that reduce potential snagging risk with fishing gear to facilitate co-existence with mobile fisheries, particularly demersal trawling (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 and a procedure for claim of loss or damage to fishing gear developed.
327. All contractors undertaking works will be contractually obliged to ensure compliance with standard offshore policies, including those that prohibit the discarding of objects or material overboard and that require the rapid recovery of accidentally dropped objects.
328. It is anticipated that the other projects included under Tier 2 and Tier 3 would also apply similar procedures to those proposed for the Proposed Development to minimise snagging risk.
329. The impact is predicted to affect very small areas (being localised around the immediate footprint of project infrastructure and potential associated seabed obstacles). Potential impacts could occur over the long term (up to 35 year); however, a range of fisheries liaison and management measures will be implemented to minimise snagging risk. The magnitude is therefore considered to be low and the probability of occurrence of safety issues remote.

Sensitivity of the receptor and severity of consequence

All Fisheries

330. The sensitivity of the receptors to snagging risk and associated loss or damage to fishing gear and the severity of consequence of safety issues during the operation and maintenance phase in a cumulative context is as previously described for the construction phase. This is as follows:

- all fisheries: medium sensitivity and moderate severity.

Significance of the Effect

All Fisheries

331. 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 and **tolerable**, which is not significant in EIA terms.

Further mitigation and residual effect

332. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Decommissioning phase

333. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.
334. The effects of decommissioning activities associated with the removal of infrastructure with regard to snagging risk and associated loss or damage to fishing gear are therefore expected to be the same or similar in nature to the effects of construction (paragraphs 315 to 323) and are therefore considered to be as follows:
- all fisheries: **minor** adverse significance and tolerable which is not significant in EIA terms.
335. The effects of infrastructure which may be left *in situ* is anticipated to be the same or similar in nature to the effects of the operation and maintenance phase with regard to gear snagging risks. These are as follows:
- all fisheries: minor adverse significance and tolerable which is not significant in EIA terms.
336. As noted in the Enhancement, Mitigation and Monitoring Commitments (volume 3, appendix 6.3) as part of the decommissioning plan a detailed assessment of the status of cables (and cable protection where appropriate) left *in situ* will be undertaken post-decommissioning, based on best practice at the time. In the event that cable exposures are identified, these will be marked and notified and appropriate rectification works undertaken where practicable and feasible. Similar measures would be expected to be implemented by the rest of projects included in the CEA.

CUMULATIVE INTERFERENCE WITH FISHING ACTIVITIES

Tiers 2 and 3

Construction phase

Magnitude of Impact

Static gear fisheries - creeling

337. The impact is predicted to be of local spatial extent, short to medium term duration and intermittent in nature. A range of fisheries liaison and management measures will be implemented to minimise potential interference between project vessels and static gear fisheries. The magnitude of the impact is therefore, considered to be low.
338. Of the Tier 3 projects considered in the assessment there may be described in the assessment for the Proposed Development alone, the main potential cause of interference for vessels that operate static gear would be the fouling of gear surface marker lines by transiting vessels. Depending on the Tier 2 project under consideration these may include construction or operation and maintenance vessels.
339. Local creelers that limit their activity to inshore areas would only be potentially affected cumulatively by Tier 2 projects of relevance to this area, namely Seagreen 1A Export Cable Corridor, and the offshore export cables of Inch Cape and NnG. In the case of vessels that have extended operational ranges, there may be potential for cumulative impacts to additionally arise from the Inch Cape and NnG array areas as well as Seagreen 1 (Figure 12.40).
340. Appropriate liaison would be undertaken with fisheries stakeholders to ensure that they are informed of the nature, timing and location of the Proposed Development construction activities. This will include provisions for enabling awareness of construction vessel crews of the location of static gears and fishermen's awareness of construction vessel operations. In addition, as noted in Table 12.9, a Code of Good Practice for contracted vessels will be produced and OFLOs will be used as appropriate. In addition, a procedure for the claim of loss or damage to fishing gear will be developed and anticipated vessel transit routes and shelter/holding areas for construction vessels will be identified in the NSVMP.
341. Provisions for the measures above will be included in the FMMS which will be produced for the Proposed Development (see outline FMMS in volume 4, appendix 24). Similar measures are expected to be implemented by the Tier 2 projects of relevance to this assessment, therefore it is considered that there are no projects with the potential to add cumulatively to interference with fishing activities, particularly for vessels that operate nearshore. As shown in Figure 12.37 the Cambois connection has little potential to affect local creelers significantly. Similar measures to those proposed for the Proposed Development are expected to be implemented by these projects. Closures to fishing within the Firth of Forth Complex Banks MPA currently under consultation, if finally implemented, would not result in increased potential interference with fishing activities.
342. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.

Mobile fisheries – demersal trawling and scallop dredging

343. All the projects included under Tier 2 may have potential to add cumulatively to the magnitude of the impact identified for the Proposed Development alone with regard to mobile fisheries. All projects in Tier 2, with the exception of Seagreen 1A Project, Seagreen 1A Export Cable Corridor and Moray Offshore Wind (West) are already operational or currently under construction. During the construction phase of the

Proposed Development, the potential for cumulative interference would therefore for the most part be associated with the presence of project vessels associated with operation and maintenance works.

344. As described for the Proposed Development alone, appropriate liaison would be undertaken with fisheries stakeholders to ensure that they are informed of the nature, timing and location of Proposed Development construction activities. This will include provisions for enabling fishermen's awareness of construction vessel transit routes. In addition, transiting construction vessels will fully comply as required under the COLREGS. Such compliance would negate the requirement for fishing vessels engaged in fishing to alter course or pose any risk to gear being towed. In addition, as noted in Table 12.9, a Code of Good Practice for contracted vessels will be produced and OFLOs will be used as required.
345. Provisions for the measures above will be included in the FMMS which will be produced for the Proposed Development (see Outline FMMS in volume 4, appendix 24). Similar measures are expected to be implemented by the Tier 2 projects included in the assessment.
346. The impact is predicted to be of local spatial extent, short to medium term duration and intermittent in nature. A range of fisheries liaison and management measures will be implemented. The magnitude of the impact is therefore, considered to be low.
347. Of the Tier 3 projects considered in the assessment there may be only potential for Eastern Link 1, the Cambois connection and Eastern Link 2 to add to cumulative impacts and Rampion 2 in the case of scallop dredgers. Similar measures to those proposed for the Proposed Development are expected to be implemented by these projects. Closures to fishing within the Firth of Forth Banks Complex MPA currently under consultation, if finally implemented, would not result in increased potential interference with fishing activities.
348. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.

Sensitivity of the Receptor

349. The sensitivity of the receptors to cumulative interference with fishing activities due to the presence of transiting vessels during the construction phase of the Proposed Development is as previously described for the construction phase of the Proposed Development alone: This is as follows:
- static gear fisheries – creeling: medium; and
 - mobile fisheries – demersal trawling and scallop dredging: low.

Significance of the Effect

Static gear fisheries - creeling

350. 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, which is not significant in EIA terms.

Mobile fisheries – demersal trawling and scallop dredging

351. 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** adverse significance, which is not significant in EIA terms.

Further mitigation and residual effect

352. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Operation and maintenance phase

Magnitude of impact

Static gear fisheries-creeling

353. During the operation and maintenance phase of the Proposed Development there may be potential for increased interference to fishing activities as a result of transiting vessels associated with other projects in Tier 2, particularly Seagreen 1A Project, Seagreen 1A Export Cable Corridor, Inch Cape, NnG as well as Seagreen 1. These projects would all be operational during the operation and maintenance phase of the Proposed Development. As such, increased vessel transits associated with these projects would be limited to operation and maintenance activities.
354. The same fisheries liaison and management measures outlined above in the cumulative assessment for the construction phase of the Proposed Development, to minimise risk of interference with static gears, would also apply during the operation and maintenance phase (paragraph 116) and similar measures would be expected to be implemented by the other relevant Tier 2 projects of relevance to this assessment.
355. The impact is predicted to be of local spatial extent, long term duration and intermittent in nature and a range of fisheries liaison and management measures will be implemented. The magnitude of the impact is therefore, considered to be low.
356. Of the Tier 3 projects considered in the assessment there may be only potential for Eastern Link 1 to add cumulatively to interference with fishing activities, particularly for vessels that operate nearshore. As shown in Figure 12.37 the Cambois connection and Eastern Link 2 have little potential to affect local creelers significantly. Closures to fishing within the Firth of Forth Banks Complex MPA currently under consultation, if finally implemented, would not result in increased potential interference with fishing activities.
357. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.
- Mobile fisheries – demersal trawling and scallop dredging*
358. All the projects included under Tier 2 may have potential to add cumulative to the magnitude of the impact identified for the Proposed Development alone with regard to mobile fisheries. It is assumed that the Tier 2 projects will be operational during the operation and maintenance phase of the Proposed Development. The potential for interactions between vessels using towed gear and maintenance vessels to occur would be very limited. Transiting maintenance vessels will fully comply as required under COLREGS. Such compliance would negate the requirement for fishing vessels engaged in fishing to alter course or pose any risk to fishing gear being towed. In addition, as noted in Table 12.9, a Code of Good Practice for contracted vessels will be produced and Offshore Fisheries Liaison Officers (OFLOs) will be used as required for the Proposed Development. Similar measures are expected to be implemented by the other projects included in the assessment.
359. The impact is predicted to be of local spatial extent, long term duration and intermittent in nature and a range of fisheries liaison and management measures will be implemented. The magnitude of the impact is therefore, considered to be low.
360. Of the Tier 3 projects considered in the assessment there may be only potential for Eastern Link 1, the Cambois connection and Eastern Link 2 to add to cumulative impacts and Rampion 2 in the case of scallop dredgers. Closures to fishing within the Firth of Forth Banks Complex MPA currently under consultation, if finally implemented, would not result in increased potential interference with fishing activities.
361. The magnitude of impact considering Tier 2 and Tier 3 projects cumulatively would remain as identified above for Tier 2 projects, low.

Sensitivity of the Receptor

362. The sensitivity of the receptors to cumulative interference with fishing activities due to the presence of transiting vessels during the operation and maintenance phase of the Proposed Development is as previously described for the construction phase (paragraph 349). This is as follows:

- static gear fisheries – creeling: medium; and
- mobile fisheries – demersal trawling and scallop dredging: low.

Significance of the Effect

Static gear fisheries - creeling

363. 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, which is not significant in EIA terms.

Mobile fisheries – demersal trawling and scallop dredging

364. 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** adverse significance, which is not significant in EIA terms.

Further mitigation and residual effect

365. No commercial fisheries mitigation is considered necessary because the likely effect in the absence of mitigation (beyond the designed in measures outlined in section 12.10) is not significant in EIA terms.

Decommissioning phase

366. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.

367. The effects of decommissioning activities associated with the Proposed Development in a cumulative context with regard to interference with fishing activities are therefore expected to be the same or similar in nature to the cumulative effects of construction and therefore considered as follows:

- static gear fisheries creeling– Nephrops and squid fisheries: minor adverse significance which is not significant in EIA terms; and
- mobile fisheries – demersal trawling and scallop dredging: negligible adverse significance which is not significant in EIA terms.

POTENTIAL CUMULATIVE IMPACTS ON COMMERCIALY EXPLOITED SPECIES

Construction phase

368. There is potential for the construction phase of the Proposed Development to result in cumulative impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that depend on them.

369. The potential cumulative impacts of the construction of the Proposed Development on fish and shellfish species, including those of commercial importance in the commercial fisheries study area, are assessed in volume 2, chapter 9 including consideration of the following:

- temporary habitat loss/disturbance;
- long-term subtidal habitat loss;

- injury and/or disturbance to fish and shellfish from underwater noise and vibration; and
- increased suspended sediment concentrations and associated sediment deposition.

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

Operation and maintenance phase

371. There is potential for the operation and maintenance phase of the Proposed Development to result in cumulative impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that depend on them.

372. The potential cumulative impacts of the operation and maintenance phase of the Proposed Development on fish and shellfish species, including those of commercial importance in the commercial fisheries study area, are assessed in volume 2, chapter 9 including consideration of the following:

- long-term subtidal habitat loss;
- temporary habitat loss/disturbance;
- increased suspended sediment concentrations and associated sediment deposition;
- injury and/or disturbance to fish and shellfish from underwater noise and vibration;
- EMFs from subsea electrical cabling;
- changes in physical process due to the presence of foundations; and
- colonisation of foundations, scour protection and cable protection.

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

Decommissioning phase

374. There is potential for the decommissioning phase of the Proposed Development to result in cumulative impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that depend on them.

375. The potential cumulative impacts of the decommissioning phase of the Proposed Development on fish and shellfish species, including those of commercial importance in the commercial fisheries study area, are assessed in volume 2, chapter 9 including consideration of the following:

- temporary habitat loss/disturbance;
- long-term subtidal habitat loss; and
- increased suspended sediment concentrations and associated sediment deposition.

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

12.13. TRANSBOUNDARY EFFECTS

377. 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 Proposed Development 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.

12.14. INTER-RELATED EFFECTS (AND ECOSYSTEM ASSESSMENT)

378. A description of the likely inter-related effects arising from the Proposed Development on commercial fisheries is provided in volume 2, appendix 20 of the Offshore EIA Report.

379. For commercial fisheries, the following potential impacts have been considered within the inter-related assessment:

- loss or restricted access to fishing grounds; and
- displacement of fishing activity into other areas.

380. Table 12.15 lists the inter-related effects (project lifetime effects) that are predicted to arise during the construction, operation and maintenance phase, and decommissioning of the Proposed Development and also the inter-related effects (receptor-led effects) that are predicted to arise for commercial fisheries receptors.

381. No inter-related effects (project lifetime effects) are predicted to arise during the construction, operation and maintenance phase, and decommissioning of the Proposed Development, since the potential impacts listed above will not be further exacerbated over the lifetime of the Proposed Development.

382. 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; and
- socio-economic receptors.

12.15. SUMMARY OF IMPACTS, MITIGATION MEASURES, LIKELY SIGNIFICANT EFFECTS AND MONITORING

383. Information on commercial fisheries within the commercial fisheries study area was collected through a desktop review of publicly available fisheries data and information and consultation with fisheries stakeholders.

384. Table 12.16 presents a summary of the potential impacts, mitigation measures and the conclusion of likely significant effects in respect to commercial fisheries. The impacts assessed include:

- loss or restricted access to fishing grounds;
- displacement of fishing activity into other areas;
- increased steaming times;
- snagging risk – loss or damage to fishing gear and safety issues;
- interference with fishing activities; and
- impacts on commercially exploited species.

385. Overall, it is concluded that there will be negligible or minor/tolerable effects arising from the Proposed Development during the construction, operation and maintenance or decommissioning phases, which are not significant in EIA terms.

386. Table 12.17 presents a summary of the potential cumulative effects, mitigation measures and the conclusion of likely significant cumulative effects. The cumulative effects assessed include:
- loss or restricted access to fishing grounds;
 - displacement of fishing activity into other areas;
 - increased steaming times;
 - snagging risk – loss or damage to fishing gear and safety issues;
 - interference with fishing activities; and
 - impacts on commercially exploited species.
387. Overall, it is concluded that there will be negligible or minor/tolerable cumulative effects from the Proposed Development alongside other developments, which are not significant in EIA terms.
388. No potential transboundary impacts have been identified in regard to effects of the Proposed Development.

Table 12.15: Summary of Likely Significant Inter-Related Effects on the environment from Individual Effects Occurring across the Construction, Operation and Maintenance and Decommissioning Phases of the Proposed Development and from Multiple Effects Interacting Across all Phases (Receptor-led Effects)

Description of Impact	Phase			Likely Significant Inter-Related Effects
	C	O	D	
Loss of or restricted access to fishing grounds and associated displacement	✓	✓	✓	During construction and decommissioning, fishing may be excluded from buoyed construction and decommissioning areas. The need to implement safety zones and advisory measures may result in a localised loss or restricted access to established fishing grounds. During operation and maintenance, the presence of the Proposed Development's infrastructure and cable protection will be long term, but effects highly localised (i.e. due to safety zones around discrete areas for maintenance works). A reduction in available fishing areas could cause increased fishing pressure in other areas (which could affect fish and benthic receptors). In view of a range of fisheries liaison and management measures to minimise loss of access and that fishing will continue around exclusion areas, effects did not exceed "minor adverse significance" for any fisheries assessed in isolation. Measures implemented to minimise loss of access during operation such as cable burial status assessments aim to reduce interactions with mobile fisheries. In view of the limited effects on vessels that are typically nomadic, combined effects of a greater significance are not predicted to result on commercially important fisheries and/or their prey species.
Impacts on commercially exploited species	✓	✓	✓	Activities that result in changes to seabed habitats (loss of benthic habitats and prey resource), water quality (increased suspended sediment concentrations) and underwater noise levels (e.g., during piling) could interact within a phase, or over the lifetime of the Proposed Development to influence disturbance displacement effects on, or the depletion of commercial fisheries resources. The potential for inter-related impacts would be greatest during construction and decommissioning (diminishing as the Proposed Development becomes operational). With regards to interactions, the effects are not considered mutually exclusive; heightened underwater noise levels would likely displace receptors from areas subject to increased sediment concentrations for example, and during construction, safety zones would already account for a temporary, localised displacement of fisheries. As impacts from these effects in isolation are highly localised and temporary (no impact above "minor adverse significance" on fish and shellfish species has been identified), combined effects of greater significance on commercially important fish and or their prey species are not predicted.
Displacement of fishing activity into other areas;	✓	✓	✓	The individual effects of vessels associated with the Proposed Development could interfere with commercial fishing activities across all phases. Vessel traffic (that could result in interference with fishing) would however, peak during construction and decommissioning. Due to a range of fisheries liaison and management measures that will be implemented to manage vessel traffic, impacts are predicted to be of local spatial extent, medium term duration and intermittent. Effects of negligible adverse significance were predicted for fisheries assessed in isolation. In this context, the interactions of transiting construction vessels with the other interactions (as they predicted to arise) would not result in an effect of greater significance in any individual phase.
Increased steaming times	✓	✗	✓	During construction and decommissioning, the implementation of safety zones and advisory measures could result in increased steaming distances, with a very small spatial extent. This effect will only arise during construction and decommissioning as it is assumed vessels will steam through the site once operational. The consequent impacts are limited in both extent (highly localised) and duration (temporary) assessed for all fisheries to be of minor adverse significance. The interaction of other individual effects during the construction phase is not predicted to result in a significant inter-related effect.
Snagging risk and associated loss or damage to fishing gear and safety issues	✗	✓	✗	During operation and maintenance, damage or loss of fishing gear and/or vessel safety issues could result if fishing gear interacted with seabed obstacles, including cables temporarily awaiting burial or protection. The implementation of safety zones and advisory measures are specifically designed to reduce interactions thereby limiting the potential for interaction with other effects. As fishing vessels operating in and around the Proposed Development would be made aware of applicable safety zones and advisory measures and as the risk is only present in the immediate footprint of the obstacles, the probability of occurrence is deemed to be remote. In view of the fisheries liaison and management measures that will be implemented, and the minor adverse significance predicted for all fisheries in isolation, significant inter-related effects are not predicted to arise.

Table 12.16: Summary of Likely Significant Environmental Effects, Mitigation and Monitoring

Description of Impact	Phase			Receptor	Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Additional Measures	Residual Effect	Proposed Monitoring
	C	O	D							
Loss or restricted access to fishing grounds	✓	✓	✓	Demersal trawlers - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor	N/A.
				Demersal trawlers - Squid fishery	Low	Low	Minor	N/A	Minor	
				Creelers -nearshore activity	Low	High	Minor	N/A	Minor	
				Creelers – extended operational range	Low	Medium	Minor	N/A	Minor	
				Dredgers -Scallop fishery	Low	Low	Minor	N/A	Minor	
Displacement of fishing activity into other areas	✓	✓	✓	Demersal trawlers - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor	
				Demersal trawlers - Squid fishery	Low	Low	Minor	N/A	Minor	
				Creelers -nearshore activity	Low	High	Minor	N/A	Minor	
				Creelers – extended operational range	Low	Medium	Minor	N/A	Minor	
				Dredgers -Scallop fishery	Low	Low	Minor	N/A	Minor	
Increased steaming times	✓	✓	✓	Demersal trawlers - <i>Nephrops</i> fishery	Negligible to low	Low	Negligible to minor	N/A	Negligible to minor	N/A
				Demersal trawlers - Squid fishery	Negligible to low	Low	Negligible to minor	N/A	Negligible to minor	N/A
				Creelers -nearshore activity	Negligible to low	Medium	Negligible to minor	N/A	Negligible to minor	N/A
				Creelers – extended operational range	Negligible to low	Low	Negligible to minor	N/A	Negligible to minor	N/A
				Scallop dredgers - local vessels	Negligible to low	Medium	Negligible to minor	N/A	Negligible to minor	N/A
				Scallop dredgers - Nomadic vessels	Negligible to low	Low	Negligible to minor	N/A	Negligible to minor	N/A
Snagging risk – loss or damage to fishing gear	✓	✓	✓	All fisheries	Low/Remote probability of occurrence	Medium/Moderate severity of consequence	Minor/Tolerable	N/A	Minor/Tolerable	Assessment of burial status of cables (including cable protection) and of potential changes to seabed.
Interference with fishing activities	✓	✓	✓	Static gear fisheries	Low	Medium	Minor	N/A	Minor	N/A
				Mobile fisheries	Low	Low	Negligible	N/A	Negligible	N/A
Potential impacts on commercially exploited species	✓	✓	✓	Fish and shellfish	See volume 2, chapter 9		Not exceeding Minor	N/A	Not exceeding Minor	N/A

Table 12.17: Summary of Likely Significant Cumulative Environment Effects, Mitigation and Monitoring

Description of Impact	Phase			Cumulative Effects Assessment Tier	Receptor	Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Additional Measures	Residual Effect	Proposed Monitoring
	C	O	D								
Cumulative loss or restricted access to fishing grounds	✓	✓	✓	Tiers 2 and 3	Demersal trawlers - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor	N/A
					Demersal trawlers - Squid fishery	Low	Low	Minor	N/A	Minor	N/A
					Creelers -nearshore activity	Low	High	Minor	N/A	Minor	N/A
					Creelers – extended operational range	Low	Medium	Minor	N/A	Minor	N/A
					Dredgers -Scallop fishery	Medium	Low	Minor	N/A	Minor	N/A
Cumulative displacement of fishing activity into other areas	✓	✓	✓		Demersal trawlers - <i>Nephrops</i> fishery	Low	Medium	Minor	N/A	Minor	N/A
					Demersal trawlers - Squid fishery	Low	Low	Minor	N/A	Minor	N/A
					Creelers -nearshore activity	Low	High	Minor	N/A	Minor	N/A
					Creelers – extended operational range	Low	Medium	Minor	N/A	Minor	N/A
					Dredgers -Scallop fishery	Medium	Low	Minor	N/A	Minor	N/A
Cumulative Increased steaming times	✓	✓	✓		Demersal trawlers - <i>Nephrops</i> fishery	Low	Low	Minor	N/A	Minor	N/A
					Demersal trawlers - Squid fishery	Low	Low	Minor	N/A	Minor	N/A
					Creelers -nearshore activity	Low	Medium	Minor	N/A	Minor	N/A
					Creelers – extended operational range	Low	Low	Minor	N/A	Minor	N/A
					Scallop dredgers - local vessels	Low	Medium	Minor	N/A	Minor	N/A
					Scallop dredgers - Nomadic vessels	Low	Low	Minor	N/A	Minor	N/A
Cumulative snagging risk – loss or damage to fishing gear	✓	✓	✓		All fisheries	Low/Remote probability of occurrence	Medium/Moderate severity of consequence	Minor/Tolerable	N/A	Minor/Tolerable	Assessment of burial status of cables (including cable protection) and of potential changes to seabed.
Cumulative interference with fishing activities	✓	✓	✓		Static gear fisheries	Low	Medium	Minor	N/A	Minor	N/A
					Mobile fisheries	Low	Low	Negligible	N/A	Negligible	N/A
Potential cumulative impacts on commercially exploited species	✓	✓	✓		Fish and shellfish	See volume 2, chapter 9	Not exceeding Minor	N/A	Not exceeding Minor		N/A

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