GREEN VOLT

# Chapter 13
## Commercial Fisheries

Offshore EIA Report: Volume 1

## Revision history

| Revision | Date | Description | Prepared | Checked | Approved |
|---|---|---|---|---|---|
| 1 | 10/10/2022 | First draft | HF (Royal HaskoningDHV) | PB (Royal HaskoningDHV) | VC (Flotation Energy) |
| 2 | 09/11/2022 | Second draft | HF (Royal HaskoningDHV) | PB (Royal HaskoningDHV) | VC (Flotation Energy) |
| 3 | 09/01/2023 | Final for submission | HF (Royal HaskoningDHV) | JM (Royal HaskoningDHV) | VC (Flotation Energy) |

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## Acronyms

| Acronym | Description |
|---|---|
| CAA | Civil Aviation Authority |
| CCS | Carbon Capture and Storage |
| CFD | Contracts for Difference |
| CFP | Common Fisheries Policy |
| CIA | Cumulative Impact Assessment |
| COLREGS | International Regulations for Preventing Collisions at Sea 1972 |
| DECC | Department of Energy and Climate Change |
| DoL | Depth of Lowering |
| EEA | European Economic Area |
| EEZ | Exclusive Economic Zone |
| EIA | Environmental Impact Assessment |
| EMF | Electro-magnetic Field |
| ESCA | European Subsea Cables Association |
| EU | European Union |
| FIR | Fishing Industry Representative |
| FLO | Fisheries Liaison Officer |
| FLOWW | Fishing Liaison with Offshore Wind and Wet Renewables Group |
| FMMS | Fisheries Management and Mitigation Strategy |
| GW | Gigawatt |
| HVDC | High Voltage Direct Current |

| | |
|---|---|
| IAC | Inter-Array Cables |
| ICES | International Council for the Exploration of the Sea |
| INTOG | Innovation and Targeted Oil & Gas |
| JNCC | Joint Nature Conservation Committee |
| MCA | Maritime and Coastguard Agency |
| MCRS | Minimum Conservation Reference Sizes |
| MMO | Marine Management Organisation |
| MoD | Ministry of Defence |
| MS-LOT | Marine Scotland Licencing and Operations Team |
| MSS | Marine Scotland Science |
| MW | Megawatt |
| nm | Nautical mile |
| NMP | National Marine Pan |
| NtM | Notice to Mariners |
| O&M | Operation & Maintenance |
| OSP | Offshore Substation Platform |
| OWL | Offshore Wind Ltd |
| RFIGS | Regional Inshore Fishery Groups |
| SEIA | Socio-Economic Impact Assessment |
| SFF | Scottish Fishermen's Federation |
| SOLAS | International Convention for the Safety of Life at Sea 1974 |
| TAC | Total Allowable Catch |

| | |
|---|---|
| TCA | Trade and Corporation Agreement |
| UK | United Kingdom |
| UKFEN | United Kingdom Fisheries Economic Network |
| UKHO | United Kingdom Hydrographic Office |
| UXO | Unexploded Ordnance |
| VMS | Vessel Monitoring System |
| WTG | Wind Turbine Generator |

# Glossary

| Term | Description |
|---|---|
| Applicant | Green Volt Offshore Windfarm Ltd. |
| Buzzard | Buzzard Platform Complex. |
| Buzzard Export Cable Corridor | The area in which the export cables will be laid, from the perimeter of the Windfarm Site to Buzzard Platform Complex. |
| Green Volt Offshore Windfarm | Offshore windfarm including associated onshore and offshore infrastructure development (Combined On and Offshore Green Volt Projects). |
| Horizontal Directional Drilling | Mechanism for installation of export cable at landfall. |
| Inter-array cables | Cables which link the wind turbines to each other and the offshore substation platform. |
| Landfall Export Cable Corridor | The area in which the export cables will be laid, from the perimeter of the Windfarm Site to landfall. |
| Mean High Water Springs | At its highest and 'Neaps' or 'Neap tides' when the tidal range is at its lowest. The height of Mean High Water Springs (MHWS) is the average throughout the year, of two successive high waters, during a 24-hour period in each month when the range of the tide is at its greatest (Spring tides). |
| Moorings | Mechanism by which wind turbine generators are fixed to the seabed. |
| NorthConnect Parallel Export Cable Corridor Option | Landfall Export Cable Corridor between NorthConnect Parallel Landfall and point of separation from St Fergus South Export Cable Corridor Option. |
| NorthConnect Parallel Landfall | Southern landfall option where the offshore export cables come ashore. |
| Offshore Development Area | Encompasses i) Windfarm Site, including offshore substation platform ii) Offshore Export Cable Corridor to Landfall, iii) Export Cable Corridor to Buzzard Platform Complex. |
| Offshore export cables | The cables which would bring electricity from the offshore substation platform to the Landfall or to the Buzzard Platform Complex. |
| Offshore Export Cable Corridor | The proposed offshore area in which the export cables will be laid, from offshore substation to landfall or to the Buzzard Platform Complex. |
| Offshore infrastructure | All of the offshore infrastructure, including wind turbine generators, offshore substation platform and all inter-array and export cables. |
| Offshore substation platform | A fixed structure located within the Windfarm Site, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore. |
| Onshore Export Cable Corridor | The proposed onshore area in which the export cables will be laid, from landfall to the onshore substation. |
| Project | Green Volt Offshore Windfarm project as a whole, including associated onshore and offshore infrastructure development. |

| | |
|---|---|
| Safety zones | An area around a structure or vessel which must be avoided. |
| St Fergus South Export Cable Corridor Option | Landfall Export Cable Corridor between St Fergus South Landfall and point of separation from NorthConnect Parallel Export Cable Corridor Option. |
| St Fergus South Landfall | Northern landfall option where the offshore export cables come ashore. |
| Windfarm Site | The area within which the wind turbine generators, offshore substation platform and inter-array cables will be present. |

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# CHAPTER 13: COMMERCIAL FISHERIES

## 13.1 Introduction

1. This chapter of the **Offshore Environmental Impact Assessment (EIA) Report** presents an assessment of the likely significant effects of the construction, operation and decommissioning of the Project (the Project refers to the offshore elements of the Green Volt Offshore Windfarm only, up to Mean High Water Springs (MHWS)) on the existing commercial fisheries activities occurring within or near to the Offshore Development Area (encompassing the Windfarm Site, offshore substation platform (OSP), the Landfall Export Cable Corridor, and the Buzzard Export Cable Corridor).

2. A description of the commercial fisheries within the Offshore Development Area is presented in **Section 13.6** of this chapter. The presentation of the baseline is followed by an assessment of the magnitude and significance of the effects on commercial fisheries resulting from the construction, operation and maintenance (O&M) and decommissioning of the Project (**Section 13.8**), using realistic worst case scenarios based on the project design presented in **Chapter 5: Project Description**. The effects resulting from cumulative interactions within the Project and with other existing or planned marine projects are also covered in this chapter.

3. This Chapter should be read in conjunction with the following:

   - **Chapter 10: Fish and Shellfish Ecology**, for assessment of potential impacts related to fish and shellfish species targeted by commercial fisheries; and
   - **Chapter 14: Shipping and Navigation**, for assessment of potential impacts related to the movement of fishing vessels within the bounds and within the vicinity of the Offshore Development Area.

4. This chapter has been informed by the interpretation of existing datasets and reports as described in **Section 13.5.2**, as well as information gathered during consultation as described in **Section 13.3**.

## 13.2 Legislation, Guidance and Policy

5. This section outlines the legislation, guidance and policy relevant to the assessment of likely significant impacts on commercial fisheries associated with the construction, operation and decommissioning of the Project. For overarching policy and guidance, please see **Chapter 3: Policy and Legislative Context.**

### 13.2.1 Relevant Guidance

6. The following guidance documents have been used to inform the assessment of potential effects on commercial fisheries:

   - Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW) (2014). Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison[1];
   - FLOWW (2015). Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds;
   - Sea Fish Industry Authority and UK Fisheries Economic Network (UKFEN) (2012). Best practice guidance for fishing industry financial and economic impact assessments;
   - Blyth-Skyrme, R.E. (2010a) Developing guidance on fisheries CIA for wind farm developers;
   - Blyth-Skyrme, R.E. (2010b). Options and opportunities for marine fisheries mitigation associated with wind farms;

[1] *It is noted that an update to the FLOWW Best Practice Guidance is currently under preparation by Marine Scotland but has not been published at the time of writing.*

- International Cable Protection Committee (2009). Fishing and Submarine Cables - Working Together. A concise summary of assessment methodology;
- Marine Scotland (2011). Economic Assessment of Short Term Options for offshore Wind Energy in Scottish Territorial Waters: Costs and Benefits to other Marine Users and Interests;
- SeaPlan (2015). Options for Cooperation between Commercial Fishing and Offshore Wind Energy Industries. A Review of Relevant Tools and Best Practices:
- Scottish Government (2022a). Good Practice Guidance for assessing fisheries displacement by other licensed marine activities: Literature Review:
- European Subsea Cable Association (ESCA) (2018). ESCA Statement on vessels operating in the vicinity of subsea cables;
- Marine Scotland Science (2022). Review of fish and fisheries research to inform ScotMER evidence gaps and future strategic research in the UK; and
- Marine Scotland (2019). Sectoral Marine Plan for Offshore Wind Energy - Social and Economic Impact Assessment Report.
- National Policy Statement for renewable Energy Infrastructure (EN-3) (Department of Energy and Climate Change (DECC), 2011).
- Natural England and Joint Nature Conservation Committee (JNCC) advice on key sensitivities of habitats and Marine Protected Areas in English Waters to offshore wind farm cabling within Proposed Round 4 leasing areas (Natural England and JNCC, 2019).
- Cable Burial Risk Assessment Guidance and Application Guide (Carbon Trust, 2015).

### 13.2.2 Scotland's National Marine Plan (NMP)

7. This assessment of the potential impacts on commercial fisheries of the Project has been undertaken with specific reference to Scotland's National Marine Plan (NMP) (Scottish Government, 2015).

8. The NMP for Scotland outlines a management framework for the marine environment which enables the requirements of marine users to be coordinated in a sustainable way. It covers the management and coordination of marine activities from 12 to 200 nautical miles (nm) offshore. The NMP outlines specific planning policies which are relevant to the assessment of commercial fisheries in this offshore EIA chapter. Examples of statements within the NMP which address issues related to commercial fisheries are as given in **Table 13.1**.

*Table 13.1 NMP policies of relevance to commercial fisheries and how/where these are addressed in this EIA chapter*

| Policy Reference | Policy Statement | Response / where addressed in the EIA |
|---|---|---|
| Section 6 - Sea Fisheries<br><br>Part 1 Objectives and marine planning polices,<br><br>Fisheries 1, Fisheries 2 and Fisheries 3 | Fisheries 1: Taking account of the European Union's (EU) Common Fisheries Policy (CFP), Habitats Directive, Birds Directive and Marine Strategy Framework Directive, marine planners and decision makers should aim to ensure:<br>• Existing fishing opportunities and activities are safeguarded wherever possible.<br>• Mechanisms for managing conflicts between fishermen and/or between the fishing sector and other users of the marine environment. | Embedded mitigation measures have been included to safeguard existing fishing opportunity where possible, as detailed in **Section 13.8.1,** including refining the Windfarm Site boundary to minimise potential impacts on key Nephrops grounds.<br><br>The Project commits to developing a Fisheries Management and Mitigation Strategy (FMMS) post-consent with full engagement from the local fishing industry. |
| | Fisheries 2: The following key factors should be taken into account when deciding on uses of the marine environment and the potential impact on fishing: | Displacement effects and associated socioeconomic implications on commercial fisheries as a result of the Project |

| Policy Reference | Policy Statement | Response / where addressed in the EIA |
|---|---|---|
| | • The cultural and economic importance of fishing, in particular to vulnerable coastal communities.<br>• The potential effect of displacement on fish stocks; the wider environment; use of fuel.<br>• Socio-economic costs to fishers and their communities and other marine users. | are assessed for each Project phase in **Section 13.8**. |
| | Fisheries 3: Where existing fishing opportunities or activity cannot be safeguarded, a Fisheries Management and Mitigation Strategy (FMMS) should be prepared by the proposer of development or use, 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 proposer 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 Project commits to developing an FMMS post-consent with full engagement from the local fishing industry. |
| Section 6 - Sea Fisheries<br>Part 3 Key issues for marine planning, Interactions with other users<br><br>Paragraphs 6.22 to 6.26 | Development: 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.<br><br>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.<br><br>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. | Displacement effects on commercial fisheries as a result of the Project are assessed for each Project phase in **Section 13.8**.<br><br>Potential gear snagging effects are assessed for the O&M phase and decommissioning phase in **Sections 13.8.4.3** and **13.8.5** respectively.<br><br>As per **Section 13.2.1**, FLOWW Best Practice Guidance is followed. |
| Section 6 - Sea Fisheries<br>Part 3 Key issues for marine planning, Interactions with other users<br><br>Paragraphs 6.33 to 6.37 | Displacement: Displacement of fishing activity can occur as a result of: interactions with other marine activities (whether commercial or conservation based); closing areas to fishing; or restricting fishing vessels' access to areas. Displacement of fishing effort has a number of features that require careful consideration.<br><br>Displaced effort may move to areas that are already fished but where the fishing pressure is then greater than otherwise would have been the case. This could be a concern if this results in a greater impact on recovery of fish stocks or increased pressure on fish stocks or damage to the environment.<br><br>Displaced effort may also impact on grounds that previously have not experienced any fishing effort. These areas can be readily identified in the offshore fisheries by vessel monitoring systems. The displaced activity may have a new and unknown environmental impact on these areas.<br><br>There may be socio-economic effects associated with displacement, such as new grounds being less profitable for fishermen; beyond the capacity of some vessels; and/or unable to provide the mix of species on which current business models rely. Displacement may also cause crowding of fishing effort in remaining established fishing areas, or | Displacement effects on commercial fisheries as a result of the Project are assessed for each Project phase in **Section 13.8**. |

| Policy Reference | Policy Statement | Response / where addressed in the EIA |
|---|---|---|
| | increased fuel use and fuel costs arising from having to travel further and make fishing less economically sustainable. | |

### 13.2.3 Fisheries Management

#### 13.2.3.1 Scottish Waters

9. Fisheries management in Scottish waters, encompassing the Exclusive Economic Zone (EEZ), is the responsibility of Marine Scotland. Marine Scotland is the relevant authority responsible for the administration and management of vessel licensing in Scottish waters and can issue licences to fish within Scottish waters.

10. In Scottish waters out to 6 nm from the coast, Regional Inshore Fisheries Groups (RFIGs) work to improve the management of Scottish inshore fisheries. Marine Scotland maintain oversight of operations and legislation in the 6 nm limit as the RFIGS have no management authority, however, RFIGS are important non-statutory representative bodies and form a key consultative group. The Offshore Export Cable Corridor within 6 nm of the Aberdeenshire coastline falls within the North & East Coast RFIG district.

#### 13.2.3.2 Fisheries Management Following UK Exit from EU

11. Whilst the United Kingdom (UK) was a member of the European Union (EU), fisheries in UK waters were managed as part of the Common Fisheries Policy (CFP). The Fisheries Act 2020 (the Act) was implemented alongside withdrawal of the UK from the EU and the MMO, acting as the UK Single Issuing Authority, has since the end of the transitional period on 21st January 2021 been responsible for managing fishing vessel licensing for foreign vessel access to UK waters. As part of the Trade and Cooperation Agreement (TCA), applicable on a provisional basis from 1 January 2021, and during a transition period between the start of the TCA and 30 June 2026, the UK and EU have agreed to grant to vessels full access to each other's waters to fish specified total allowable catch (TAC) and non-quota stocks in the respective EEZ, and in specified parts of waters between the coast and twelve nautical miles.

#### 13.2.3.3 Scotland's Fisheries Management Strategy 2020 – 2030

12. In September 2022 the Scottish Government released its Delivery Plan for Scotland's Fisheries Management Strategy (Scottish Government, 2022b). The plan outlines 12 actions to improve fisheries management in Scottish waters, with input from stakeholders.

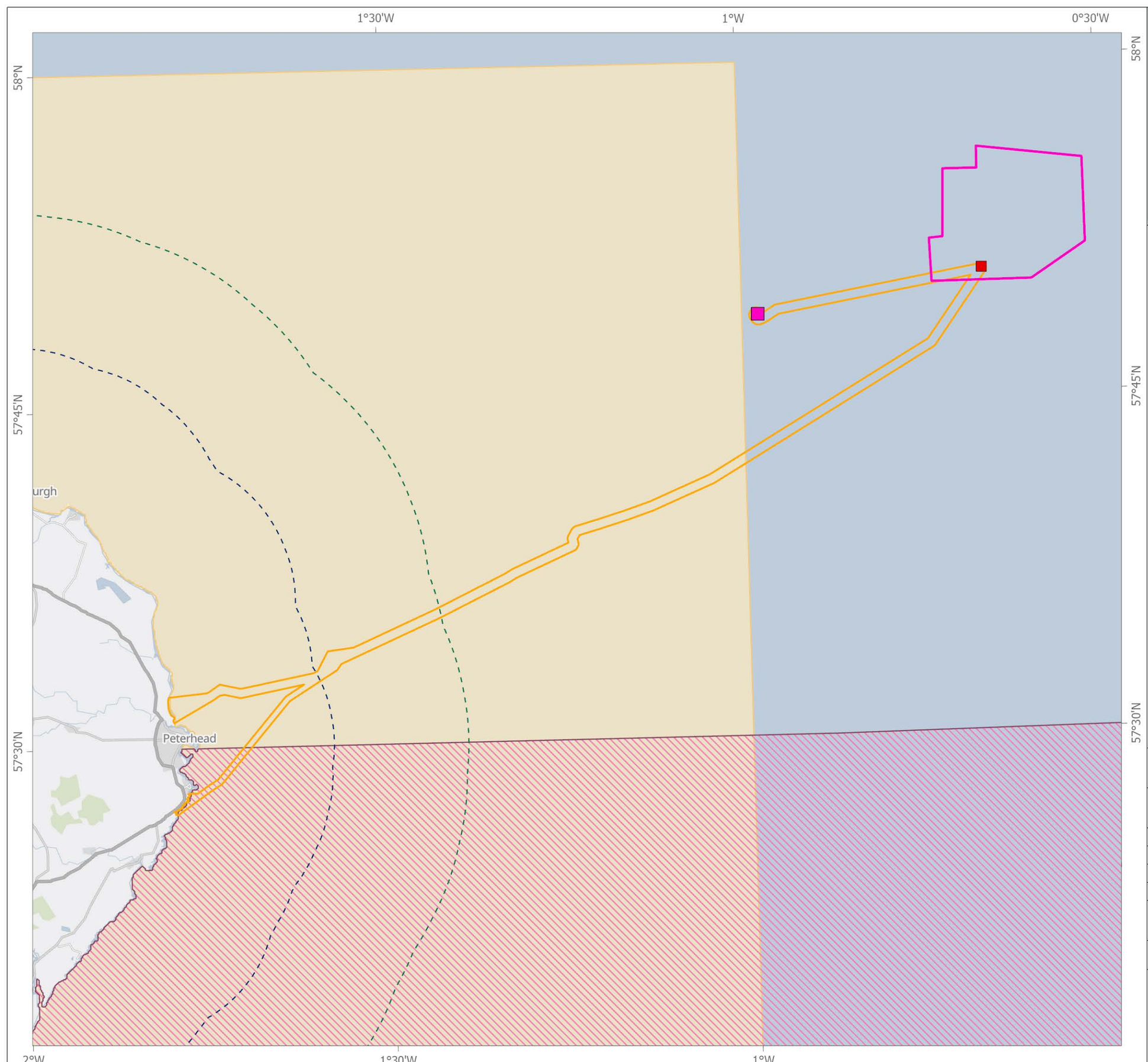
13. Action 5 states: "*We will address issues around the shared marine space linking with wider developments through our actions on the Blue Economy, considering how fishing interests can work alongside others marine users including offshore renewables*" relates to managing interactions between fishing interests and offshore renewable energy projects, including this Project. The plan notes "*We recognise the need for a clear policy framework that reflects our new shared priorities and commitments and helps guide decision-making in cases where there may be conflict between different interests*."

#### 13.2.3.4 Fishing Managed Areas

14. There are a number of spatial fisheries restrictions that apply in areas of relevance to the Project, as shown in **Figure 13.1**. The Offshore Development Area overlaps the following restrictions:

- Fishing for sandeels with any towed gear with a codend mesh size less than 32 mm is prohibited under Regulation (EU) 2019/1241 of the European Parliament and of the Council.

- It is prohibited to fish for seabass in International Council for the Exploration of the Sea (ICES) division 4b and 4c, and in ICES subarea 7, except within 12 nm as by-catch (Council Regulation (EU) 2020/123).





## LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform

Fishing Managed Areas

- Conservation of sandeels
- Conservation of spawning sea bass aggregations
- 6 nm limit
- 12 nm limit

0 10 20
Kilometres

Data:
Marine Scotland (2022), UKHO



PROJECT:
GREEN VOLT

TITLE:
Fig 13.1 Fishing Managed Areas

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 30/09/2022 | | SK | HF |
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| | | | | |

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DRAWING: FLO-GRE-GIS-MAP001-FishingManAreas-Rev001

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| 1:300,000 | A3 | WGS 1984 UTM Zone 30N |

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### 13.2.3.5 Scallop Dredge Restrictions

15. As required by the Regulation of Scallop Fishing (Scotland) Order 2017, vessels are prohibited from deploying more than 8 dredges from either side of the vessel (16 in total) in Scottish inshore waters (within 6 nm). In Scottish waters between 6 and 12 nm, vessels may deploy up to 10 scallop dredges either side of the vessel. In Scottish waters outside of 12 nm, vessels may deploy up to 28 scallop dredges in total.

### 13.2.3.6 Minimum Conservation Reference Sizes

16. A number of commercial fish and shellfish species targeted in the Offshore Development Area are not subject to TAC. Instead, the principal method for the regulation of landings is through Minimum Conservation Reference Sizes (MCRS) (also known as minimum landings sizes).

17. MCRS applies to the following non-quota species of importance in the Offshore Development Area:

- Edible/brown Crab (*Cancer pagarus*), 140mm;
- Velvet Crab (*Necora puber*), 65mm;
- Lobster (*Homarus gammarus*), 87mm;
- Scallops (*Pecten maximus*), 100mm; and

18. The shellfish listed above are additionally regulated by the requirement for fishing vessels to have a shellfish permit.

## 13.3 Consultation

19. Consultation is a key requirement within the EIA process as it enables stakeholders to present their assessment of the proposed works. This requirement is explained in further detail in **Chapter 6: EIA Methodology** of this **Offshore EIA Report**. This includes consultation meetings with the Scottish Fishermen's Federation (SFF) and wider industry liaison including local fishing organisations/associations and individual vessels, and inclusion of Fishing Industry Representatives (FIRs) during pre-application consultation.

20. As part of the wider engagement process with the commercial fishing community and to help support the wider data and information gathering requirements for the Project, the Project has engaged a suitably qualified Fishing Liaison Officer (FLO) to liaise with the wider fishing community on behalf of the Project. Additional information gathered by the FLO has been considered within this chapter as appropriate.

21. **Table 13.2** provides an overview of consultation undertaken with the commercial fishing industry for the Project to date, including consultation responses/representations received in the **Scoping Opinion** (MS-LOT, 2022) (**Appendix 1.1).**

*Table 13.2 Summary of consultation relating to commercial fisheries*

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
|---|---|---|---|
| Marine Scotland Licensing and Operations Team (MS-LOT) | April 2022, Marine Scotland - Licensing Operations Team: Scoping Opinion for Green Volt Offshore Windfarm | **[Ref: 5.15.4] Shipping and Navigation:** Additionally with regard to cabling, the Scottish Ministers emphasise the representation from the Scottish Fishermen's Federation (SFF) which states that impacts on safe navigation for fishing vessels around the export and inter-array cables should be scoped into the EIA Report. The Scottish Ministers agree and advise that this point must be fully addressed by the Developer. | Safe navigation for fishing vessels is assessed in **Chapter 14: Shipping and Navigation.** |
| MS-LOT | April 2022, Marine Scotland - Licensing | **[Ref: 5.16.1] Commercial Fisheries:** With regards to baseline data, the Scottish Ministers draw the Developer's | Landings data for the period 2017 to 2021 as published by the Marine Management Organisation (MMO, 2022) is the most |

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
|---|---|---|---|
| | Operations Team: Scoping Opinion for Green Volt Offshore Windfarm | attention to the representation from NatureScot regarding landings data used by the Developer which shows different results to that of National Marine Plan Interactive Vessel Monitoring System which indicate the Proposed Development Area is largely trawled for herring and Nephrops. The Scottish Ministers advise that both sources must be considered and clarity provided on what fishing activity takes place in the Proposed Development Area in order to fully assess the potential displacement of fishing activity.<br><br>The Scottish Ministers also highlight the representation from the SFF which states that the commercial fisheries data provided in Section 6.2 of the Scoping Report should be compared with historic data dating from pre-2013 in order to allow variations to be seen. | current data source for landings data available at the time of writing and has been used to undertake the commercial fisheries baseline and impact assessment. Vessel Monitoring System (VMS) data provided by the MMO for the period 2016 – 2020 for vessels over 15 m in length has also been used where applicable. A description of all data sources used to inform the commercial fisheries baseline and limitations of the datasets is provided in **Section 13.5.2**.<br><br>A full baseline characterisation of commercial fisheries is given in **Section 13.6**, including for Nephrops (**Section 13.6.2.1**) and herring (**Section 13.6.5**).<br><br>Please see **Appendix 13.1** for landings prior to 2017 for International Council for the Exploration of the Sea (ICES) rectangle 44E9 where the Windfarm Site is located. |
| MS-LOT | April 2022, Marine Scotland - Licensing Operations Team: Scoping Opinion for Green Volt Offshore Windfarm | **[Ref: 5.16.2] Commercial Fisheries:** In Table 7.8 of the Scoping Report the Developer summarises the potential impacts to commercial fisheries and proposes to scope out potential impacts for all phases of the Proposed Development. The Scottish Ministers disagree with the proposed approach and advise that the Developer must instead use the approach outlined in the following paragraph. The approach therein is supported by the MSS and MAU advice and the SFF representation and the Scottish Ministers advise that these must be fully addressed. | **Table 13.8** outlines the potential impacts scoped in and out of assessment in the **Offshore EIA Report.** |
| MS-LOT | April 2022, Marine Scotland - Licensing Operations Team: Scoping Opinion for Green Volt Offshore Windfarm | **[Ref: 5.16.3] Commercial Fisheries:** While the south-eastern corner remains within the boundary of the Wind Farm Area, reduction in access to or exclusion from established fishing grounds, displacement leading to gear conflict and increased fishing pressure on adjacent grounds, displacement or disruption of commercially important fish and shellfish resources and physical presence of offshore windfarm infrastructure leading to gear snagging must be scoped in to the EIA Report. For the avoidance of doubt, this should include but must not be limited to consideration of potential impacts on the nephrops fishery located in the south-eastern corner. Impacts during the construction phase of the Proposed Development leading to additional steaming to alternative fishing grounds must be scoped in to the EIA Report, irrespective of whether the south-eastern corner remains within the boundary of the Wind Farm Area. Additionally, displacement or disruption to commercial fisheries across the Proposed Development Area boundary must also be scoped in to the EIA Report. | A baseline characterisation of the Nephrops fishery is given in **Section 13.6.2.1** and potential impacts assessed in **Section 13.8.**<br><br>**Table 13.9** outlines the potential impact pathways on commercial fisheries receptors which are assessed in **Section 13.8**, including:<br>• reduction in access to or exclusion from established fishing grounds;<br>• displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds;<br>• displacement or disruption of commercially important fish and shellfish resources;<br>• physical presence of offshore wind farm infrastructure leading to fishing gear snagging;<br>• activities leading to additional steaming to alternative fishing grounds; and |

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
|---|---|---|---|
| | | | • increased vessel traffic within fishing grounds leading to interference. |
| MS-LOT | April 2022, Marine Scotland - Licensing Operations Team: Scoping Opinion for Green Volt Offshore Windfarm | **[Ref: 5.16.4] Commercial Fisheries:** In regard to cumulative effects, the Scottish Ministers highlight the NorthConnect representation regarding cumulative Electro-magnetic Force (EMF) effects between the Proposed Development and the NorthConnect cable corridor; and the implications of these on the commercial fishing industry and other receptors. The Scottish Ministers advise that the Developer must fully address these comments within the EIA Report in all relevant receptor chapters. | Cumulative impacts from EMF are assessed in **Chapter 10: Fish and Shellfish Ecology**.<br><br>Cumulative impacts to the fishing industry are assessed in **Section 13.9** |
| MS-LOT | April 2022, Marine Scotland - Licensing Operations Team: Scoping Opinion for Green Volt Offshore Windfarm | **[Ref: 5.16.5] Commercial Fisheries:** The Scottish Ministers also direct the Developer to the representation from the SFF with regards to design aspects of the Proposed Development. The Scottish Ministers advise that the Developer must fully address the points raised regarding cable route design, including burial, within the EIA Report. The Scottish Ministers also advise that the Developer must fully address the SFF point regarding surveys post-laying of cables. | Consultation with the fishing industry on the Offshore Export Cable Corridor was undertaken as described in **Table 13.2**.<br><br>As described in **Chapter 5: Project Description** and **Section 13.8.1** of this chapter, the preferred option is for burial of cables. Where this is not possible due to seabed conditions, external protection will be installed.<br><br>Post-installation surveys will be undertaken to confirm cable burial, as described in **Section 13.8.1**. |
| MS-LOT | April 2022, Marine Scotland - Licensing Operations Team: Scoping Opinion for Green Volt Offshore Windfarm | **[Ref: 5.16.6] Commercial Fisheries:** With regards to commercial fisheries catch data, the SFF representation states a worst case scenario of loss of all catch should be assumed and appropriate mitigations put in place for this. The Scottish Ministers advise that this point must be fully considered in the EIA Report. | Exclusion from the Windfarm Site is assumed for the assessment of O&M impacts provided in **Section 13.8.4**. |
| MS-LOT | April 2022, Marine Scotland - Licensing Operations Team: Scoping Opinion for Green Volt Offshore Windfarm | **[Ref: 5.18.5] Commercial Fisheries:** With regards to the location of the Proposed Development, the Scottish Ministers direct the Developer to the representation from the SFF. The SFF notes that the commercial fishing industry would have presumed to regain access to the two former hydrocarbon fields post-oil production. It therefore states that the commercial fishing industry's reduction in access to the proposed location and the potential economic and socio-economic impacts of this should be scoped in to the EIA Report. The Scottish Ministers agree and advise that this must be fully addressed by the Developer. | **Table 13.9** outlines the potential impact pathways on commercial fisheries receptors which encompasses socioeconomic impacts, and are assessed in **Section 13.8**, including:<br>• reduction in access to or exclusion from established fishing grounds;<br>• displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds;<br>• displacement or disruption of commercially important fish and shellfish resources;<br>• physical presence of offshore wind farm infrastructure leading to fishing gear snagging;<br>• activities leading to additional steaming to alternative fishing grounds; and<br>• increased vessel traffic within fishing grounds leading to interference. |

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
|---|---|---|---|
| MS-LOT | April 2022, Marine Scotland - Licensing Operations Team: Scoping Opinion for Green Volt Offshore Windfarm | **[Ref: 5.18.6] Offshore Social-Economics and Tourism:** Additionally on potential socio-economic impacts of the Proposed Development, the Scottish Ministers draw the Developer's attention to the MAU advice which recommends that these impacts should be assessed across the whole boundary of the Wind Farm Area, including the south-eastern corner which currently remains within this area. Moreover, it states that there remains a significant number of active commercial fishers to consider even if this corner is removed from the Wind Farm Area. The Scottish Ministers agree and advise that this must be fully addressed by the Developer in the EIA Report. | **Table 13.9** outlines the potential impact pathways on commercial fisheries receptors which encompasses socioeconomic impacts, and are assessed in **Section 13.8**, including:<br>• reduction in access to or exclusion from established fishing grounds;<br>• displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds;<br>• displacement or disruption of commercially important fish and shellfish resources;<br>• physical presence of offshore wind farm infrastructure leading to fishing gear snagging;<br>• activities leading to additional steaming to alternative fishing grounds; and<br>• increased vessel traffic within fishing grounds leading to interference. |
| MS-LOT | Regulator Meeting 13th January 2021 | Picking up one of the points on other marine stakeholders, it is key that the fishing community should be engaged as soon as possible. The sooner Project Green Volt to set up the stakeholder process with the key groups, will aid in the consenting process to move forward and help secure consenting. Therefore, a robust stakeholder management process is important to help move the Project forward. | As part of the wider engagement process with the commercial fishing community and to help support the wider data and information gathering requirements for the Project, the Project has engaged a suitably qualified Fishing Liaison Officer (FLO) to liaise with the wider fishing community on behalf of the Project. Green Volt Offshore Windfarm Ltd (the Applicant) has maintained engagement with key fisheries stakeholders since 2021, including the SFF. |
| NatureScot | 27th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | We are unclear on current fishing activity within the area-the landings data in Tables 6.3 and 6.4 indicate different results to that of NMPi VMS data which indicate the site is largely trawled for herring and nephrops. It will be important to be clear on what activity does take place within the site to enable consideration of any displaced fishing activity. It would also be helpful to consider the export cable route and any inshore fishing activity that may be affected. | Landings data for the period 2017 to 2021 as published by the Marine Management Organisation (MMO, 2022) is the most current data source for landings data available at the time of writing and has been used to undertake the commercial fisheries baseline and impact assessment. VMS data provided by the MMO for the time period 2016 – 2020 for vessels over 15 m in length has also been used where applicable. A description of all data sources used to inform the commercial fisheries baseline and limitations of the datasets is provided in **Section 13.5.2**.<br><br>A full baseline characterisation of commercial fisheries is given in **Section 13.6**. |
| NatureScot | Stakeholder engagement meeting 14th February 2022 | Suggested the project team might want to raise with MS Policy the comments provided by SFF on loss of future fishing activities (i.e. the site would not be returned to them post O&G decommissioning) with regard to what they might want to put in to INTOG moving forward. SFF have the right to fish wherever, but EK suggested there is plenty of opportunity through INTOG and possibly any national marine plan review for policies on shared use of marine | Comments received by the SFF have been addressed in **Table 13.2**. Potential impacts to fishing activity are assessed **in Section 13.8**. The Applicant will consider any relevant policies from Marine Scotland on shared use of marine space and apply any future recommendations with respect to fisheries. |

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
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| | | space to made a bit clearer for all parties. | |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | The premise in the Executive summary/ Introduction is misleading, in that the expected life span of Buzzard is 15 years, so this development of 50 years planned existence, is unashamedly describing the power they will supply to the grid, which will be a larger component of production, than that dedicated to Buzzard. Even if the project manages to deliver power by 2026, that will only cover maybe c14years of Buzzard production. At that point, 2026, platform decommissioning comes into the scenario, and fishing would normally expect a clean seabed to be left behind | Please see **Chapter 5: Project Description** for further information on the Project design, potential for connections to oil and gas facilities in the Outer Moray Firth and approach to decommissioning.<br><br>As described in **Section 13.8.5** of this chapter, the Project will develop a Decommissioning Programme prior to decommissioning. It is anticipated that the wind turbine generators (WTG) and associated substructures and foundations will be removed. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | Of course the ability to measure benthic ecology and fish communities in the Buzzard 500m zone will have been hampered by its very existence, so the developer must find a way to define the baseline with the Buzzard in situ. That is further complicated by the uncertainty surrounding oil based cuttings from the area, containing substances with the ability to damage the marine environment. The apparent lack of these should be scoped and confirmed. The fishing industry would expect that any such dangerous chemicals are dealt with safely and the Buzzard is removed at end of life. | Please see **Chapter 8: Marine Water Sediment and Quality**, **Chapter 9: Benthic Ecology** and **Chapter 10: Fish and Shellfish Ecology**. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | Furthermore there is an expectation that the cable delivering power to Buzzard is also removed, as a foreign object, which purpose has gone.<br><br>The impact of the export cable must be addressed, with full burial being the aim. | The preferred option of the Project is full burial of the Offshore Export Cables. Where this is not possible, external protection will be use. Impacts of the Offshore Infrastructure, including the Offshore Export Cables, are assessed in **Section 13.8**.<br><br>As described in **Section 13.8.5**, a comparative assessment will be performed to determine the risk of the cables becoming exposed and will consider the views of all stakeholders. If the risk is minimal, then the cables (and relevant scour protection) may be left in-situ to avoid disturbing the seabed unnecessarily after decommissioning. Impacts of this are assessed in **Section 13.8.5**. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | Then we have to consider the siting of the proposed farm, the area quoted as “previously hosting the Ettrick and Blackbird oilfield” which again the fishing industry would have expected to regain access to post oil production.<br><br>Having been denied access to all these areas it is unlikely that there will be verifiable statistics on fish populations in any of the three areas. | Information on fish populations is presented in **Chapter 10: Fish and Shellfish Ecology**. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on | With the advent of 50 year leases, the fishing industry is now looking at the best part of two generations being excluded from working in these areas, | Displacement effects for each of the Project phases are assessed in **Section 13.8**. |

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
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| | Offshore Scoping Opinion | which is an immense potential displacement, and should be scoped in. | The Project is extending the timescale of potential current displacement rather than causing new displacement. Density of commercial species on the decommissioned oil field site is unknown. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | In order for there to be any attempt at coexistence or just transition, the developer should have to scope all the above scenarios, so that the regulator can make an informed judgement about the value of the project compared to the economic and socio-economic impacts on Fishing, a low carbon source of protein, which will rise in importance in years to come. | **Table 13.9** outlines the potential impact pathways on commercial fisheries receptors which are assessed in **Section 13.8** for the Offshore Development Area, including:<br>• reduction in access to or exclusion from established fishing grounds;<br>• displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds;<br>• displacement or disruption of commercially important fish and shellfish resources;<br>• physical presence of offshore wind farm infrastructure leading to fishing gear snagging;<br>• activities leading to additional steaming to alternative fishing grounds; and<br>• increased vessel traffic within fishing grounds leading to interference. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | Moving on to 2.2.1.3& 4, any discussion of the mooring system needs to scope the loss of seabed for safe fishing activity. This is effectively the seabed within the circumference of the anchor system. Anchors should be functionally designed to allow for removing from the seabed in due course and not being left in place. | The potential impacts of reduction in access to or exclusion from established fishing grounds and physical presence of offshore wind farm infrastructure leading to gear snagging are assessed in **Section 13.8**.<br><br>As described in **Section 13.8.5**, it is anticipated that WTGs and associated substructures and foundations will be removed during decommissioning. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | Para 2.2.1.5 on needs to be scoping in the cables, both array and export, in terms of both safety for fishing vessels and EMF for fish and crustaceans. It is not a preferred option to leave unburied due to the “lack of commercial fishing activity” as that is an obvious historical impact of the Oil & Gas (O&G) developments. Indeed this might be interpreted as the developer saying that fishing has not lost anything because they were excluded by the O&G anyway, which is not right. The same applies in 6.2.3.9.5, where they acknowledge O&G caused the lack of fishing, but don’t assess whether it could return to historic levels, when there may have been significant fishing. | EMF is assessed in **Chapter 10: Fish and Shellfish Ecology**.<br><br>As described in **Chapter 5: Project Description** and **Section 13.8.1** of this chapter, the preferred option is for burial of cables to a minimum of 0.6 m. Where this is not possible due to seabed conditions, and external protection is required, the rock berm height and slope will be designed to provide the correct level of protection and long-term stability. In areas where fishing activity is likely, the Applicant will engage with relevant stakeholders to ensure berm design is suitable, accounting for potential impacts to commercial fisheries.<br><br>Commercial fisheries landings data is assessed in this chapter in line with best practice, using a five-year average. Please see **Section 13.5.2** for information on data sources used to inform the EIA.<br><br>Please see **Appendix 13.1** for landings prior to 2017 for ICES rectangle 44E9 where the Windfarm Site is located. |
| SFF | 28th January 2022 Representation to MS-LOT during | Export cables need to be assessed for burial and impacts on fishing along their route. Route design should be an early | Consultation with the fishing industry on the Offshore Export Cable Corridor was undertaken as described in **Table 13.2**. |

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
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| | consultation on Offshore Scoping Opinion | discussion with fishing interests, to aim for full burial. While we welcome the developers sated desire to bury these, we must note this misleading statement; "Damage, once in operation, usually arises from external aggression originating from fishing operations or vessel anchoring" where in reality the cable laying operation is the biggest cause of damage. There is nothing in there to say post lay that there will be surveys to decide any need for over trawl trials, which the SFF sees as essential. | As described in **Chapter 5: Project Description** and **Section 13.8.1** of this chapter, the preferred option is for burial of cables. Where this is not possible due to seabed conditions, external protection will be installed.<br><br>Post-installation surveys will be undertaken to confirm cable burial, as described in **Section 13.8.1**. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | The SFF would expect that Ettrick/ Blackbird should be fully decommissioned prior to development of Green Volt. Only then can a true picture of the seabed become visible as well heads are removed, and safety zones are finished with. This should happen in order to get an accurate scoping of the area. | Comment addressed to MS-LOT as falls under the remit of Marine Scotland policy. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | Commercial fisheries data in 6.2 shows significant amounts of Scallops, Squid, Crabs, Lobster, Haddock. .and Mackerel. These should be compared to the historic data, pre 2013, to give an indication of changes. It would seem essential to assume the worst case scenario which would be the loss of all that catch, and to show mitigation for that. | Please see **Chapter 10: Fish and Shellfish Ecology** for information on data sources used in fish and shellfish ecology assessment.<br><br>Commercial fisheries landings data is assessed in this chapter in line with best practice, using a five-year average. Please see **Section 13.5.2** for information on data sources used to inform the EIA.<br><br>Please see **Appendix 13.1** for landings prior to 2017 for ICES rectangle 44E9 where the Windfarm Site is located. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | It should also be noted that fish generally choose a particular seabed to spawn, so those spots should be identified and mitigated by the timing of development activity. With regards to fish aggregation, invasive species etc, the developers should seek the most relevant data available. | Please see **Chapter 10: Fish and Shellfish Ecology**. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | On EMF, the development is quoting work from 2012, it is essential that they source the latest science on this subject, and make provision accordingly. | Please see **Chapter 10: Fish and Shellfish Ecology** for information on EMF. |
| SFF | 28th January 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | The table, 7.8 in chapter 7.3, seems to indicate no need to scope, but the fishing industry would at least expect to see these items scoped in during construction and operation. Furthermore, without assurances about the future of the Nephrops fishery in the south-eastern corner it needs to be scoped in. | **Table 13.9** outlines the potential impact pathways on commercial fisheries receptors which are assessed in **Section 13.8** for the Offshore Development Area, including:<br>• reduction in access to or exclusion from established fishing grounds;<br>• displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds;<br>• displacement or disruption of commercially important fish and shellfish resources;<br>• physical presence of offshore wind farm infrastructure leading to fishing gear snagging; |

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
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| | | | • activities leading to additional steaming to alternative fishing grounds; and<br>• increased vessel traffic within fishing grounds leading to interference. |
| SFF | Stakeholder engagement meeting 12th November 2021 | Noted that the south-eastern area of the Windfarm Site is an important Nephrops ground. There will be some level of fishing activity in the site.<br><br>Requested that the south-eastern boundary be moved outside the more intense fishing grounds in the south-eastern corner.<br><br>Requested that a map showing the original boundary and updated boundary be prepared to show the difference in impact to fisheries.<br><br>Requested that static gear fishermen be consulted with regarding the export cable route, and that engagement is facilitated with fishermen from Peterhead.<br><br>Requested coordinates for the area to be shared. | Nephrops activity is described in the commercial fisheries baseline in **Section 13.6.2.1.**<br><br>As per discussions held with the SFF, the Project refined the Windfarm Site boundary to reduce the impact to the Nephrops fishery, as described in **Section 13.8.1.** It was not possible to move the Windfarm Site fully outside the Nephrops grounds, as the Windfarm Site must be situated within the Innovation and Targeted Oil & Gas (INTOG) decarbonisation Area.<br><br>A map showing the original Windfarm Site boundary and the refined boundary is provided in **Figure 13.43** for reference.<br><br>Consultation with fishermen via the FLO and through fisheries organisations/representative has been ongoing throughout the development of the Project. Liaison will continue throughout the O&M phase.<br><br>Coordinates and map shared with fisheries stakeholders alongside meeting minutes. |
| SFF | Email 22nd July 2022 | First of we are pleased to see that Marine Scotland have addressed the issues we raised on the scoping advice and look forward to seeing that come together. We are, however, disappointed that no-one involved with the Green Volt project has, to date, conducted any relevant consultation with the fishing industry on potential cable routes.<br><br>Moving to para 2, where the developer is choosing to split the consultation on the export cable at 12nm, and again splitting the approach to landfall in two. While we welcome early engagement on cable routing, without knowing the constraints that have led to these choices we can hardly comment usefully on the choices. For the fishing industry, our concerns & constraints centre around cable burial and rock dumping, so we would be looking for assurances on these matters at an early stage, including the proposed installation methods. We are happy to sit and discuss when there is more detail to consider.<br><br>It was our understanding that for the Tog aspect of licencing, the primary objective was transitioning oil & gas decarbonization. However,as your introduction reads, the development will produce power to the UK grid and only secondary is power for O&G production. Which would maybe raise an objection. | Meeting held 16/08/2022 to discuss in further detail.<br><br>As per minutes:<br><br>The Pre-Application Consultation (PAC) response from SFF asked why consultation responses only looked for responses inside the 12nm zone and not the entire project. Under the PAC process legislation this process only extends to the 12nm boundary and therefore areas outside 12nm should not be included within the Offshore PAC Report. The Project welcomes general comments about the wider project, but only comments directly relating to the area inside 12nm can be reported on within the MS consultation process.<br><br>MM noted in the PAC response process that the scheme appears to be designed to provide primary electricity to shore, rather than for offshore oil and gas platforms. RW noted that the Project is primarily set up to supply power to offshore platforms and that to achieve maximum renewable energy output for their demand the Project needs to be 'over planted' to ensure maximum green electricity is used over brown grid back up power (a lot of the power generation in the grid is from gas fired power stations).<br><br>The Applicant noted that we have undertaken significant consultation with the inshore fishing fleet to limit the impact of the export cable inside the 12nm zone. The |

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
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| | | response to PAC event invite Just to check you do have the comments we sent recently?<br>These were in addition to data supplied previously, so we don't have to repeat everything?<br><br>Am i reading this correctly, that your PAC is only covering the cable corridors? | project has significantly reduced the scope of the survey area following additional desk based assessment of potential cable landing locations and available offshore data from our FLO. This has reduced the likely cable corridors down to the smallest possible practical width and reduced the impact on commercial fishing |
| SFF | Stakeholder engagement meeting<br>16th August 2022 | Noted that the optimisation of the cable corridor should be informed by consultation with fishermen to limit the impact on commercial fishing. | As per meeting minutes-<br>The Applicant has "undertaken significant consultation with the inshore fishing fleet to limit the impact of the export cable inside the 12 nm zone. The project has significantly reduced the scope of the survey area following additional desk based assessment of potential cable landing locations and available offshore data from our FLO. This has reduced the likely cable corridors down to the smallest possible practical width and reduced the impact on commercial fishing". |
| Marine Scotland Marine Analytical Unit | April 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | It is noted that the scoping report highlights limited fishing activity within the majority of the project area, apart from the southeast corner. The report states that, 'Should this southeast corner be removed from the Project Area boundary, this results in a 40% reduction in the number of vessels actively fishing across the site.' However, this southeast corner remains in the current Project Area boundary and it is our recommendation that the socioeconomic impacts of the development be considered across the whole boundary. Furthermore, a 40% reduction in the number of vessels suggests that there is still a significant number of active fishers to consider across the rest of the boundary. The possible socio-economic impacts on commercial fishing may not be limited to fishing activity that takes place directly within the site, as the development may also impact vessels transiting through. For example, increased steaming times to alternative fishing grounds may have knock-on socio-economic implications for commercial fishers, such as increased fuel costs or changes to working patter, and these should be explored. It is therefore our recommendation that the socio-economic impact of any reduction, displacement or disruption to commercial fisheries across the whole project area boundary is scoped into the Socio-Economic Impact Assessment (SEIA). | As above |
| Marine Scotland Science (MSS) | 4th February 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | Marine Scotland Science (MSS) note that there is a lack of fishing in most of the project area due to the historic presence of oil and gas infrastructure and that vessels generally only transit the area. MSS also note that there is a higher density of fishing activity in the southeast corner of the project area and that the developer has stated that | As above |

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
|---|---|---|---|
| | | 'should this southeast corner by removed from the project area boundary, this results in a 40% reduction in the number of vessels activity fishing across the site'. MSS recommend that while the south-eastern corner of the project area is still included the boundary area, the following potential fisheries impacts should be scoped in:<br>· reduction in access to, or exclusion from established fishing grounds;<br>· displacement leading to gear conflict and increased fishing pressure on adjacent grounds;<br>· displacement of disruption of commercially important fish and shellfish resources;<br>· physical presence of offshore wind farm infrastructure leading to gear snagging. | |
| Marine Scotland Science | 4th February 2022 Representation to MS-LOT during consultation on Offshore Scoping Opinion | Regardless of whether or not the southeast corner of the project area remains or is removed, MSS do not agree that 'Construction activities leading to additional steaming to alternative fishing grounds' should be scoped out of the Environmental Impact Assessment, and advise that it is scoped in. There appears to be some confusion around potential impacts to fisheries across the export cable as Section 7.3.4.3 states, 'In contrast fishing activity occurs across the export cable route and, therefore, impacts to commercial fisheries have the potential to occur and are scoped into the assessment'. This is not reflected in Table 7.8 as potential impacts to fisheries across the export cable are scoped out. MSS recommend that this is clarified and that all potential fisheries impacts are scoped in across the export cable. | As above |
| Buchanhaven Harbour Board of Trustees | Email, 27th July 2022 | Queried whether fishing vessels working from Buchanhaven Harbour will be affected by the Project, and whether those affected will be entitled to compensation. | The Project employs an FLO to engage with the fishing industry and to facilitative effective communications. The Project will avoid, where possible, interactions with fishing equipment.<br>During pre-construction surveys, where interactions could not be avoided, the Project offered cooperation agreements to fishermen affected by the works in line with FLOWW best practice guidance.<br><br>The Project will take the same approach to impacts arising from construction works and offer cooperation agreements to fishermen who can prove negative impact from works associated with the Project. |
| Buchanhaven Harbour Board of Trustees | Email 13th September 2022 | Requested Project Updates and contact with FLO | FLO has made contact with relevant fishermen and is undertaking further consultation. Informal meeting held with Buchanhaven trustees on the 1st November 2022 |
| Buchanhaven Harbour Board of Trustees | Fisheries meeting 1st November 2022 | Attendees at the meeting had the following queries:<br>• Would the construction or survey work impact the areas where they are fishing? | In response to these questions, it was made clear to the fishers that; for any vessel to be eligible for relocation compensation they would need to have: |

| Consultee | Date / Document | Comment | Response / where addressed in the EIA |
|---|---|---|---|
| | | • Would any of their boats be entitled to compensation for relocation? | • Vessel license<br>• All certification<br>• Proof of actual fishing<br>• 3 years audited accounts<br>• Evidence of areas fished. (Plotter shots) None of the vessels have plotters.<br><br>Only three of the vessels fishing from Buchanhaven are licensed; they are very small fishing vessels only work during the seasons from spring to autumn.<br>• Only three of their vessels could potentially qualify for relocation compensation.<br>• If the survey happened early in spring 2023, none of the vessels would be affected as they only deploy their gear when the weather gets better.<br>• Their gear even when deployed is always inside 10 metres of water.<br>• They agreed that it is very likely that the work planned will have very little impact upon any of these fishermen. |

## 13.4 Assessment Methodology

### 13.4.1 Impact Assessment Methodology

22. In **Chapter 6: EIA Methodology**, an overarching method is presented for enabling assessments of the potential impacts arising from the Offshore Infrastructure on the receptors under consideration**.** The approach to the impact assessment requires assigning each potential receptor a sensitivity and magnitude level to determine the significance of an effect on each receptor. This approach is applied to all potential impacts that are identified as part of the EIA. Each potential impact has been assessed against the Offshore Development Area's construction, O&M and decommissioning development phases. The impact assessment is tailored with reference to commercial fishing.

#### 13.4.1.1 Sensitivity

23. In assessing the sensitivity of commercial fisheries, the following criteria are considered:

- The operational range of fishing vessels;
- The ability of fishing vessels to deploy different fishing methods and/or target alternative species;
- The ability of fishing vessels to adapt to the changes associated with the potential impact; and
- The value of the fishery in and around the Offshore Development Area.

24. The criteria for defining the sensitivity of a commercial fisheries receptor is shown in **Table 13.3.**

*Table 13.3 Definitions of sensitivity levels for commercial fisheries*

| Sensitivity | Definition |
|---|---|
| High | Receptor is highly vulnerable to impacts that may arise from the project and recoverability is long term or not possible, for example, no alternative fishing grounds are available. |
| Medium | Receptor is generally vulnerable to impacts that may arise from the project and recoverability is slow and/or costly, for example few alternative fishing grounds are available and/or fishing fleet has low operational range. |
| Low | Receptor is somewhat vulnerable to impacts that may arise from the project and has moderate levels of recoverability, for example *some alternative fishing grounds are available and/or fishing fleet has moderate operational range.* |

| Sensitivity | Definition |
|---|---|
| Negligible | Receptor is not generally vulnerable to impacts that may arise from the project and/or has high recoverability, for example a high number of suitable alternative fishing grounds are available and/or fishing fleet has large to extensive operational range; fishing fleet is adaptive and resilient to change. |

### 13.4.1.2 Magnitude of Impact

25. The criteria for defining the magnitude of a potential impact to commercial fisheries is shown in **Table 13.4**.

26. In assessing the magnitude of potential impact to commercial fisheries, the following criteria are considered:

- The extent of the area affected in the context of operational ranges and level of fishing activity present in the area;
- The duration and frequency of the potential effect; and
- The liaison, management and mitigation measures implemented by the Project.

*Table 13.4 Definitions of magnitude levels for commercial fisheries*

| Magnitude | Definition |
|---|---|
| High | **Adverse**<br><br>Impact is of long-term duration (e.g. greater than 12 years duration) and/or is of extended physical extent. Impact is also expected to result in one or more of the following:<br>• Substantial loss of target fish or shellfish resources (e.g. loss of available proportion of resource within Offshore Development Area).<br>• Substantial reduction in the level of fishing effort within the Offshore Development Area.<br>• Substantial loss of available fishing grounds within the Offshore Development Area. |
| Medium | **Adverse**<br><br>Impact is of medium-term duration (e.g. between 5 to 12 years) and/or is of moderate physical extent. Impact is also expected to result in one or more of the following:<br>• Partial loss of target fish or shellfish resource (e.g. moderate loss of available proportion of resource within Offshore Development Area).<br>• Moderate reduction of fishing effort within Offshore Development Area.<br>• Moderate loss of available fishing grounds within the Offshore Development Area. |
| Low | **Adverse**<br><br>Impact is of short-term duration (e.g. less than 5 years) and/or is of limited physical extent. Impact is also expected to result in one or more of the following<br>• Minor loss of target fish or shellfish resource (e.g. moderate loss of available proportion of resource Offshore Development Area).<br>• Minor reduction of fishing effort within the Offshore Development Area.<br>• Minor and temporary loss of available fishing grounds within the Offshore Development Area. |
| Negligible | **Adverse**<br><br>Impact is of very short-term duration (e.g. less than 2 years) and/or is of limited physical extent. Impact is also expected to result in one or more of the following<br>• Temporary reduction of fishing effort within the Offshore Development Area. Temporary loss of available fishing grounds within the Offshore Development Area. |

### 13.4.1.3 Effect Significance

27. The combination of both the sensitivity and magnitude levels will provide the criteria for defining the significance of the potential effect to commercial fisheries as shown in **Table 13.5**.

*Table 13.5 Effect significance matrix*

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

28. As with the definitions of magnitude and sensitivity, the effect significance categories are defined as shown in **Table 13.6**.

*Table 13.6 Significance definitions*

| Impact Significance | Definition |
|---|---|
| Major | Very large or large change in receptor condition or very large or large disturbance to an activity, both adverse or beneficial, which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or, could result in exceedance of statutory objectives and / or breaches of legislation. |
| Moderate | Intermediate change in receptor condition or intermediate disturbance to an activity, which are likely to be important considerations at a local level. |
| Minor | Small change in receptor condition or small disturbance to an activity, which may be raised as local issues. |
| Negligible | No discernible change in receptor condition or disturbance to activity. |
| No Change | No impact, therefore no change in receptor condition or activity. |

29. For the purposes of the EIA, ‘major’ and ‘moderate’ effects are deemed to be significant. In addition, whilst ‘minor’ effects are not significant on their own, they may contribute to significant effectss cumulatively.

30. Where mitigation has already been embedded in the Project design, this is stated in the initial assessment for the impact. If the effect does not require mitigation (or none is possible) the residual effect will remain the same. If, however, mitigation is required, then the post-mitigation residual impact is assessed.

### 13.4.2 Cumulative Impact Assessment

31. The general methodology for the cumulative impact assessment (CIA) is presented in **Chapter 6: EIA Methodology**.

32. Cumulative impacts are assessed through consideration of the extent of influence of changes or effects upon commercial fisheries within the Offshore Development Area arising from the Project alone and cumulatively with other projects.

33. Several other projects have been identified on the east coast of Scotland, including other offshore wind farm developments, oil and gas developments, spoil disposal at licensed offshore sites, cable and pipeline projects, offshore cables and other marine works such as harbour expansions, sea outfall construction and sea wall works.

34. A number of projects have been screened out from consideration in the CIA due to:

- The distance from the Offshore Development Area;
- The timing of construction of other projects unlikely to overlap with timing of construction of the Offshore Infrastructure; and
- The embedded mitigation measures between infrastructure operators.

35. Notwithstanding this, a small number of projects cannot be screened out from cumulative effects and have therefore been considered within the CIA in **Section13.9**.

36. Cumulative impacts associated with vessel traffic and movements is assessed in **Chapter 14: Shipping and Navigation.**

### 13.4.3 Transboundary Impact Assessment

37. **Chapter 6: EIA Methodology** outlines the general methodology for undertaking Transboundary Assessment.

38. Transboundary impacts are defined as those impacts upon the receiving environment of other European Economic Area (EEA) states, whether occurring from the Project alone, or cumulatively with other projects in the wider area. Transboundary impacts arise when impacts from the Offshore Infrastructure within one EEA state affects the environment of another EEA state(s).

39. Transboundary impacts are assessed in **Section 13.10.**

## 13.5 Scope

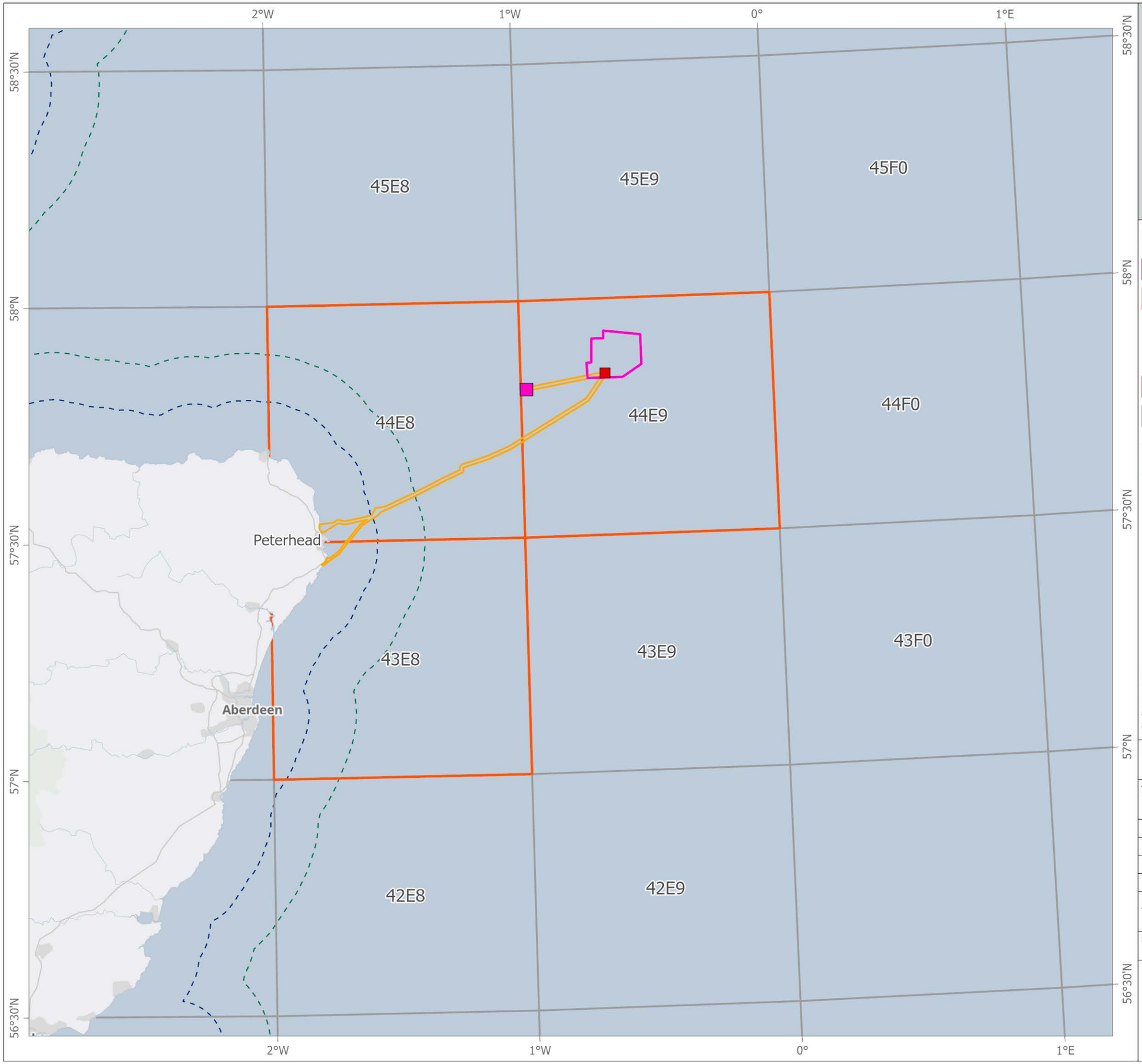
### 13.5.1 Study Area

40. The Offshore Development Area is located on the border between ICES Division 4a and 4b (Greater North Sea) with the Windfarm Site and majority of the Offshore Export Cable Corridor within Division 4a and only the inshore part of the Offshore Export Cable Corridor and landfalls within Division 4b.

41. For the purpose of recording fisheries landings, ICES Division 4a and 4b are divided into statistical rectangles, which are consistent across all ICES Member States operating in the North Sea.

42. For the commercial fisheries assessment, the study area has been defined with reference to the ICES rectangles within which the Offshore Development Area is located (**Figure 13.2**). The commercial fisheries study area is defined as follows:

- ICES rectangle 44E9: which encompasses the Windfarm Site and Buzzard Platform Complex (Buzzard);
- ICES rectangles 44E9 and 44E8, which include the Buzzard Export Cable Corridor and Landfall Export Cable Corridor; and
- ICES rectangle 43E8: where the St Fergus South Landfall (North landfall option) and the NorthConnect Parallel Landfall (South landfall option) come ashore.





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60

Kilometres

Data:
NSTA, UKHO, ICES



PROJECT: GREEN VOLT

TITLE: Fig 13.2 Commercial Fisheries Study Area

| REV | DATE | COMMENTS | DRAWN | CHECKED |
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GREEN VOLT

### 13.5.2 Data Sources

43. A desk-based study was undertaken to obtain information on commercial fisheries through a review of existing studies and datasets. The principal data sources used to inform the commercial fisheries baseline characterisation and assessment, including dataset-specific limitations, are given in **Table 13.7.**

44. In addition, information from local consultees/stakeholders, and from the FLO, has been used to validate information as presented in the desk-based resources. Additional details on consultation is provided in **Section 13.3.**

45. In addition, consultation with fisheries stakeholders, as described in **Section 13.3**, has been pertinent in both ground-truthing the data and understanding temporal and spatial patterns of fishing activity.

46. In addition, the following EIAs/Environmental appraisals for other projects in the vicinity of the Project have been used to support the analysis:

- NorthConnect High Voltage Direct Current (HVDC) Link EIA Report, Chapter 20 – Commercial Fisheries (2018); and
- Eastern Green Link 2 – Marine Scheme Environmental Appraisal Report, Chapter 14 – Commercial Fisheries (2022).

47. Additionally, information from *Mapping fisheries and habitats in the North and East Coast RIFG area* (Shelmerdine & Mouat, 2021), has been used to inform the analysis where appropriate.[2]

*Table 13.7 Data Sources*

| Dataset | Year | Coverage | Notes/Limitations |
|---|---|---|---|
| Fisheries landings statistics by ICES rectangle (MMO) | 2017 – 2021 | 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 (£)). | Landings data have been presented as an annual average for the period between 2017 and 2021, to account for seasonal and annual variations.<br><br>Landings data are recorded at the level of ICES rectangles, however, it is acknowledged that fishing activity is unlikely to take place uniformly within ICES rectangles. Therefore, landings data provide only an indication of fishing activity for specific locations, e.g. in the Offshore Development Area, within a given ICES rectangle.<br><br>Landings data are grouped into gear categories, which in many instances includes multiple separate fisheries that use the same gear type, for example data collected under the category demersal trawls/seines encompasses fisheries that engage in demersal trawling (e.g. Nephrops or whitefish fisheries), This has been addressed by analysing the data by species in the relevant sections.<br><br>Data from 2021 includes a higher level of granularity in vessel length categories, however, data prior to 2021 only includes the categories 10 m and under or 10 m and over. Vessel categories from 2021 can therefore only be used to provide an indication of the vessel sizes active in a given fishery.<br><br>Catches that fall below the acceptable limit as defined within the UK Registration of Buyers and Sellers (i.e. when purchases of first sale fish direct from a fishing vessel are wholly for private consumption, and less than 30 kg is bought per day) are not reported and are therefore not included in this dataset. |

[2] *The Project attempted to obtain the raw data from the report but was unsuccessful.*

| Dataset | Year | Coverage | Notes/Limitations |
|---|---|---|---|
| Vessel Monitoring System data for UK fishing vessels (15 m and over) (MMO) | 2016 – 2020 | VMS data (satellite tracking data) from UK vessels combined with logbook data, analysed by value (£). | This dataset covers VMS for vessels with a length of 15 m or above only, and will therefore underestimate fishing activity by smaller fishing vessels.<br><br>VMS is recorded by broad gear category, and therefore is unable to distinguish between different fisheries using the same gear, e.g. demersal trawling. |
| Creel Fishing Effort Study (Marine Scotland Science, 2017) | 2015 - 2017 | Study undertaken by Marine Scotland, with data collected from interviews with creel fishermen and from stakeholder workshops between 2015 and 2016.<br><br>Datasets shows average number of crab and lobster hauls per day per 4 $km^2$. | Study based on interviews with a sample number of fishermen and therefore may not be fully representative of all fishing activity undertaken by creel fishermen. |
| Inshore Fisheries Mapping Project in Scotland – ScotMap (Kafas et al, 2014) | 2007 - 2011 | Information collected by interview with vessel owners for Scottish fishing vessels under 15 m in length. | Data coverage for the period 2007 – 2011 and may not be fully representative of current fishing activity. |
| Amalgamated VMS intensity layers (Kafas et al, 2013) | 2009 - 2013 | VMS for vessels over 15 m in length combined with landings data for UK vessels. | Data coverage for the period 2009 – 2013 and may not be fully representative of current fishing activity. |
| Scientific, Technical and Economic Committee for Fisheries (STECF) Fisheries landings & effort: data by c-square | 2016 - 2020 | EU27 landings value (€) | Showed by ICES rectangle – low granularity |

### 13.5.3 Assumptions and Limitations

48. While there are additional spatial datasets available for vessels over 15 m in length, there is a lack of detailed spatial data available for vessels under 15 m in length. Therefore, not all datasets are representative of activity by smaller fishing vessels. While it is anticipated that Inshore VMS (iVMS) will become a requirement for all vessels under 12 m in length later in 2022, iVMS data is not currently available due to lack of historic records and low number of vessels under 12 m in length using VMS. Where spatial data for inshore vessels is lacking, this has been supported by consultation efforts undertaken by the Applicant and the Project FLO.

49. The impacts of COVID-19 on the commercial fishing industry in 2020 have been highlighted in UK Sea Fisheries Statistics 2020 Report (MMO, 2021). It is acknowledged that landings statistics and VMS from 2020 may not be fully representative of normal fishing activities. A five-year average from 2017 to 2021 has been used to assess landings data, while a five-year average from 2016 to 2020 has been used for VMS in absence of more recent data.

## 13.6 Existing Environment

50. This section presents the existing baseline for commercial fisheries, using the most recent datasets available at the time of writing. This section provides an overview of all landings from the commercial fisheries study area (ICES rectangles 43E8, 44E8, 44E9), followed by analysis on a fishery-by-fishery basis, where details on the species caught, and location of fishing activity is provided.

### 13.6.1 Overview of Key Fisheries in the Study Area

51. **Figure 13.3** shows the value (£) of UK landings by species and method for the whole Study Area. The analysis of the landings data presented in **Figure 13.3** indicates that demersal otter trawling is the principal method used in the Study Area, to target Nephrops, haddock, and to a lesser extent other demersal species including squid, monks/anglers, whiting and cod. Other key methods used in the Study Area include lobster and crab creeling, and dredging for scallops. Some pelagic trawling takes place targeting herring. Additionally, mackerel are targeted by gears using hooks (mackerel jigging) and handlines.

52. Nephrops is the principal species of value in the Study Area, with landings accounting for approximately £3.56 million annually, and 32% of the total landings in the Study Area. Haddock accounts for £1.63 million as the species with the second highest landings across the Study Area. Other demersal whitefish (monks/anglers, whiting and cod) account for 12% combined.

53. Crab landings (including velvet crab) account for £1.32 million, and lobsters for approximately £440,000, combined to represent approximately 16% of landings in the Study Area annually.

54. Mackerel, accounts for £336,000 on average annually.

55. Lower value landings in the Study Area include landings by pelagic trawlers for herring account for on average £270,000 per year, and squid for £213,000.

56. As shown in **Figure 13.4**, which shows the principal species by vessel length between 2017 and 2021, the majority of vessels active in the Study Area are over 10 m in length. The exceptions are for fishing vessels targeting crabs, lobster and mackerel.

57. Fisheries statistics data for 2021 contains additional vessel size categories, as presented in **Figure 13.5** which shows principal species by vessel length for 2021 only. **Figure 13.5** provides increased granularity on the vessel lengths used to target specific species in the Study Area, however, as this granularity is only available for a single year, it provides an indication of vessel length distribution only and should not be extrapolated to previous years.

58. A summary of UK landings by ICES rectangles provided in **Figure 13.6** and **Figure 13.7** by fishing method and species is provided below:

- Demersal trawling for Nephrops is concentrated most heavily in ICES rectangle 44E9, and overlaps with the Windfarm Site in the southeastern corner, and is the highest value fishery in the Study Area.
- Landings of scallops are recorded at high levels in both ICES rectangles 44E8 and 43E8, with very limited activity in ICES rectangle 44E9 where the Windfarm Site is located.
- Creeling for lobster and crab similarly concentrates in ICES rectangles 44E8 and 43E8.
- Trawling for demersal whitefish, including haddock, whiting, monks/anglers takes place predominantly in ICES rectangle 44E9 followed by 44E8.
- Pelagic trawling for herring in ICES rectangle 44E9 followed by 44E8, although is not of significant value in comparison to regional landings.
- Mackerel fishing by gears using hooks and handlines takes place principally in ICES rectangle 44E8.

59. While there was a one-off sandeel fishery in ICES rectangle 43E8 in May 2018, sandeel are not targeted elsewhere in the Study Area and are under fisheries management restrictions (see **Figure 13.1**).

60. As shown in **Figure 13.8**, there is very limited activity by foreign vessels in the Study Area. Foreign vessels are active to the northeast and south of the Study Area, with limited potential for interaction with the Project, and are therefore not considered further.

61. Based on 2021 data[3], catches are landed into three ports from the Study Area (**Figure 13.9**) - Boddam, Fraserburgh and Peterhead. Catches from ICES rectangle 44E9 are only landed into Fraserburgh and Peterhead, while a smaller proportion of catches from ICES rectangles 43E8 and 44E8 are landed into Boddam. Catches landed into Boddam are lobster and crab and some mackerel caught by gears using hooks/handlines (**Figure 13.10**), while species caught by demersal methods and dredges are landed into Fraserburgh and Peterhead.

62. There are currently no aquaculture sites registered with Marine Scotland located in the vicinity of the Offshore Development Area and are therefore not considered further.

*[3] Fisheries statistics data for landings into port by ICES rectangle is not available for all years in the MMO datasets. 2021 data only is used to provide an indication of landings into ports from ICES rectangles in the Study Area (ICES rectangles 43E8, 44E8 and 44E9).*

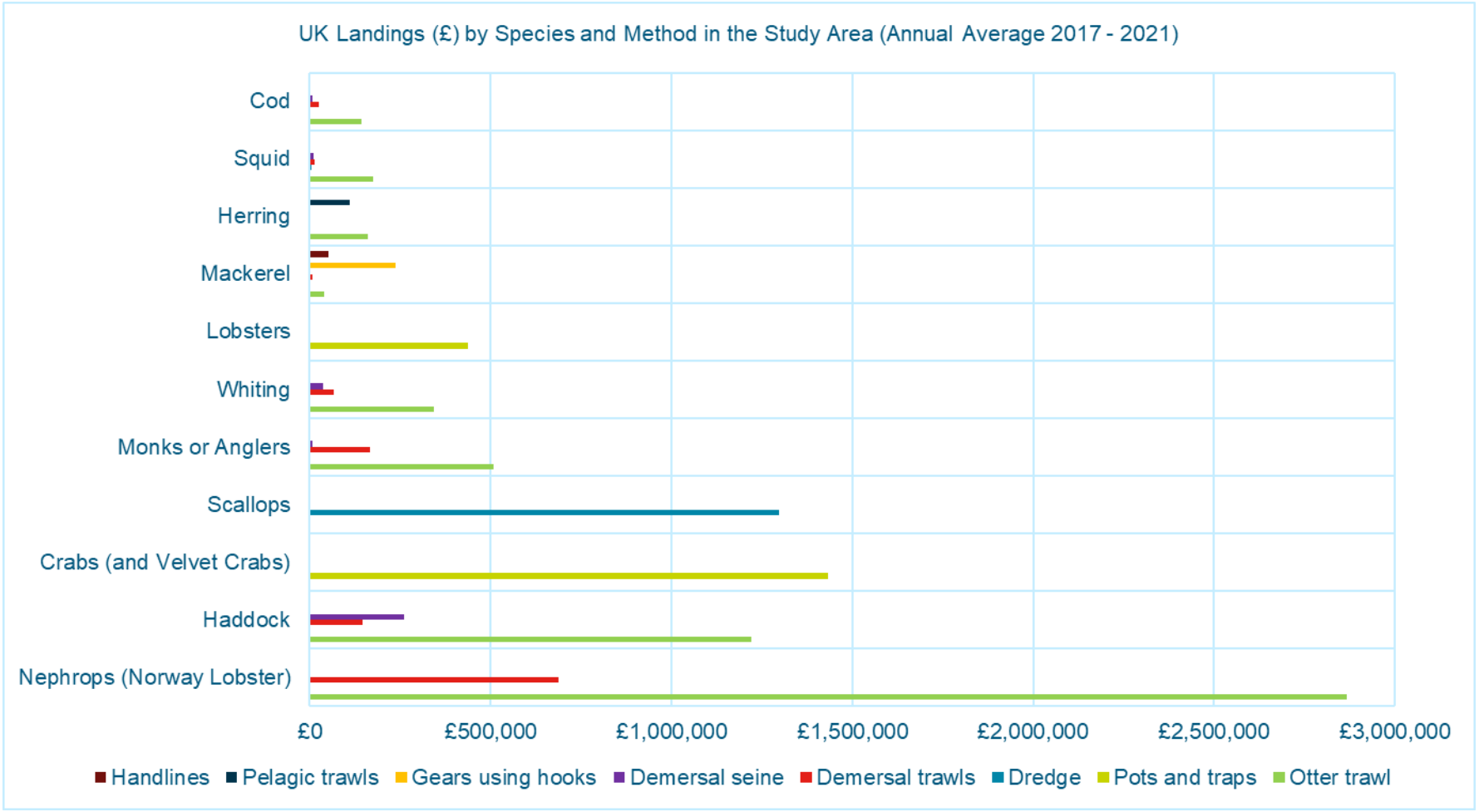



*Figure 13.3 UK Landings (£) by principal species and method in the Study Area (Annual Average 2017 - 2021) (MMO, 2022)*


*Figure 13.4 Principal species by vessel length (over 10 m and under 10 m) in the Study Area (Annual Average 2017 - 2021 (MMO, 2021)*

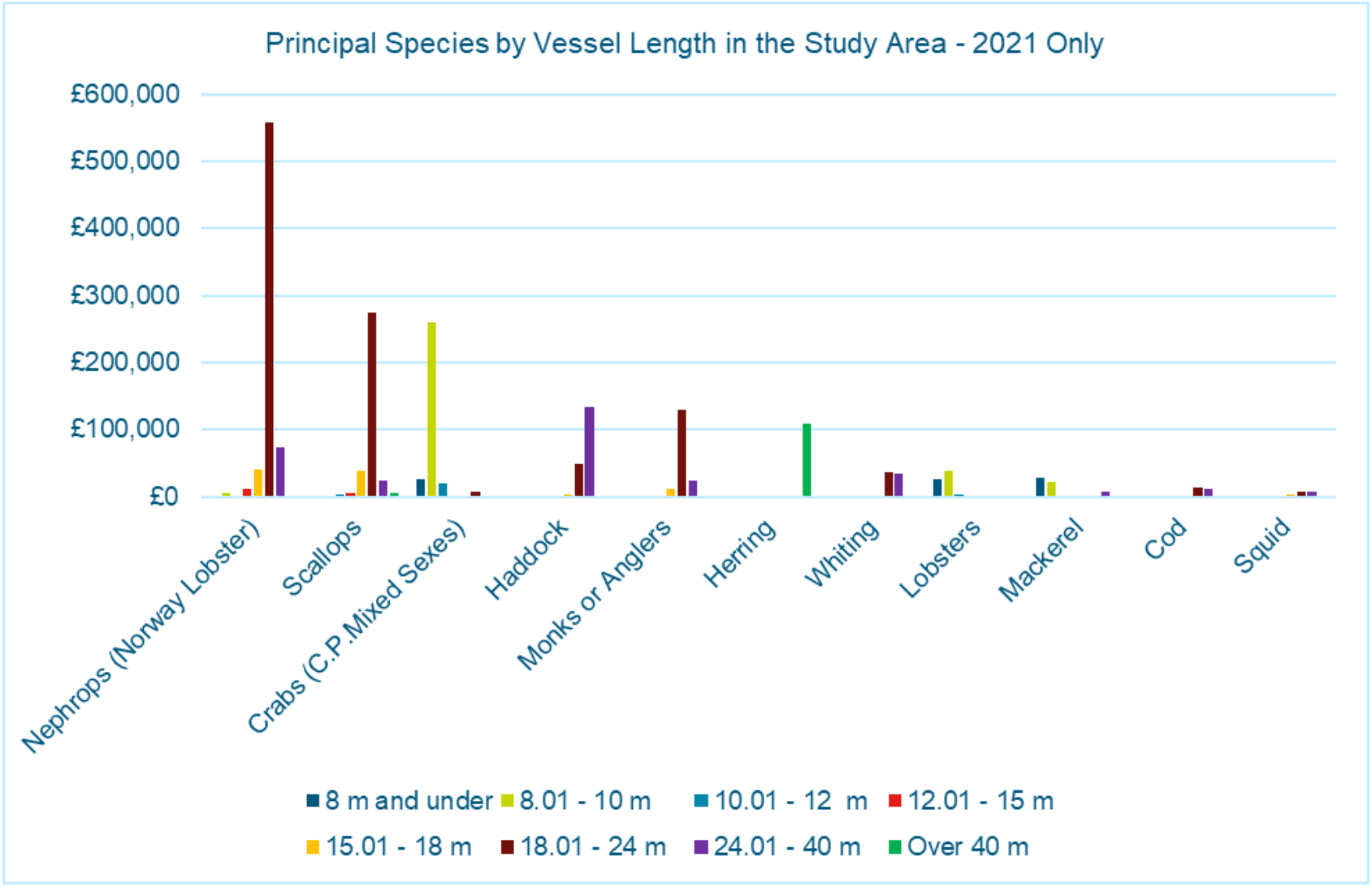
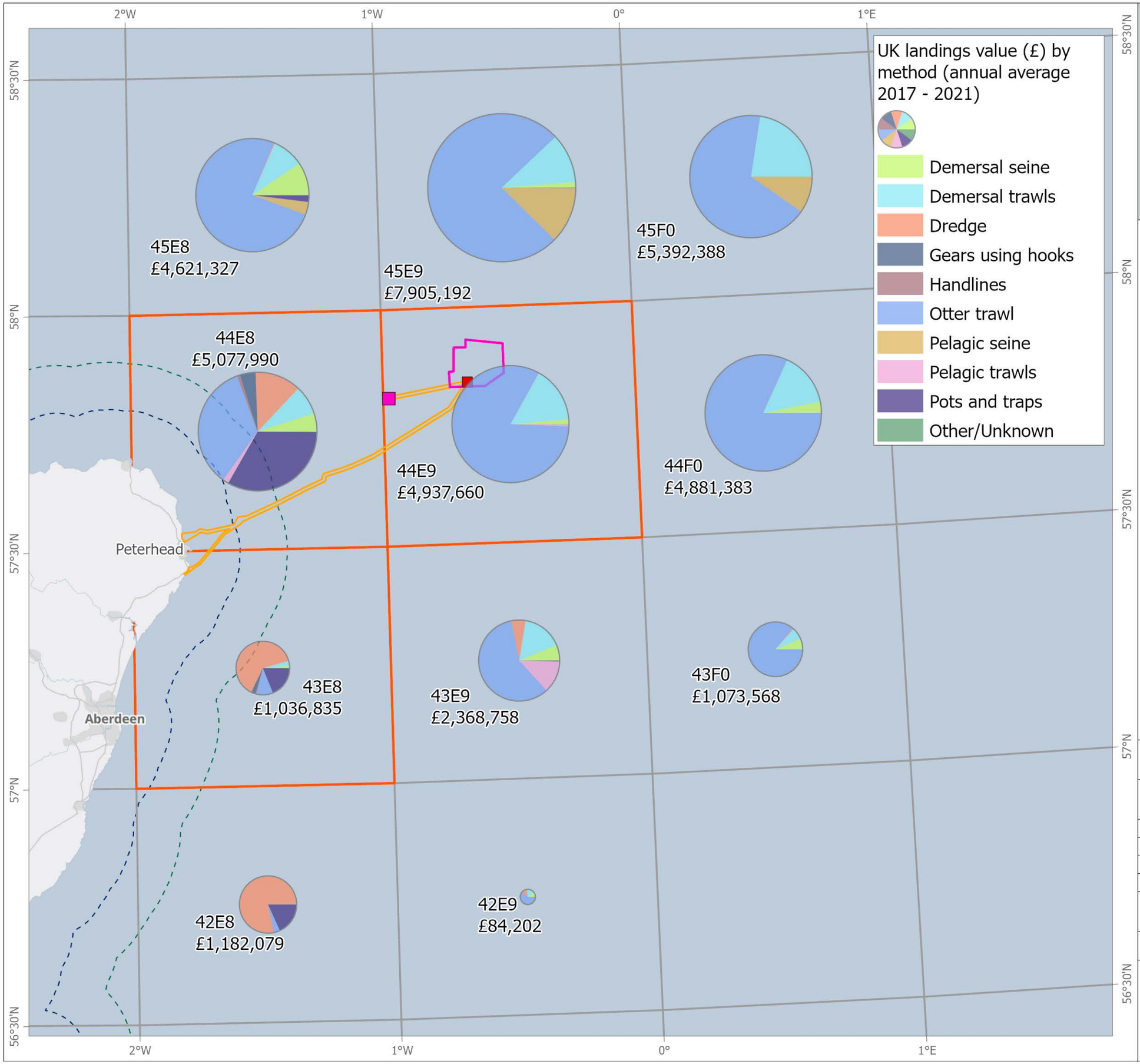



*Figure 13.5 Principal species by vessel length in the Study Area – 2021 Only (MMO, 2022)*





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
MMO (2022), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.6 UK Landings Value (£) by Method (Annual Average 2017 to 2021)

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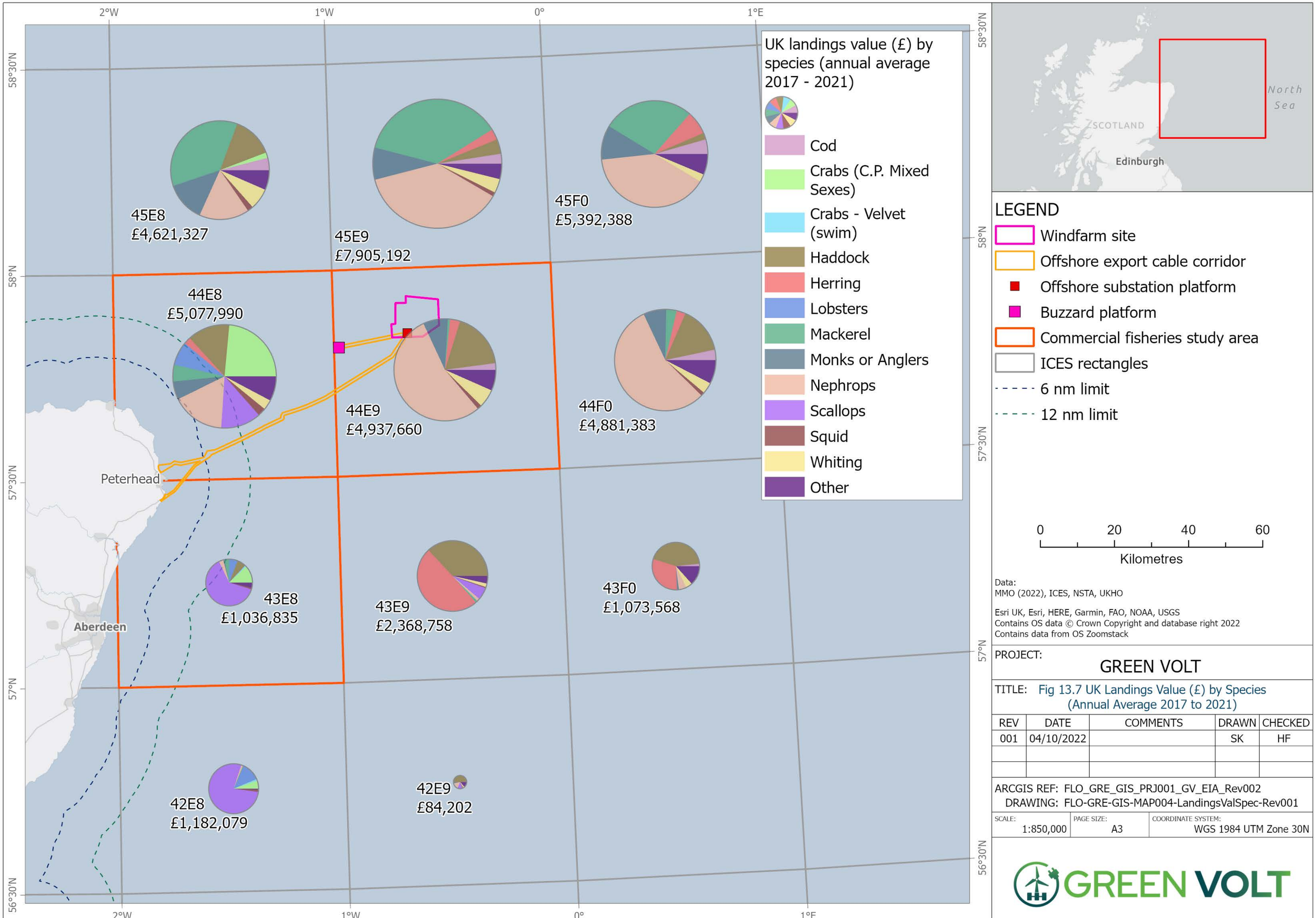


Data:
MMO (2022), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.7 UK Landings Value (£) by Species (Annual Average 2017 to 2021)

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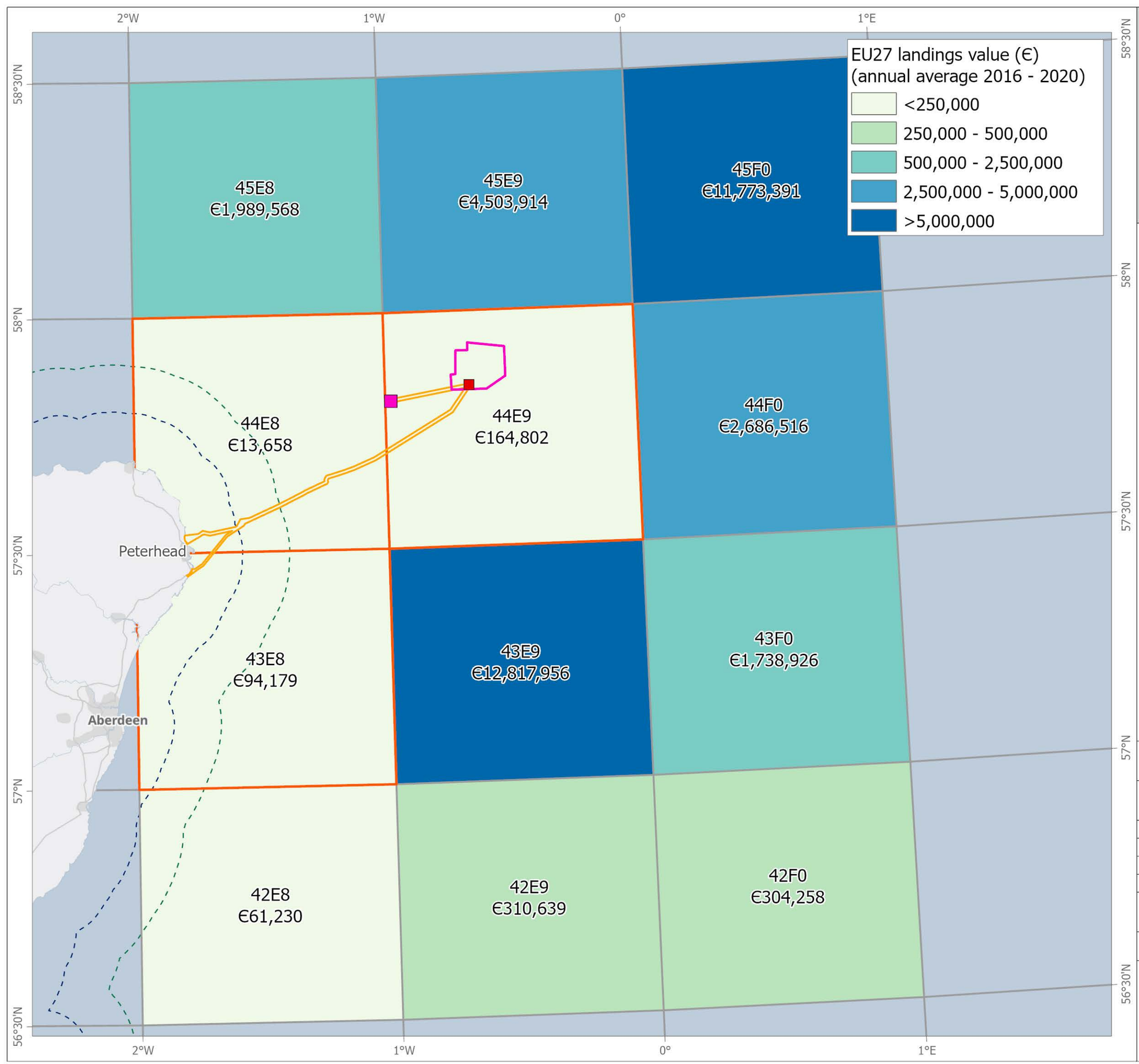



LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
Gibin, Maurizio; Maksims Kovšars; Maciej Adamowicz; Zanzi, Antonella; Hekim, Zeynep (2022), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.8 EU27 Landings Value (€) (Annual Average 2016 to 2020)

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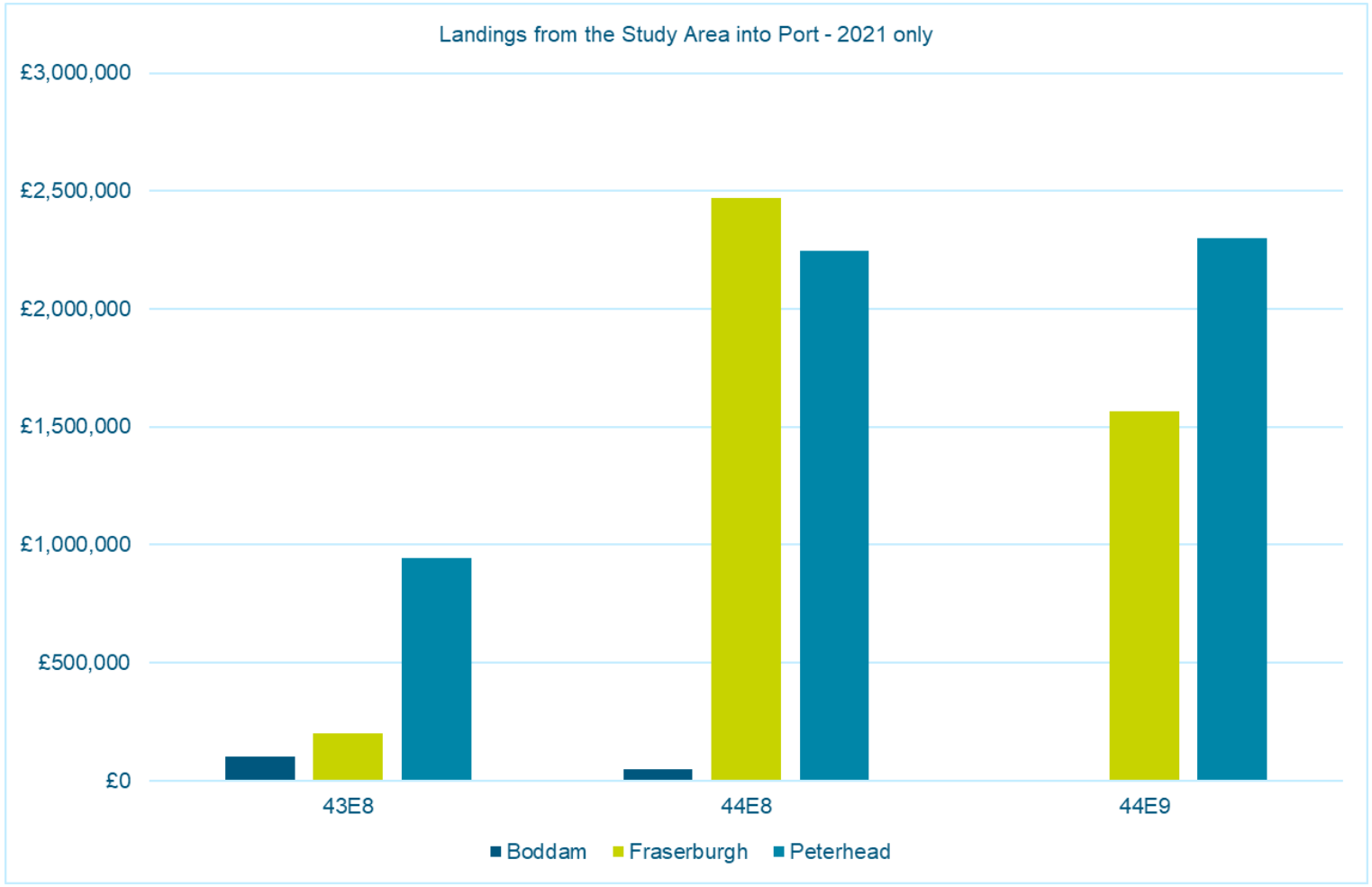



*Figure 13.9 Landings from the Study Area into port – 2021 only (MMO, 2022)*

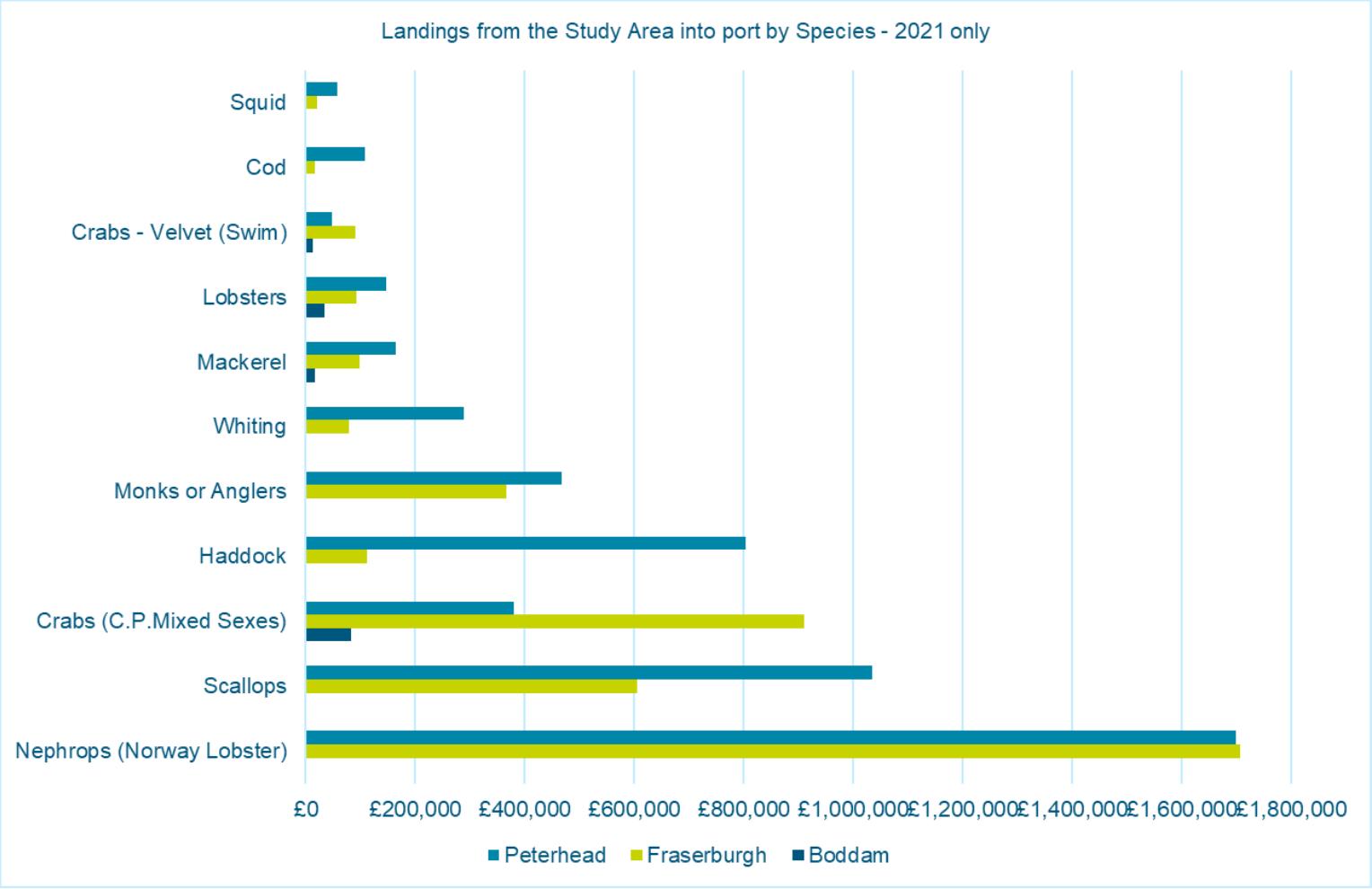


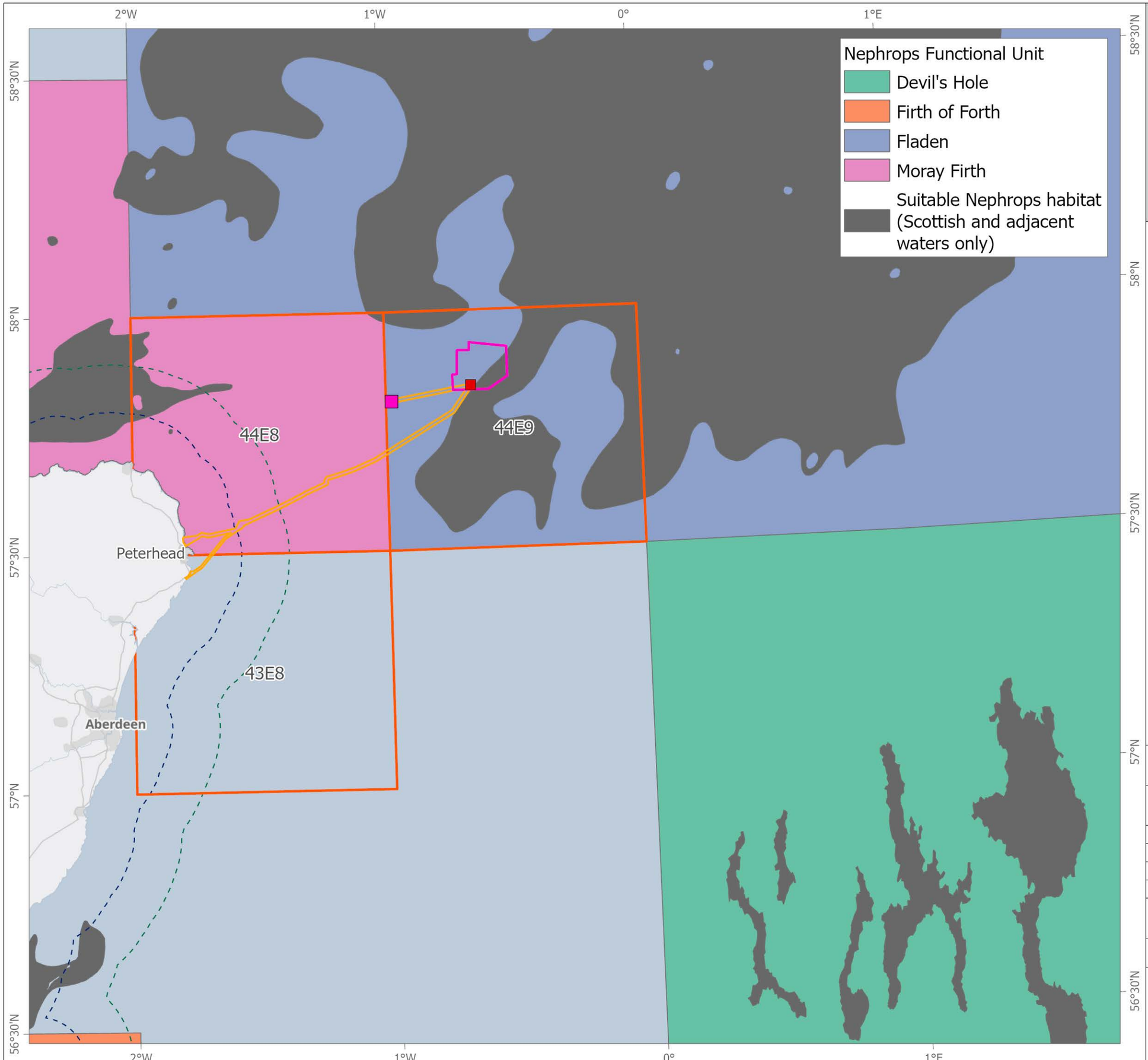

*Figure 13.10 Landings from the Study Area into port by species – 2021 only (MMO, 2022)*

### 13.6.2 Demersal Fisheries – Nephrops, Squid and Whitefish

63. In the Study Area, there is a historic mixed whitefish fishery, targeting species such as haddock, cod and whiting. EU quota restrictions and upon the landing of cod have reduced the fleet's ability to fish alternative species. As a result of a lack of available quota, demersal trawlers have diversified into the Nephrops fishery, where quota levels are not so restrictive. Consequently, Nephrops have become the primary demersal trawl fishery in the Study Area.

#### 13.6.2.1 Nephrops Fishery

64. Nephrops (*Nephrops norvegicus*), also commonly known as langoustine, Dublin Bay prawn or Norway lobster, lives in burrows in soft and muddy sediment types. For the purposes of management and stock assessment, Nephrops are split into a number of stocks or ICES 'functional units' (FUs) based on the discrete patches of suitable mud habitats (Marine Scotland, 2017). **Figure 13.11** shows the distribution of Nephrops FUs and suitable habitat of relevance to the Study Area. As shown, the majority of the Offshore Development Area falls within two Nephrops FUs (FU9 – Moray Firth, and FU7 - Fladen), with the exception of the NorthConnect Parallel landfall. The southeastern corner of the Windfarm Site overlaps with Nephrops habitat identified within FU7.





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60

Kilometres

Data:
Marine Scotland (2017), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.11 Nephrops (Nephrops norvegicus) Functional Units and Habitat

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GREEN VOLT

65. Nephrops in the Study Area are caught by fishing vessels deploying demersal trawls. A demersal trawl is a cone shaped net that is towed on the seabed to target demersal fish species (as shown in **Figure 13.12**). The mouth of the trawl is held open by a pair of trawl doors (also called 'otter boards') (Brown & May Marine Ltd., 2021). Demersal trawls used to target Nephrops are typically specifically designed for this species, with the net having lightweight ground gear used to tow over the muddy seabed Nephrops inhabit (Seafish, 2015).

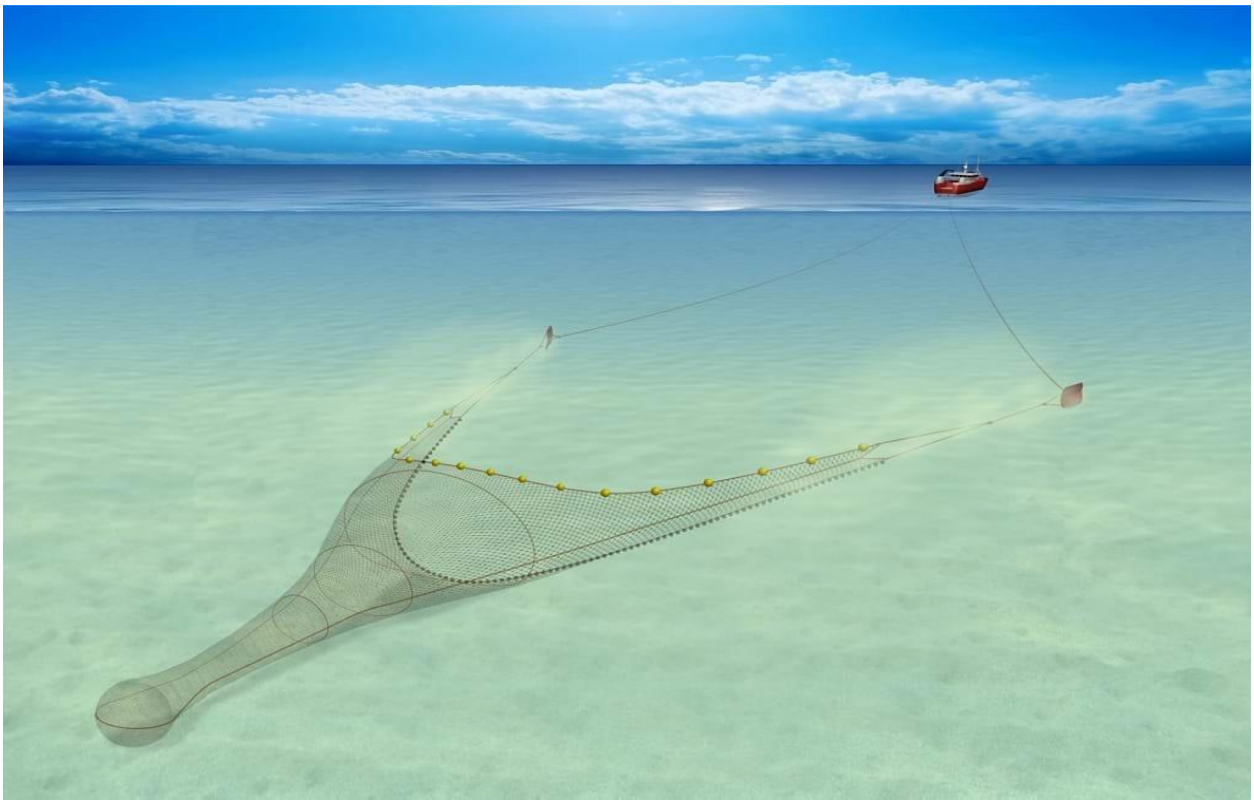


*Figure 13.12 Demersal trawl net towed on the seabed (Seafish, no date(a))*

66. Demersal trawlers targeting Nephrops in the Study Area are principally over 10 m in length (**Figure 13.4**), and landings data for 2021 only, as shown in **Figure 13.5**, indicate that vessels targeting Nephrops are principally between 18 and 24 m in length.

67. Nephrops is targeted year-round in the Study Area, however, the highest landings are recorded during the summer months in June and July, with lower landings throughout autumn, winter and spring, as shown in **Figure 13.13**.

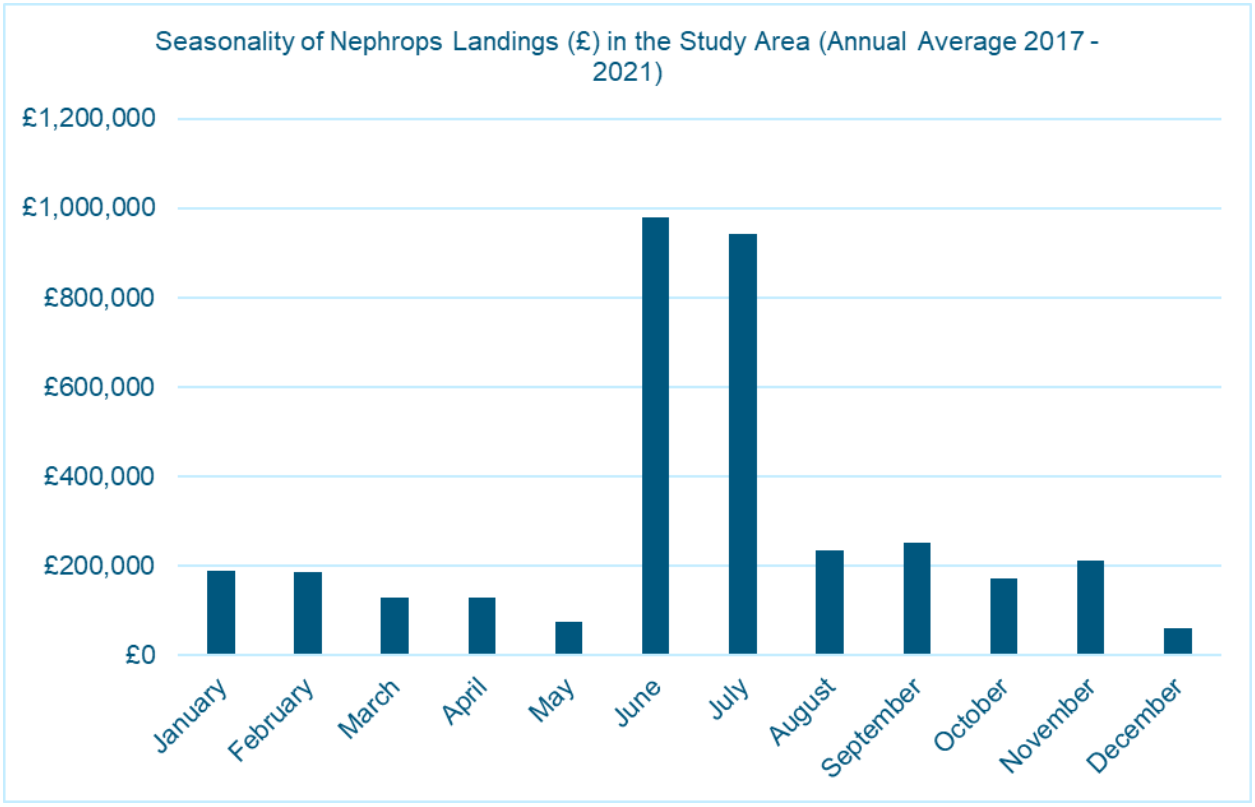
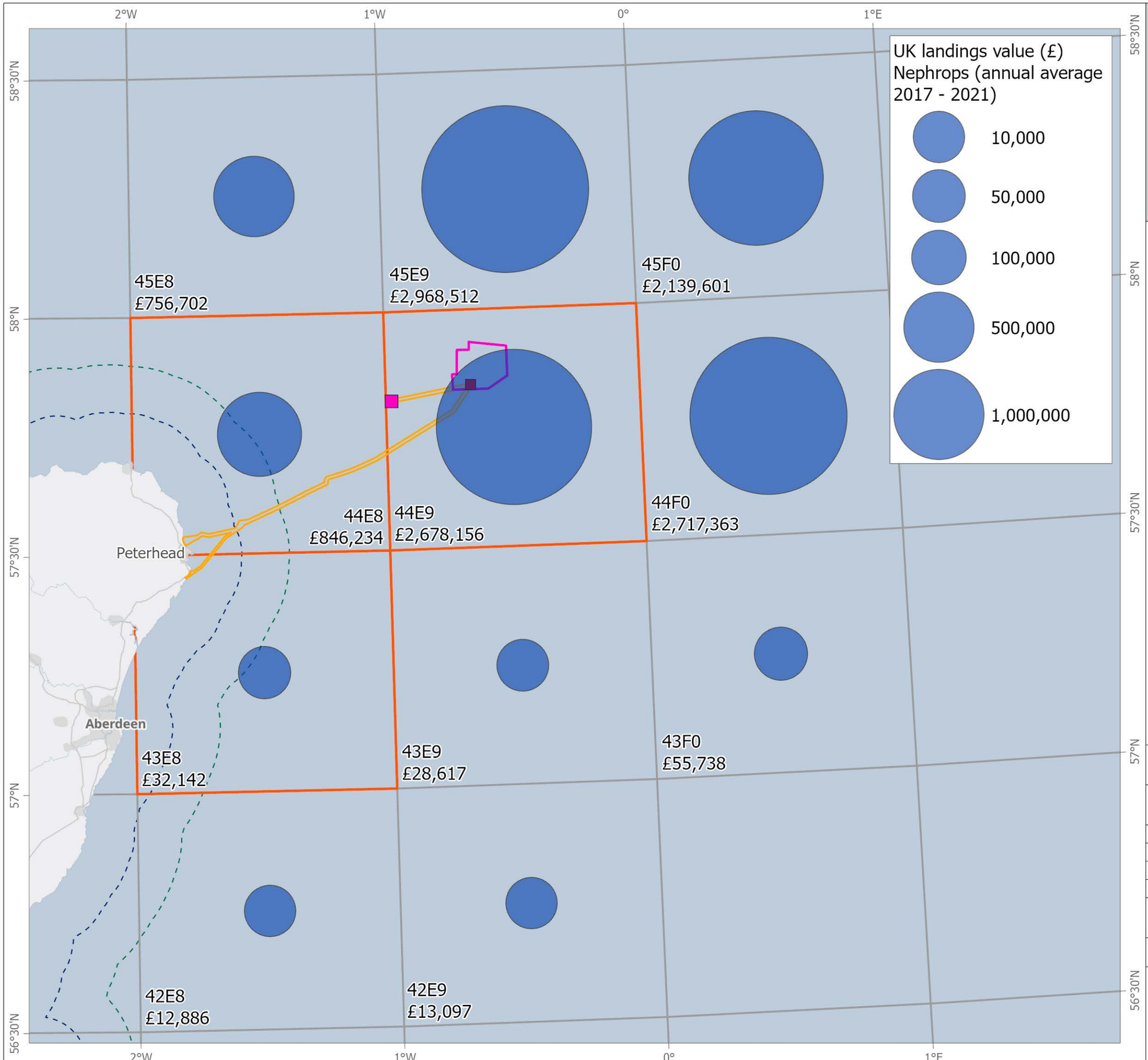



*Figure 13.13 Seasonality of Nephrops landings (£) in the Study Area (Annual Average 2017 - 2021) (MMO, 2022)*

68. As shown in **Figure 13.14**, Nephrops landings in the Study Area are highest in ICES rectangle 44E9 (where landings account for £2,678,156 on average annually), with lower (£846,234 annually) and much lower (£32,142 annually) levels of Nephrops landed in ICES rectangles 44E8 and 43E8 respectively. **Figure 13.15**, showing VMS data for trawlers[4] overlaid with suitable Nephrops habitat, indicates that demersal trawling for Nephrops is concentrated primarily in the southeastern corner of the Windfarm Site, although demersal trawling is shown to take place across the wider Offshore Development Area, however, at lower levels. **Figure 13.15** additionally shows that activity in the Windfarm Site is comparatively lower than surrounding areas to the south and east, where demersal trawling activity is higher.

*[4] It should be noted that Figure 13.13 shows VMS distribution of fishing activity for trawlers in general, and does not separate by species. Consequently, Figure 13.13 provides only an indication of where Nephrops-specific trawling takes place, with the aid of suitable Nephrops habitat and additional data, e.g. MMO landings data.*





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
MMO (2022), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.14 UK Landings Value (£) Nephrops (Annual Average 2017 to 2021)

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GREEN VOLT

2°W 1°W 0° 1°E

58°30'N 58°N 57°30'N 57°N 56°30'N

UK VMS Value (£) Demersal Trawls or Seine (Vessels 15m and above) (Annual Average 2016 - 2020)

- 0 - 2,500
- 2,500 - 5,000
- 5,000 - 10,000
- 10,000 - 25,000
- 25,000 - 50,000
- 50,000 - 75,000
- 75,000 - 100,000
- >100,000

45E8 45E9 45F0 44E8 44E9 44F0 43E8 43E9 43F0 42E8 42E9

Peterhead Aberdeen


LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Suitable Nephrops habitat
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
MMO, Marine Scotland (2017), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.15 UK VMS Value (£) Demersal Trawls or Seine (Annual Average 2016 - 2020)

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GREEN VOLT

### 13.6.2.2 Other Demersal Fisheries

69. While Nephrops trawling is the principal demersal fishery undertaken in the Study Area, as described in **Section 13.6.2.1**, there are also smaller directed squid and whitefish fisheries in the Study Area.

**Squid Fishery**

70. The Scottish squid fishery (*Loligo spp.*) is the most important fished cephalopod in UK waters, with activity concentrating along the east coast of Scotland, in the Moray Firth (Pierce, et al., 2004). Squid are typically associated with and hard seabed substrates, and are targeted using single demersal trawl nets with rockhoppers, designed to be towed over hard seabed (**Figure 13.16**).

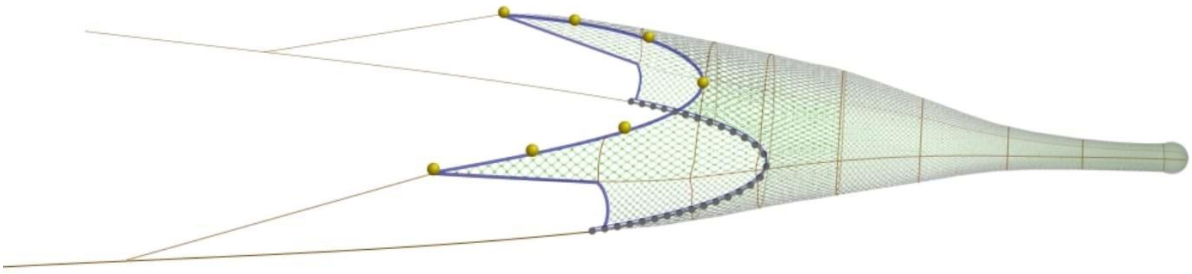


*Figure 13.16 Demersal rockhopper trawl (Seafish, no date (b))*

71. Hastie et al (2009) has shown that the Scottish squid population exhibits a distinct seasonal migration patter, with squid travelling up to 500 km from the west coast to the east coast of Scotland annually. The east coast squid fishery is seasonal, taking place in the winter, with peak landings in the Study Area recorded in November (**Figure 13.17**).

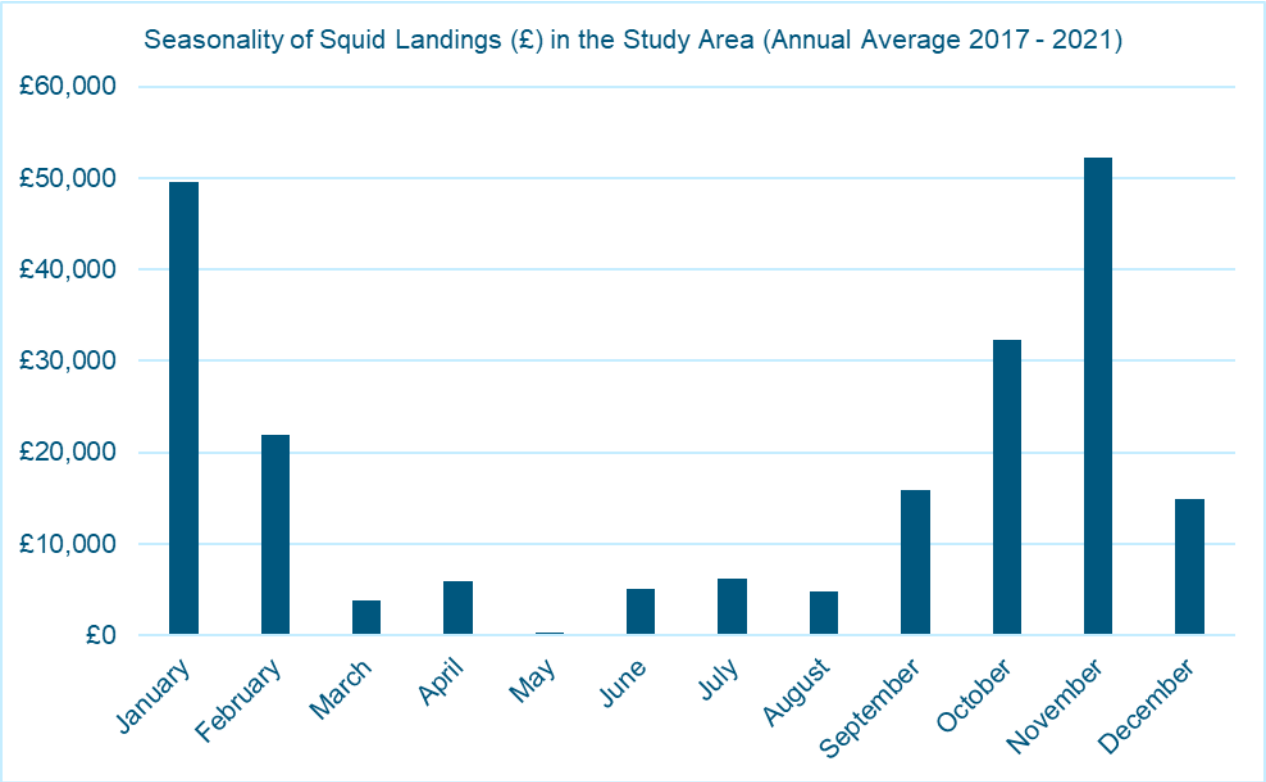


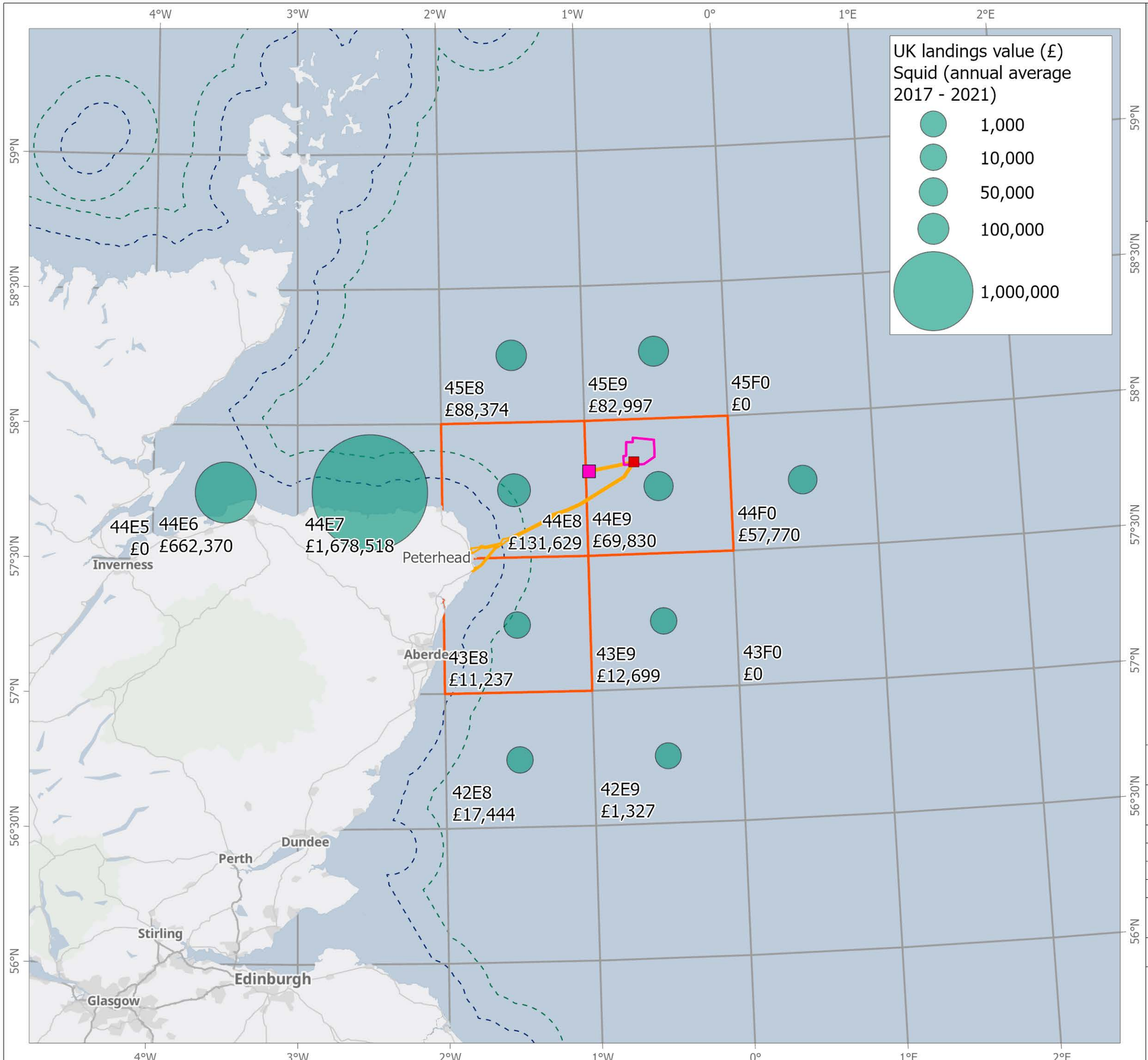

*Figure 13.17 Seasonality of squid landings (£) in the Study Area (Annual Average 2017 - 2021) (MMO, 2022)*

72. Squid fishing often takes place in inshore areas, however, squid grounds are subject to annual variability, and typically move further offshore as the season progresses.

73. Vessels targeting squid are typically over 10 m in length, as shown in **Figure 13.4,** with data from 2021 as shown in **Figure 13.5** indicating vessels are typically between 18 and 40 m in length.

74. Landings of squid in the Study Area is provided in **Figure 13.18**, which shows that within the Study Area, squid is landed primarily from ICES rectangle 44E8. **Figure 13.18** shows that the main squid fishery is concentrated further inshore than the Offshore Development Area, in the Moray Firth, with overall landings of squid in the Study Area at low levels in comparison to landings from the Moray Firth.

75. **Figure 13.19**, showing VMS intensity data for squid trawlers over 15 indicates (Kafas et al., 2013) that squid fishing activity has historically concentrated in inshore areas, with activity along the majority of the Landfall Export Cable Corridor taking place at relatively low levels.





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 40 80 120

Kilometres

Data:
MMO (2022), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.18 UK Landings Value (£) Squid (Annual Average 2017 to 2021)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 06/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
DRAWING: FLO-GRE-GIS-MAP010-LandingsValSquid-Rev001

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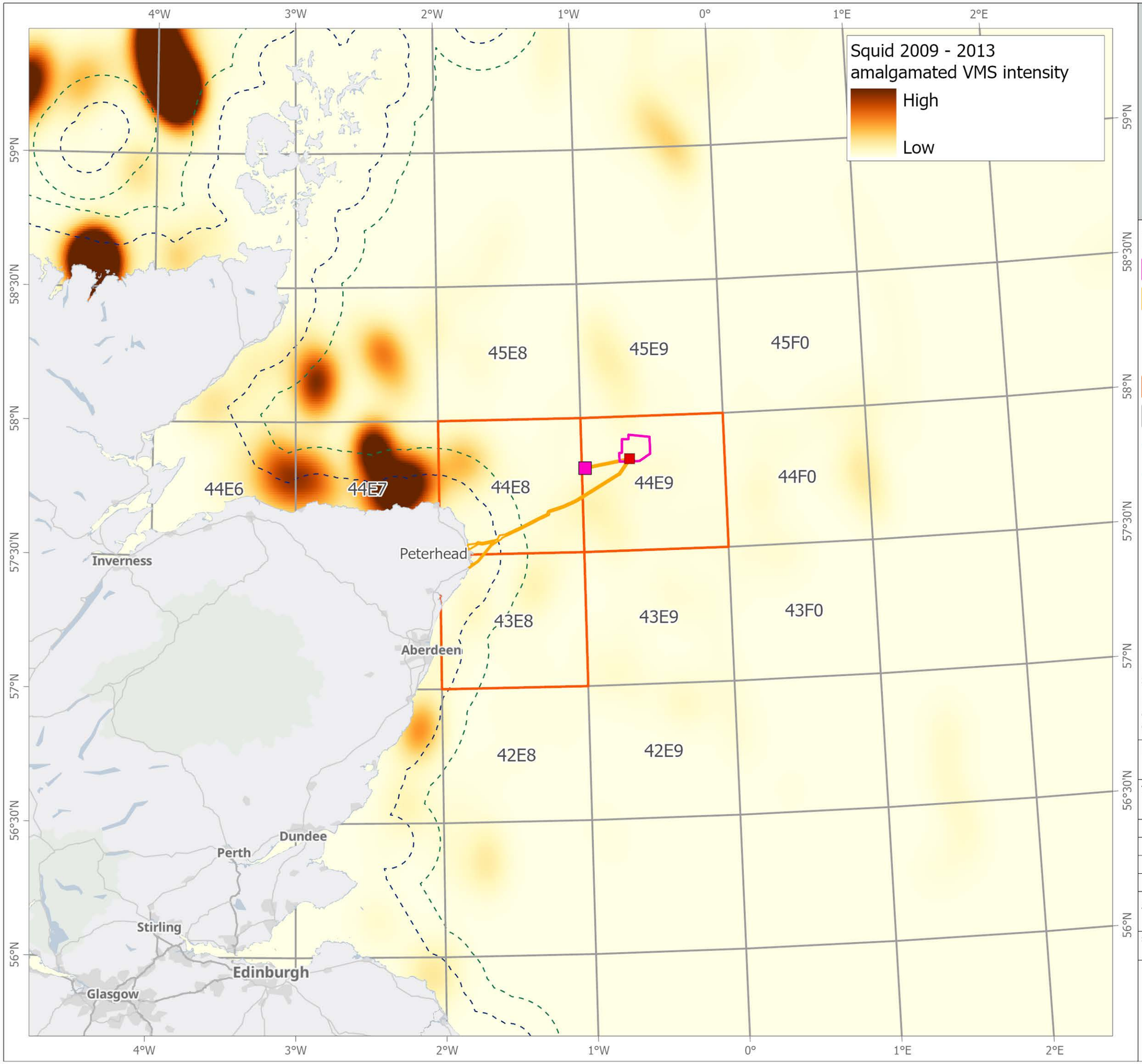
GREEN VOLT





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 40 80 120

Kilometres

Data:
Scottish Government, Kafas et al., (2013). ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.19 Amalgamated VMS Intensity Squid (2009 – 2013 )

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 07/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
DRAWING: FLO-GRE-GIS-MAP011-VMSAmalSquid-Rev001

| SCALE: | PAGE SIZE: | COORDINATE SYSTEM: |
|---|---|---|
| 1:1,500,000 | A3 | WGS 1984 UTM Zone 30N |

GREEN VOLT

**Demersal Whitefish – Haddock, Monks/Anglers, Whiting and Cod**

76. In the Study Area, there is a targeted demersal fishery for demersal whitefish such as haddock, monks/anglers, whiting and cod. These species are targeted by a mixture of vessels deploying demersal trawls (**Figure 13.12**) and vessels deploying demersal seines. There are a number of variations of demersal seines, with a popular option for targeting demersal whitefish such as haddock, the Scottish seine, as shown in **Figure 13.20**.

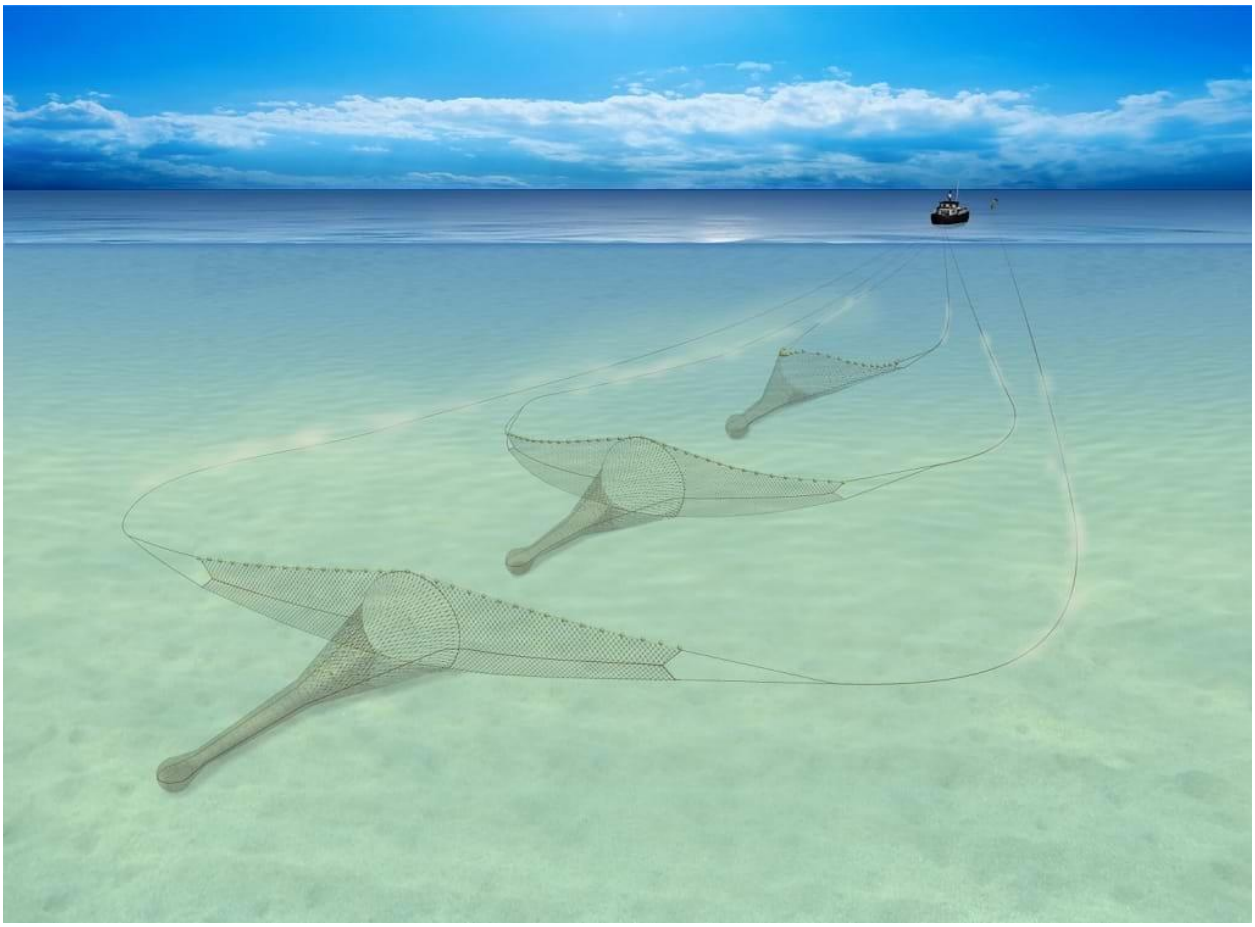


*Figure 13.20 Scottish Seine (Seafish, no date (c))*

77. The majority of haddock is caught by vessels using otter/demersal trawls, with only 19% of catch landed by vessels using demersal seines (see **Figure 13.3**). A similar trend is seen for monks/anglers, whiting and cod, with a much lower proportion of landings from vessels using demersal seines.

78. Vessels are predominantly over 10 m in length, and as indicated by 2021 data shown in **Figure 13.5**, vessels targeting:

- Haddock, are between 24 and 40 m in length;
- Monks/anglers are between 18 and 24; and
- Whiting and cod are targeted by vessels between 18 and 40 m.

79. An indication of the seasonality of the demersal whitefish fishery is provided in **Figure 13.21**. As shown, each species is targeted principally between June and January over the autumn and winter, with landings of haddock peaking in January, monks/anglers and whiting in June and cod in February.

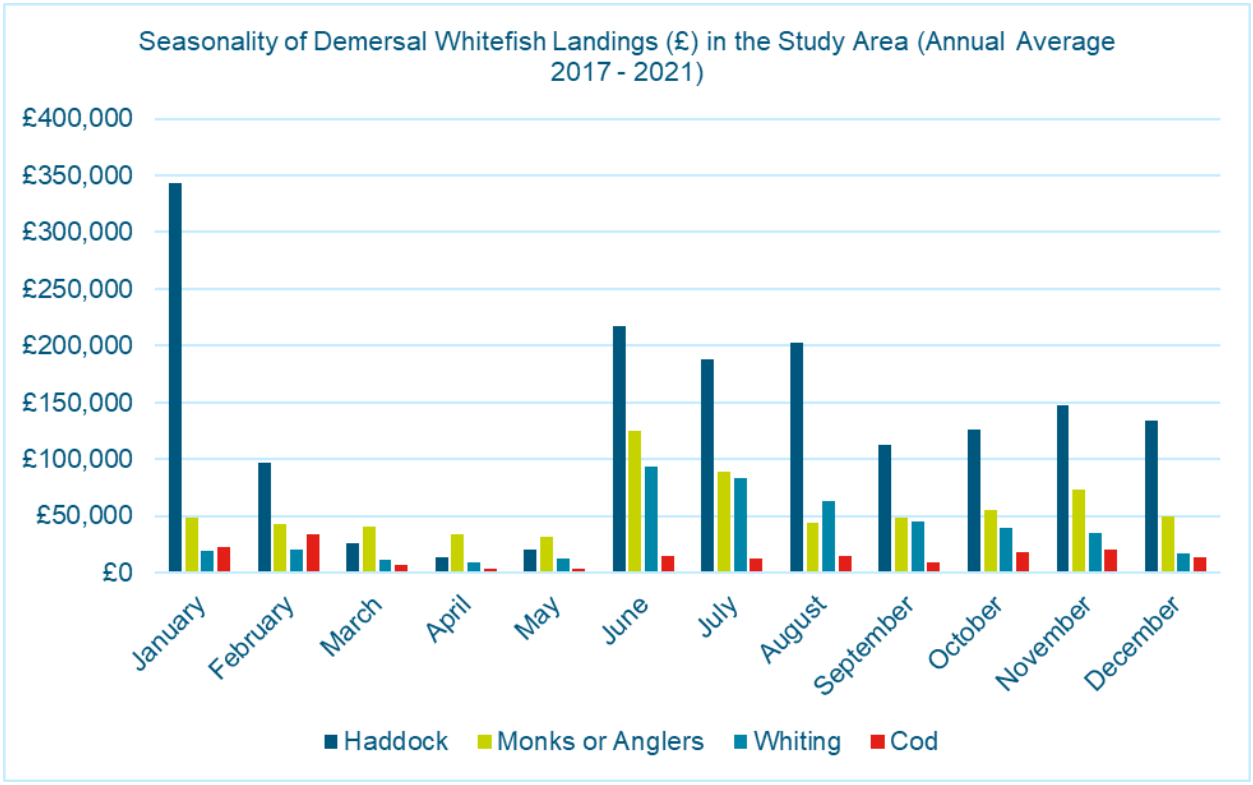
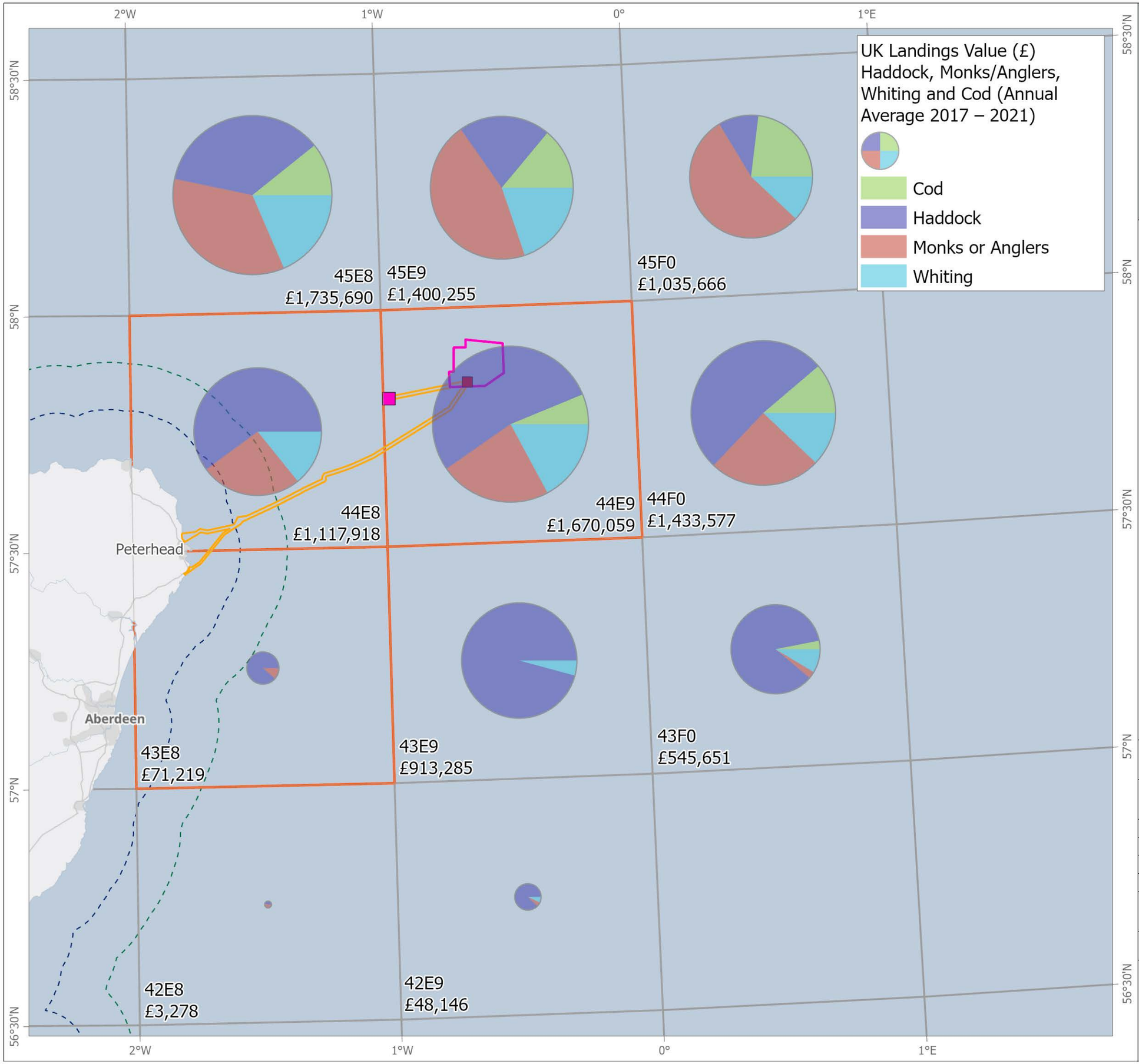



*Figure 13.21 Seasonality of demersal whitefish landings (£) in the Study Area (Annual Average 2017 - 2021) (MMO, 2022)*

80. Landings of haddock, monks/anglers, whiting and cod are highest in ICES rectangle 44E9, as shown in **Figure 13.22**[5]. Landings for each species are comparatively lower in ICES rectangles 44E8 and significantly 43E8. **Figure 13.15** shows the spatial distribution of the fishery for vessels over 15 m in length, with activity concentrated in ICES rectangle 44E9 and lower levels of activity in ICES rectangle 44E8. **Figure 13.23** showing historic data from the ScotMap project (Kafas et al. 2014) for vessels under 15 m in length similarly indicates that there are low levels of activity around the areas of the Offshore Export Cable Corridors, with inshore demersal trawling concentrated to the north in the Moray Firth.

[5] *It should be noted that some of the landings will be a result of by-catch in the Nephrops fishery, however, the relatively high level of landings indicates that there is a directed whitefish fishery.It is assumed that where suitable Nephrops habitat is found,t he majority of activity will be attributed to Nephrops trawling rather than whitefish.*





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
MMO (2022), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.22 UK Landings Value (£) Haddock, Monks/ Anglers, Whiting and Cod (Annual Av 2017 – 2021)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 07/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
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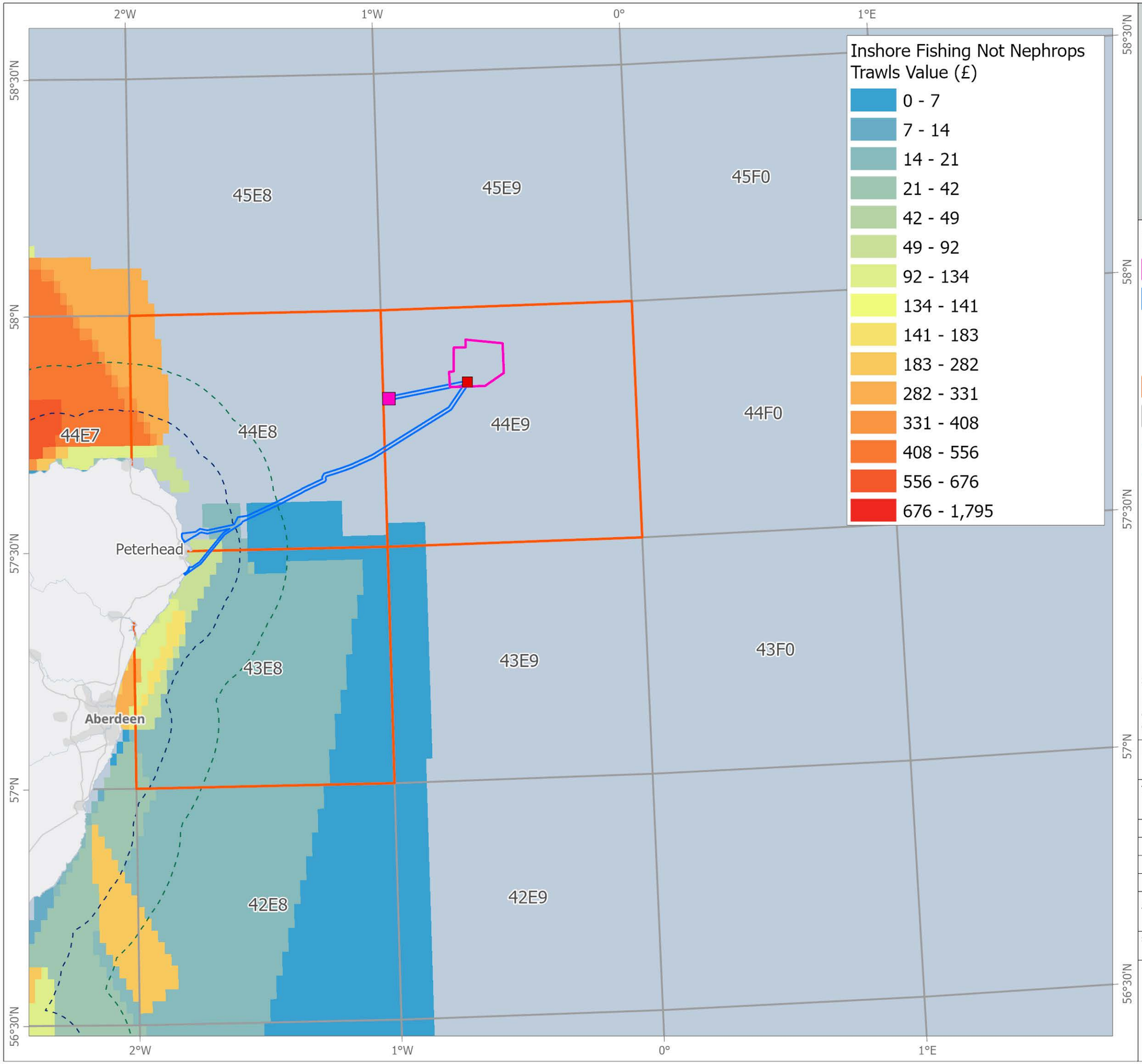



LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
Scottish Government, Kafas et al., (2014). ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.23 Inshore Fishing Not Nephrops Trawls Value (£)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 07/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
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| 1:850,000 | A3 | WGS 1984 UTM Zone 30N |

GREEN VOLT

### 13.6.3 Creeling – Lobster and Crab Fishery

81. Creeling (a static fishing method) for lobster (*Homarus gammarus*) and (edible/brown) crab (*Cancer pagurus*) takes place along the Scottish coast. Creels can be shot individually, but are more typically shot in fleets, where a number of creels are attached to a single long rope on the seabed, with a buoy marking their location (Seafish, no date (d)). The numbers in a fleet can vary from five in some inshore lobster fisheries to over 100 in offshore crab fisheries, and are typically left to soak for up to 24 hours (Brown & May Marine Ltd, 2021).

82. Creels are typically designed with the target species in mind. The D-shaped creel is a common creel-type used among fishermen targeting lobster and crab (**Figure 13.24**).

83. Vessels engaged in the creel fishery in the Study Area are typically under 10 m in length ( see **Figure 13.4**) and work in inshore areas, operating from Peterhead and Boddam Harbour. There is an informal agreement between creelers and scallop fishermen to avoid gear conflict, and creelers typically remain within the 1° 40' longitude line during certain times of year (NorthConnect, 2018; Eastern Green Link 2, 2022).

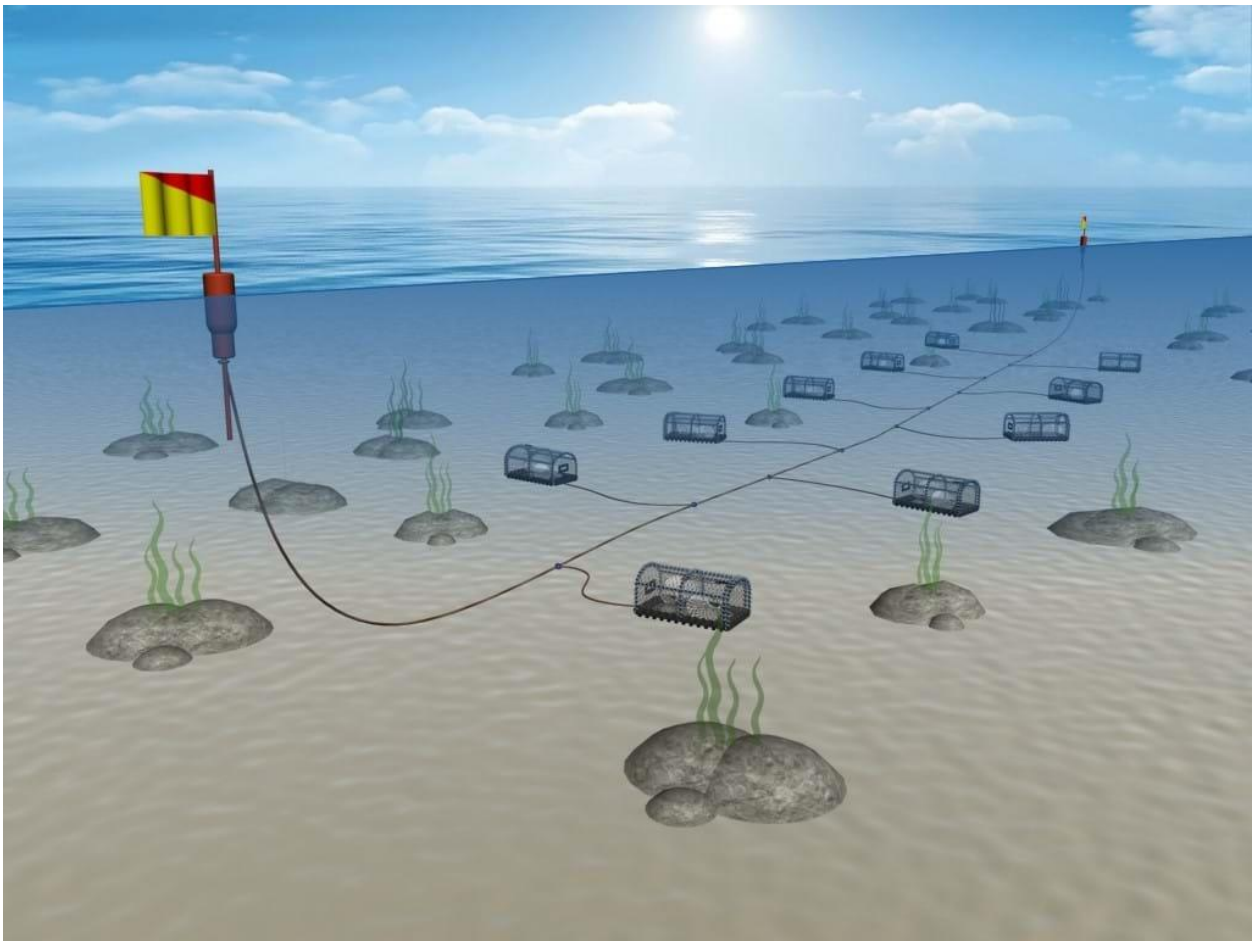


*Figure 13.24 Fleet of D-shaped Creels on the Seabed (Seafish, no date (d))*

84. The seasonality of crab and lobster landings is provided in **Figure 13.25**. As shown, lobster landings in the Study Area peak in August and September with lower levels landed throughout the year. Crab is landed consistently at higher levels throughout the year, with peak landings in the winter months, particularly December.

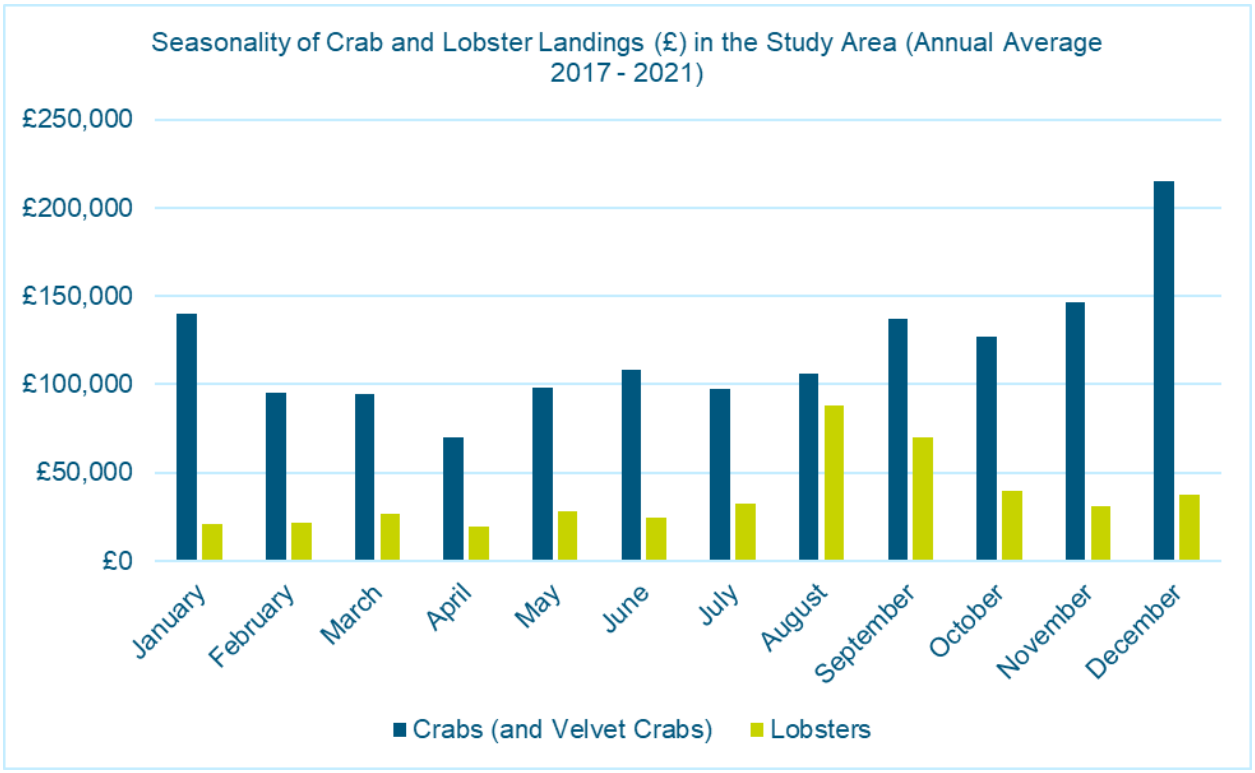
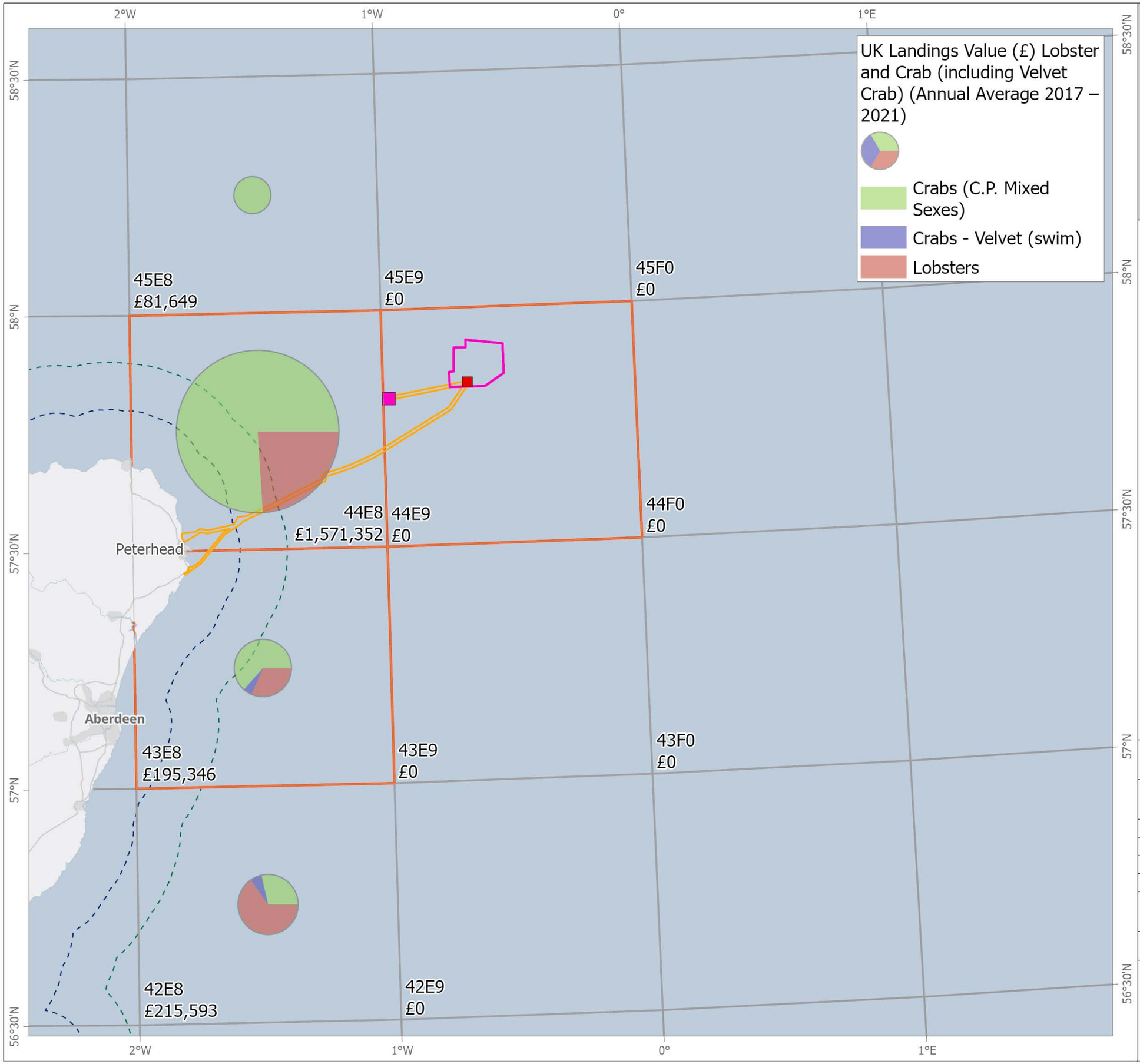



*Figure 13.25 Seasonality ofcrab and lobsterlLandings (£) in the Study Area (Annual Average 2017 - 2021) (MMO, 2022)*

85. **Figure 13.26** shows landings of crab and lobster in the Study Area. As indicated, crabs and lobster are not targeted in ICES rectangle 44E9, with the highest landings in the Study Area concentrated inshore in ICES rectangle 44E8 and to a lower extent in 43E8.

86. Data from a creel fishing activity study (Marine Scotland, 2017) as given in **Figure 13.27** shows moderate to high levels of activity by creelers under 15 m in length in the inshore within 6 nm, in areas overlapping with both the St Fergus South Landfall and the NorthConnect Parallel Landfall areas. These trends are additionally shown in **Figure 13.28**, which shows historic data for lobster and creel fishing in the inshore Study Area (Kafas et al., 2014). Activity further offshore is limited, although there is anecdotal evidence in recent years that crab fisheries are targeting areas further offshore during winter months (Brown & May Marine Ltd., 2021; Eastern Green Link 2, 2022).

87. While the majority of landings of crab and lobster are by vessels under 10 m in length (see **Figure 13.4**), **Figure 13.29** showing VMS data for creelers indicates that there are very low levels of activity by vessels 15m and above in ICES rectangles 44E8 and 43E8.





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60

Kilometres

Data:
MMO (2022), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.26 UK Landings Value (£) Lobster and Crab (including Velvet Crab) (Average 2017 – 2021)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 07/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
DRAWING: FLO-GRE-GIS-MAP014-LandingsValCrLb-Rev001

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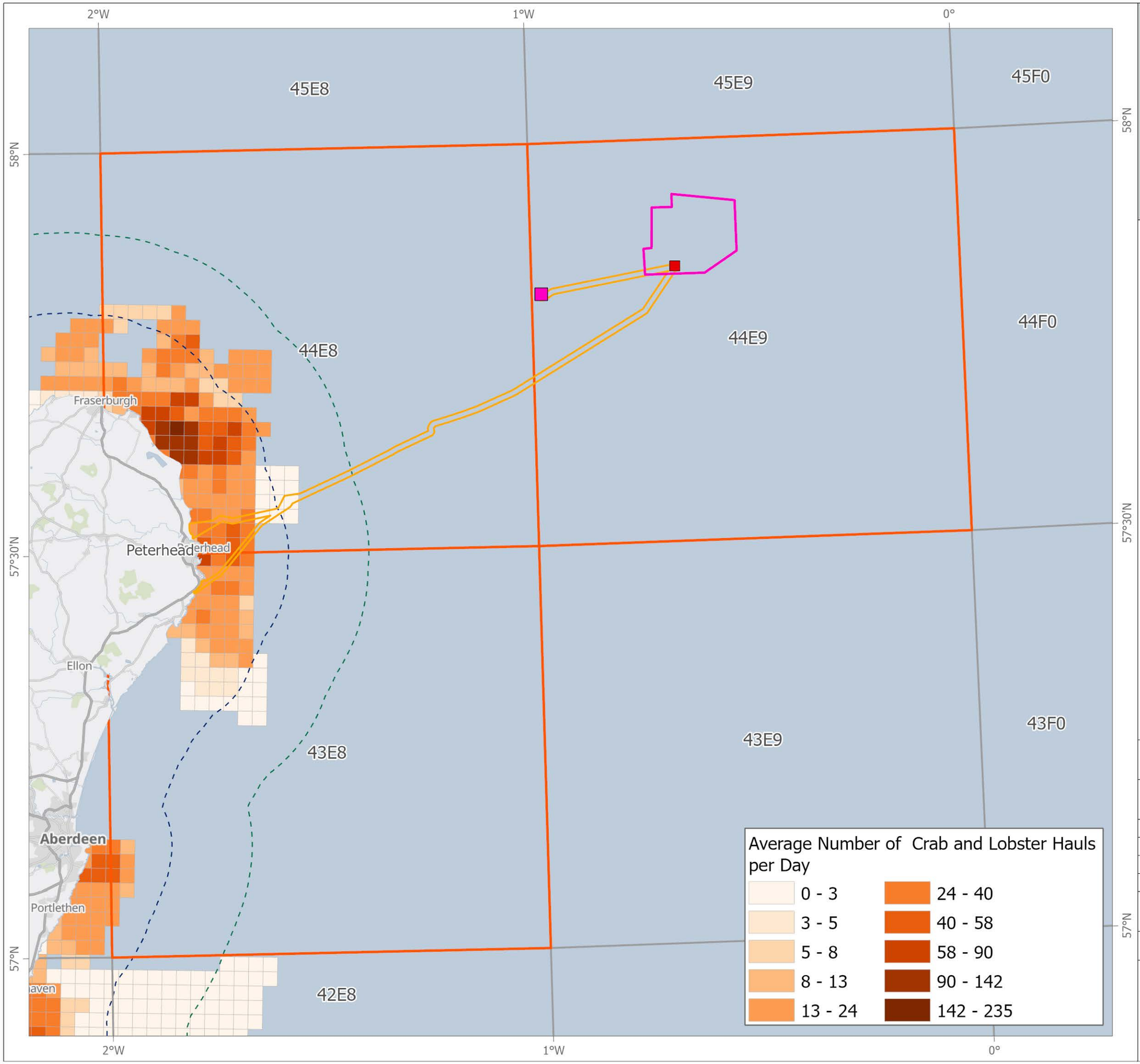


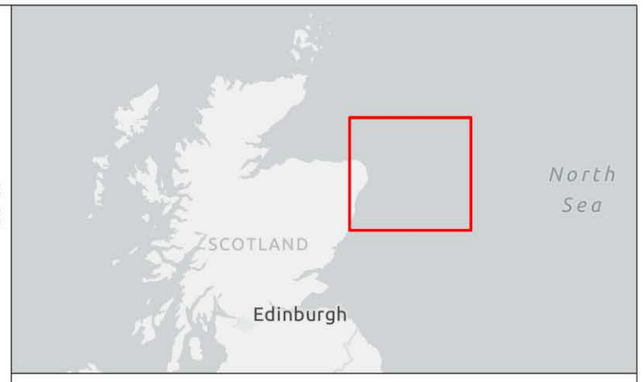


LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 10 20 30 40
Kilometres

Data:
Marine Scotland Science (2017), NSTA, UKHO, ICES



PROJECT: GREEN VOLT

TITLE: Fig 13.27 Creel Fishing Effort Study (Average Number of Crab and Lobster Hauls per Day)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 10/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
DRAWING: FLO-GRE-GIS-MAP015-Creel&Lobster-Rev001

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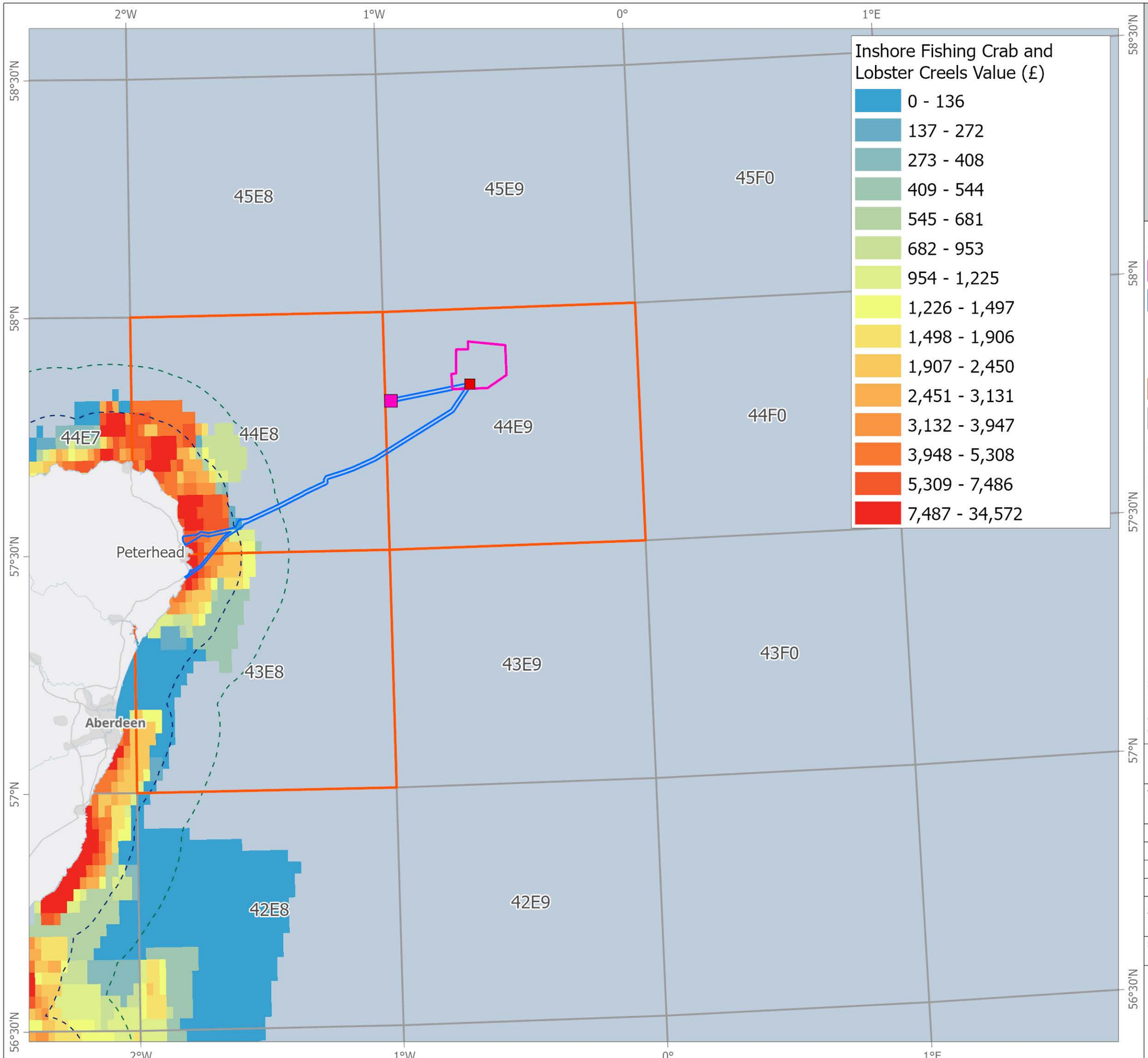



LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60

Kilometres

Data:
Scottish Government, Kafas et al., (2014). ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.28 Inshore Fishing Crab and Lobster Creels Value (£)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 10/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
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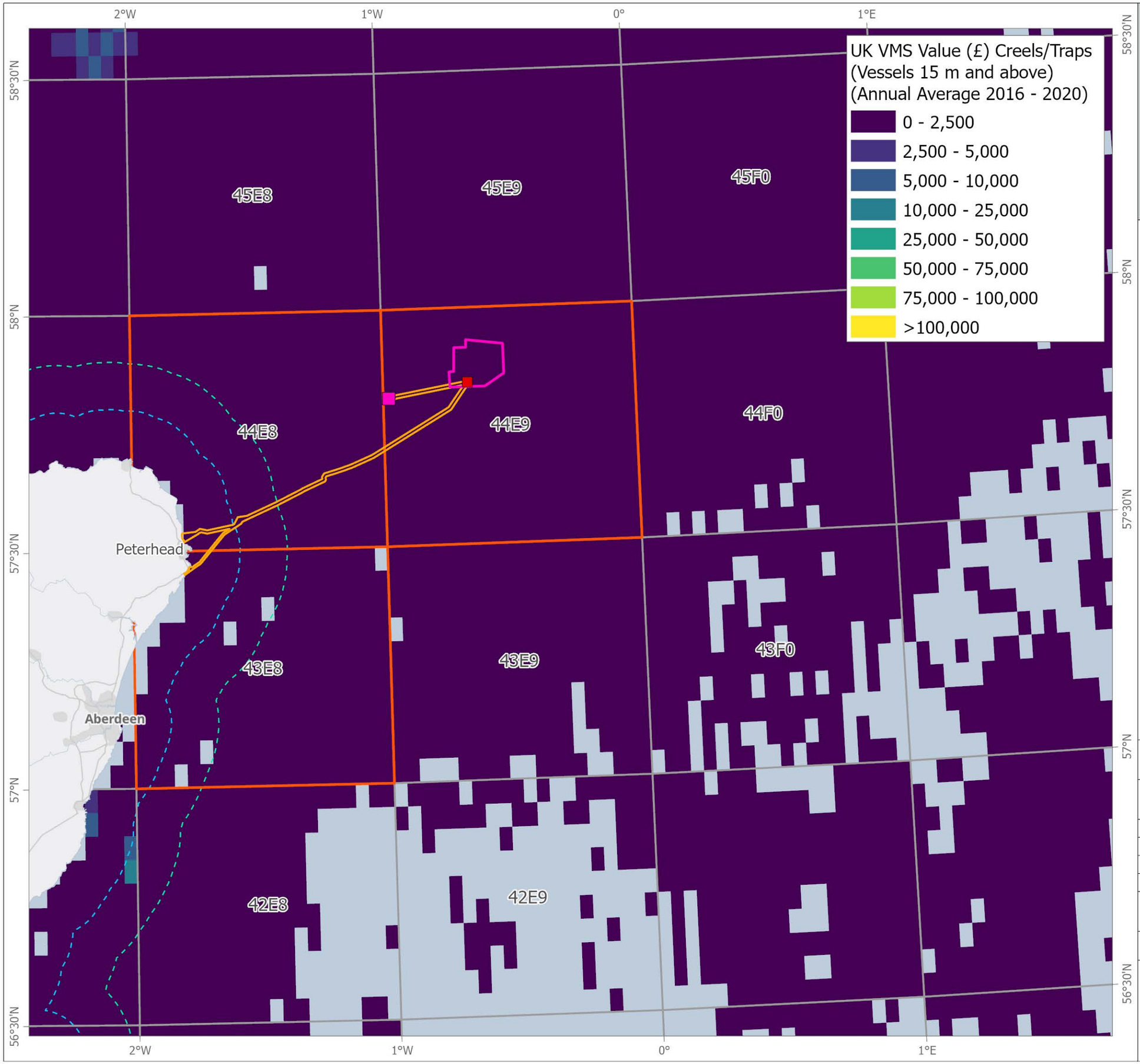



LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
MMO, Scottish Government, ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.29 UK VMS Value (£) Creels/Traps (Annual Average 2016 - 2020)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 10/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
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GREEN VOLT

### 13.6.4 Dredging – Scallop Fishery

88. The preferred habitat of scallops (*Pecten maximus*) is sediment composed of sand, gravel and mud, with some level of stones, rocks and boulders. Vessels use dredges to target scallops, which consist of a rigid structure with a toothed bar up to 11 cm in length (Howarth & Stewart, 2014) that is dragged along the seabed and scoops the scallops out of the seabed and into a collecting bag made of chains (**Figure 13.30**) (Seafish, no date (e)). Multiple dredges are typically towed behind a heavy spreading bar from each side of a vessel.

89. Scallop dredge vessels in the Study Area are over 10 m in length, and as per 2021 data, principally between 18 and 24 m although local vessels will be smaller in length (see **Figure 13.5**). This larger class vessel tend to operate a higher number of dredges and work further offshore (see **Section 13.2.3.5** for information on dredge restrictions) and are often part of the UK nomadic scallop fleet, working in grounds elsewhere in the UK on a cyclical basis (Brown & May Marine Ltd, 2021; Howarth & Stewart, 2014).

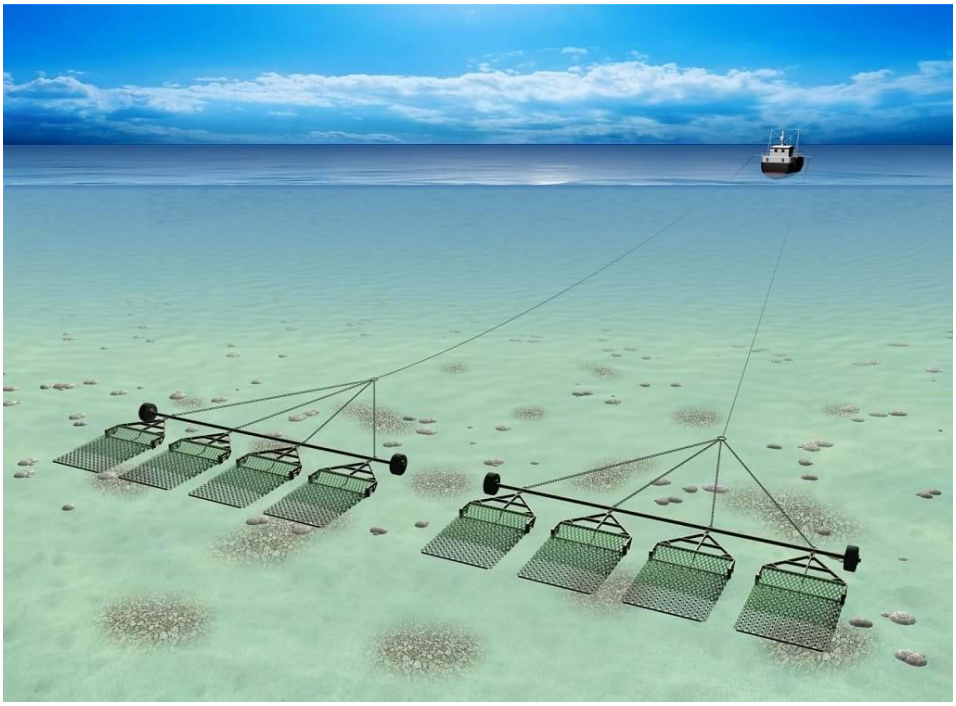


*Figure 13.30 Scallop dredge (Seafish, no date (e))*

90. An indication of the seasonality of the scallop fishery in the Study Area is shown in **Figure 13.31**. As shown, landings of scallops peak in May with high landings between April and June, with lower levels of activity throughout the rest of the year.

91. It is known that the scallop fishery is cyclical in nature, and productive scallop grounds rotate around the UK on a seven-to-eight-year cycle (Cappell et al., 2018). This cycle is illustrated in **Figure 13.32** which shows annual scallop landings in the Study Area between 2011 to 2021.

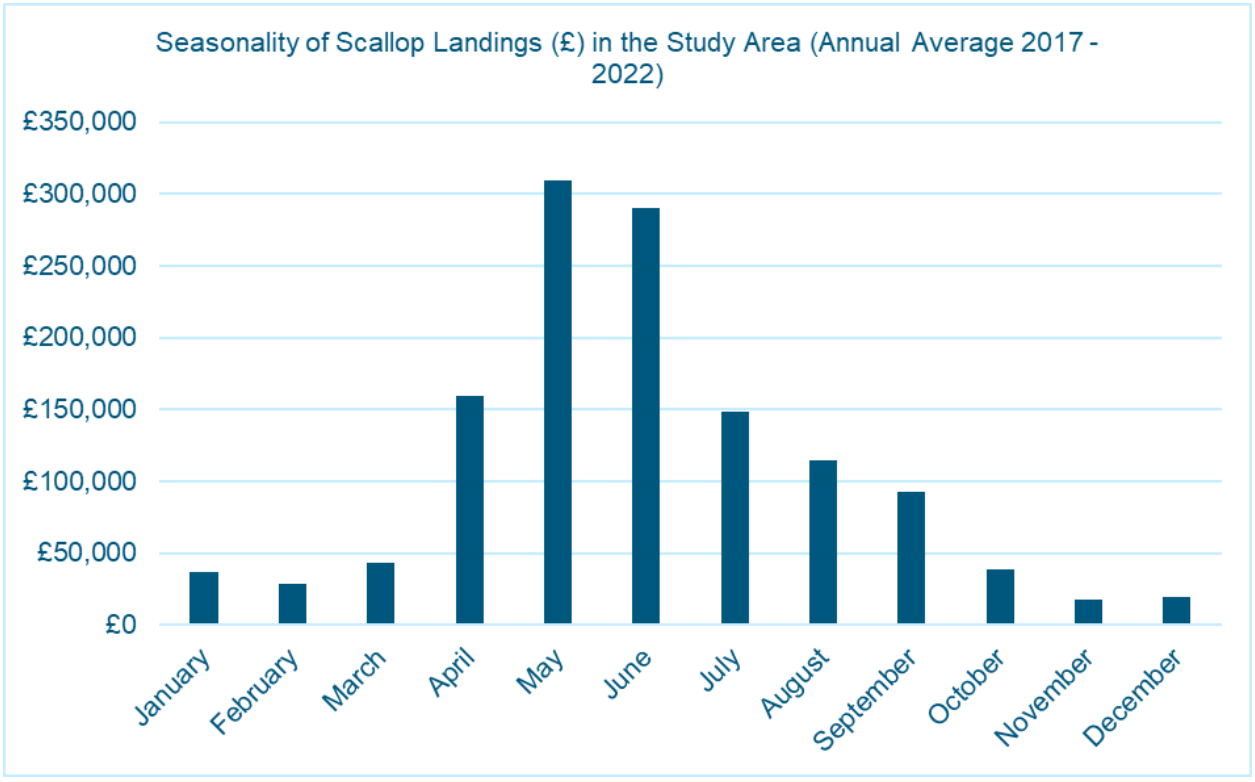



*Figure 13.31 Seasonality of scallop landings (£) in the Study Area (Annual Average 2017 - 2022) (MMO, 2022)*

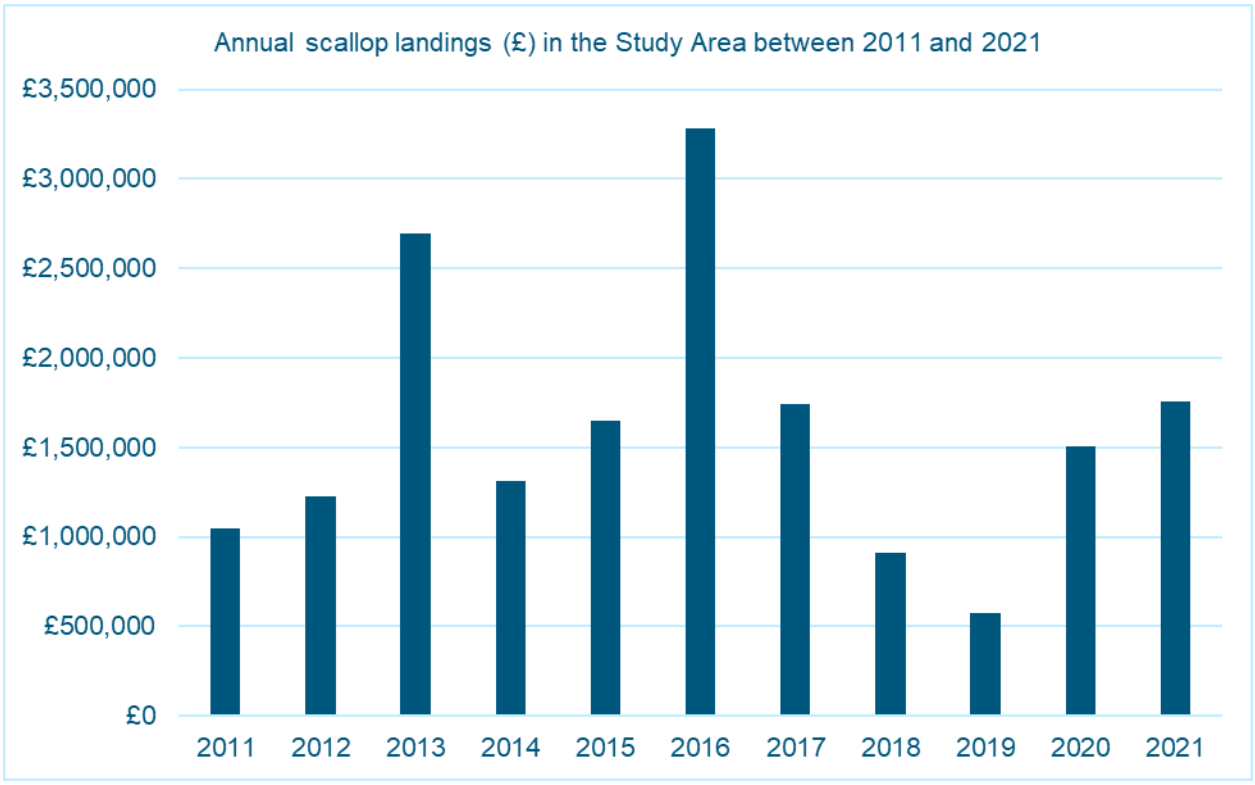
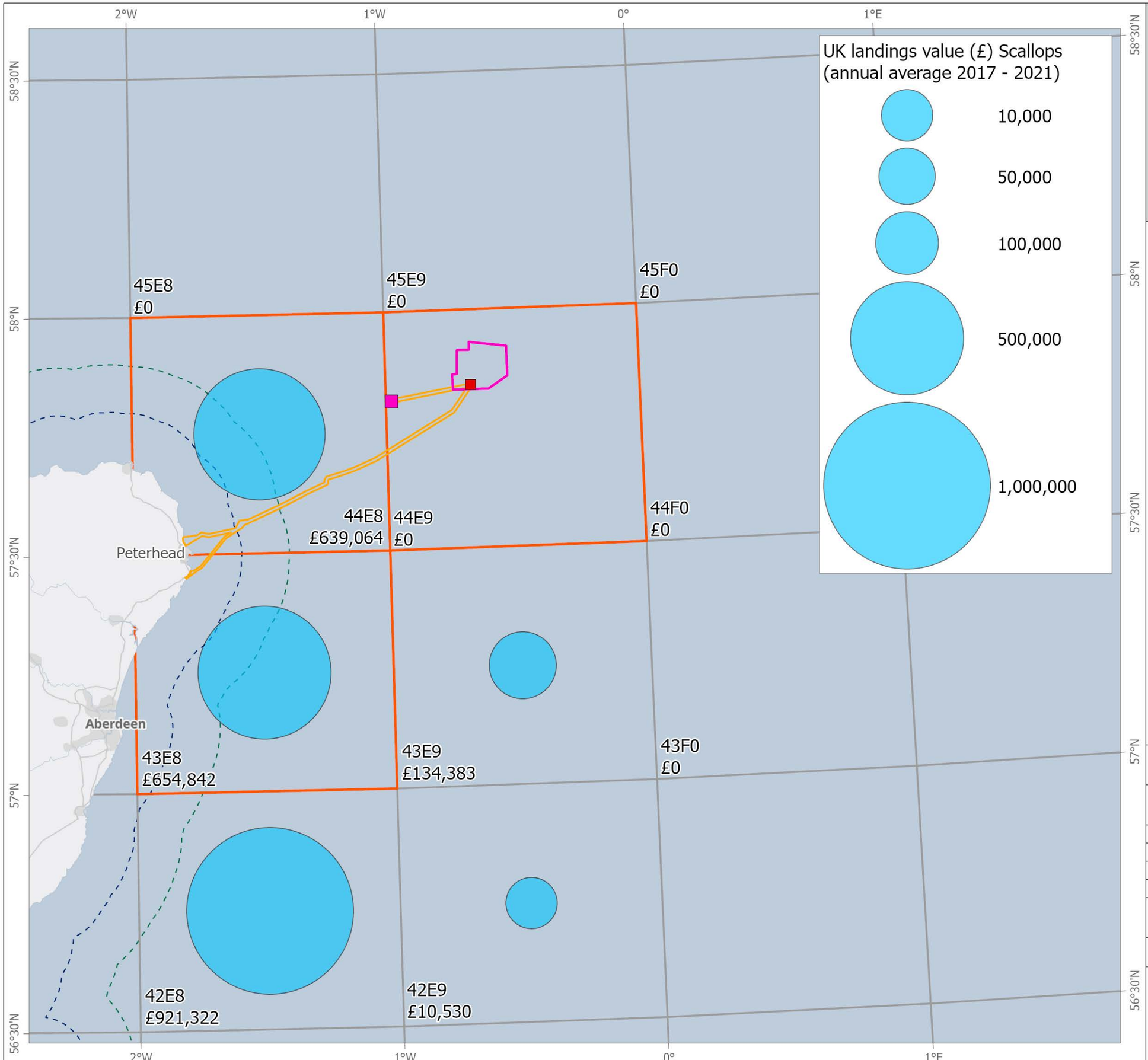



*Figure 13.32 Annual scallop landings (£) in the Study Area between 2011 and 2021 (MMO, 2022)*

92. **Figure 13.33** shows that the highest landings for scallops are recorded in ICES rectangles 43E8 and 44E8, accounting for £654,842 and £639,064 respectively, with negligible landings in 44E9 where the Windfarm Site is located.

93. For vessels 15 m and over, **Figure 13.34** shows similarly that there is low to moderate levels of activity in inshore (between 6 and 12 nm) in 44E8 and 43E8, in areas that overlap with the Landfall Export Cable Corridor.





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
MMO (2022), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.33 UK Landings Value (£) Scallops (Annual Average 2017 to 2021)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
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| 001 | 10/10/2022 | | SK | HF |
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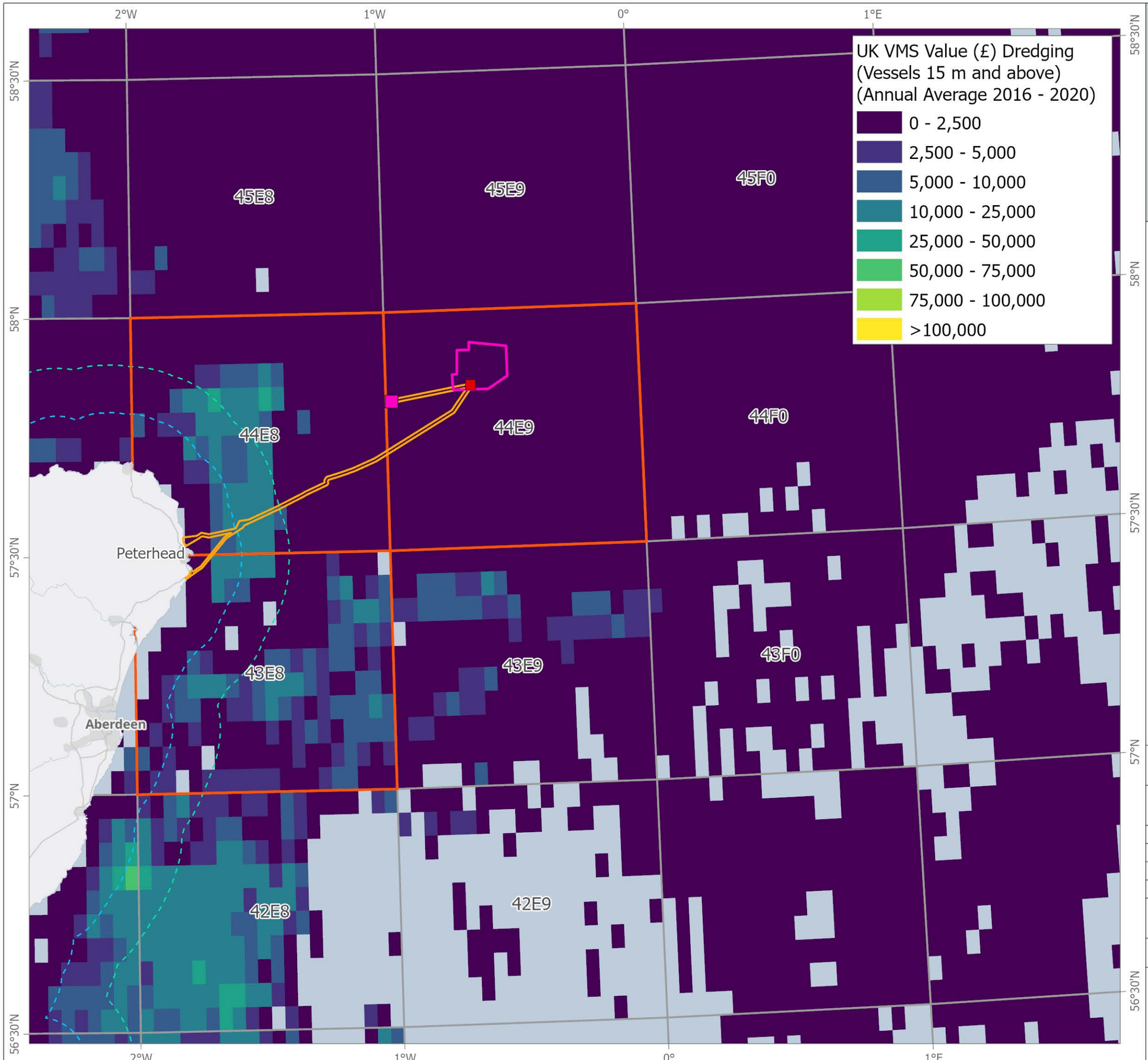



LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
MMO, Scottish Government, ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.34 UK VMS Value (£) Dredging (Annual Average 2016 - 2020)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
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GREEN VOLT

### 13.6.5 Pelagic Trawling – Herring Fishery

94. Herring are pelagic fish species which inhabit the water column, rather than living in or near the seabed. Typically, pelagic fish species are targeted in the water column by pelagic trawls (**Figure 13.35**) or seines, however, pelagic fish can also be targeted when congregating near the seabed using demersal trawls. In the Study Area, both pelagic and demersal trawls methods are used to target herring. Vessels engaged in the herring fishery are, as indicated by 2021 data, principally over 40 m (**Figure 13.5**). As vessels engaged in these fisheries are of a larger class, they expend comparatively less effort due to the method which enables vessels to target entire shoals.

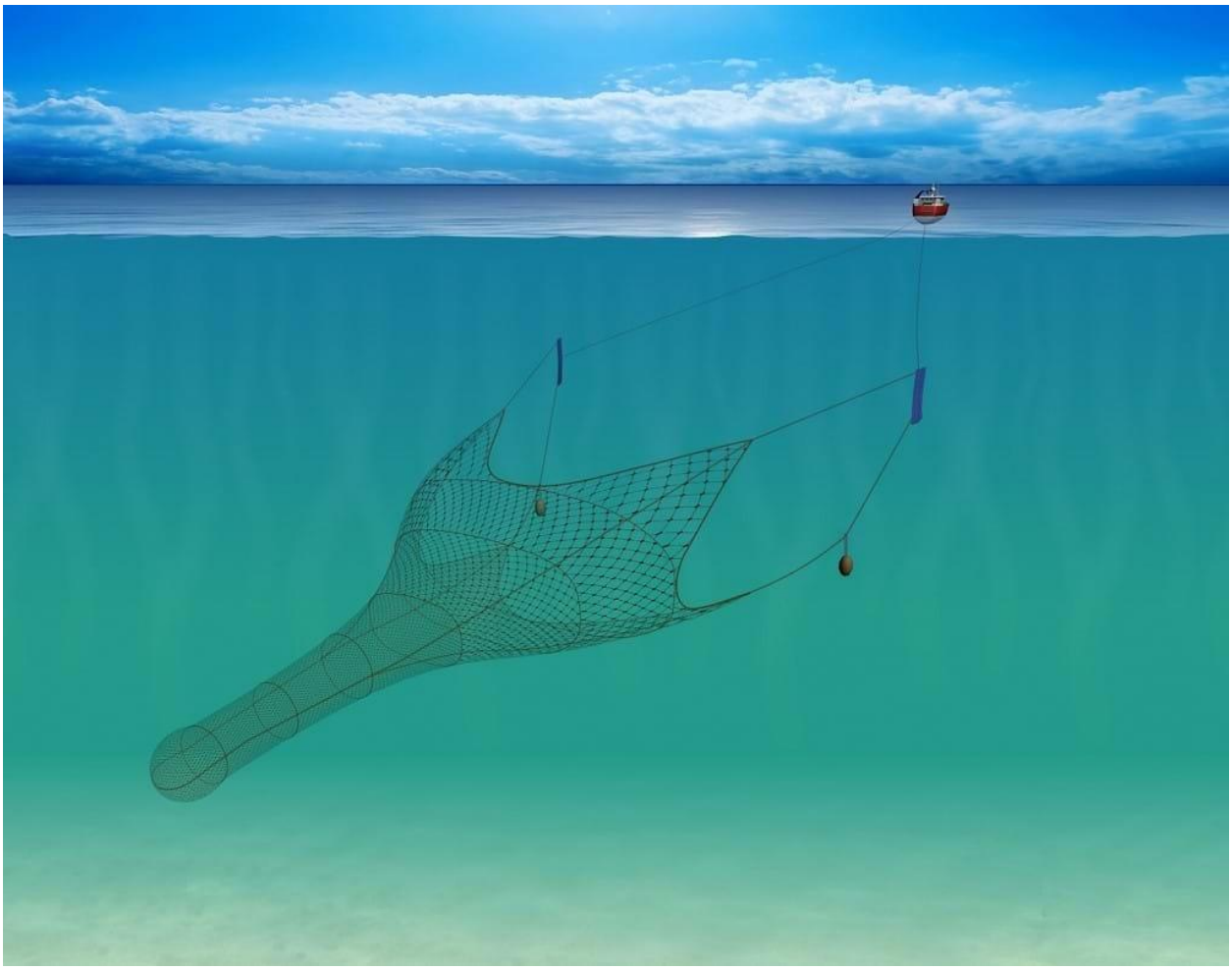


*Figure 13.35 Pelagic Trawl (Seafish, no date (f))*

95. An indication of the seasonality of herring pelagic fisheries is provided in **Figure 13.36**, showing that the herring fishery is seasonal, taking place in autumn – principally August and September.

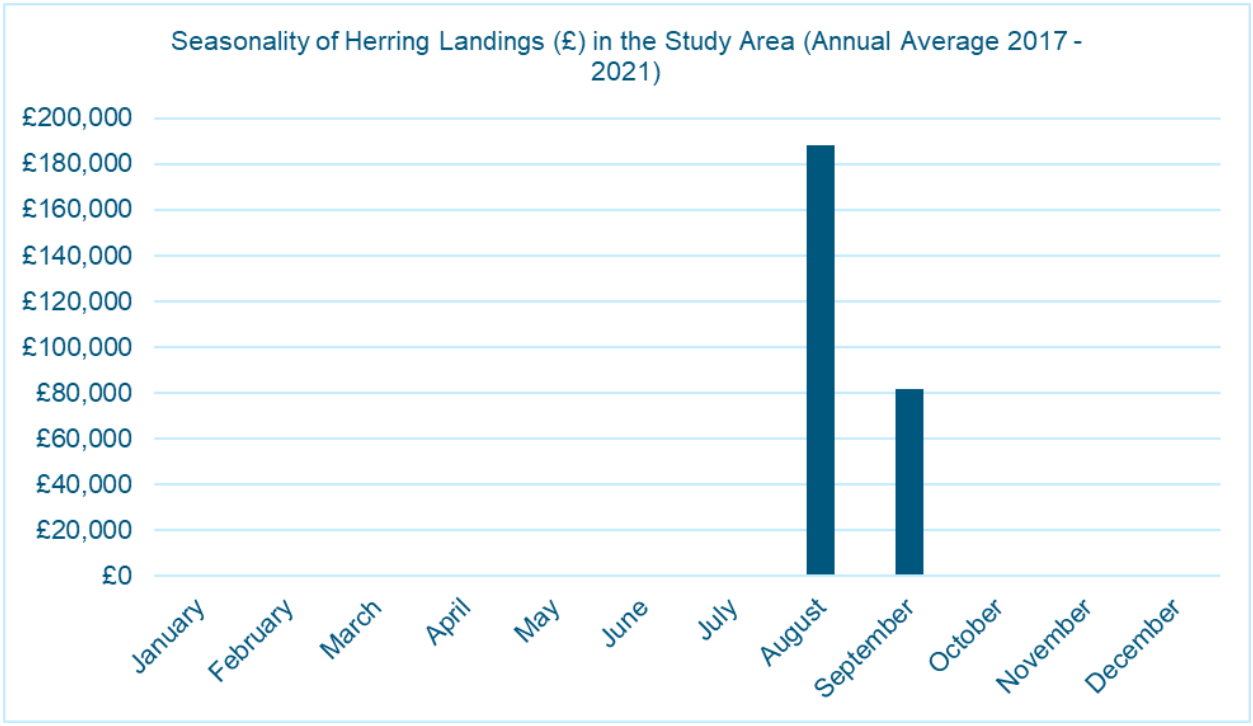
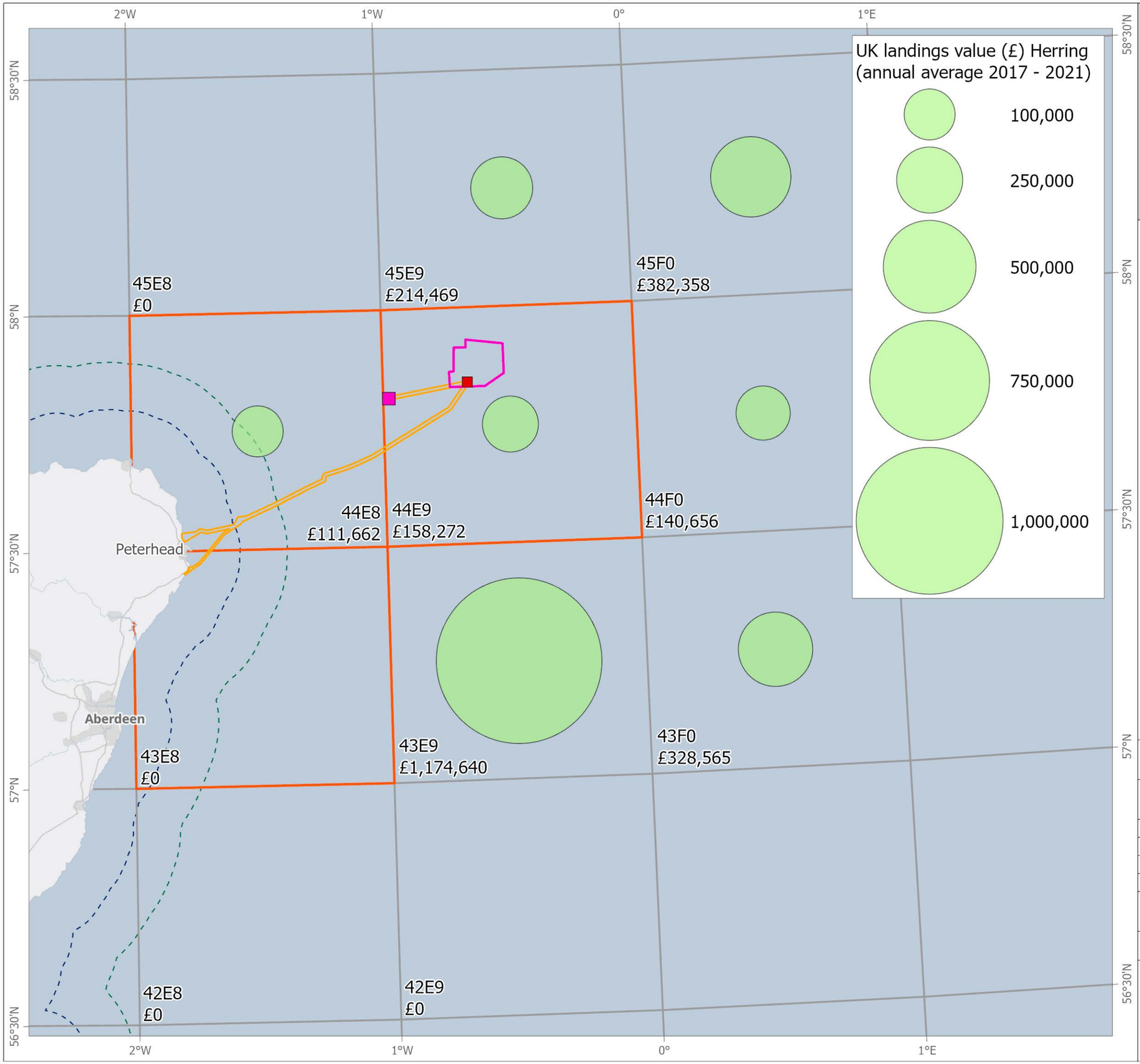



*Figure 13.36 Seasonality of Herring Landings (£) in the Study Area (Annual Average 2017 - 2021) (MMO, 2022)*

96. As indicated by **Figure 13.37**, landings herring concentrate in ICES rectangle 44E9. However, these are relatively low landings in comparison to regional herring landings from ICES rectangle 43E9 to the south. As shown by **Figure 13.38**, in ICES rectangle 44E9 compared to activity by pelagic trawlers/seiners in 43E9.





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
MMO (2022), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.37 UK Landings Value (£) Herring (Annual Average 2017 to 2021)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 10/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
DRAWING: FLO-GRE-GIS-MAP020-LandingsValHer-Rev001

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| 1:850,000 | A3 | WGS 1984 UTM Zone 30N |

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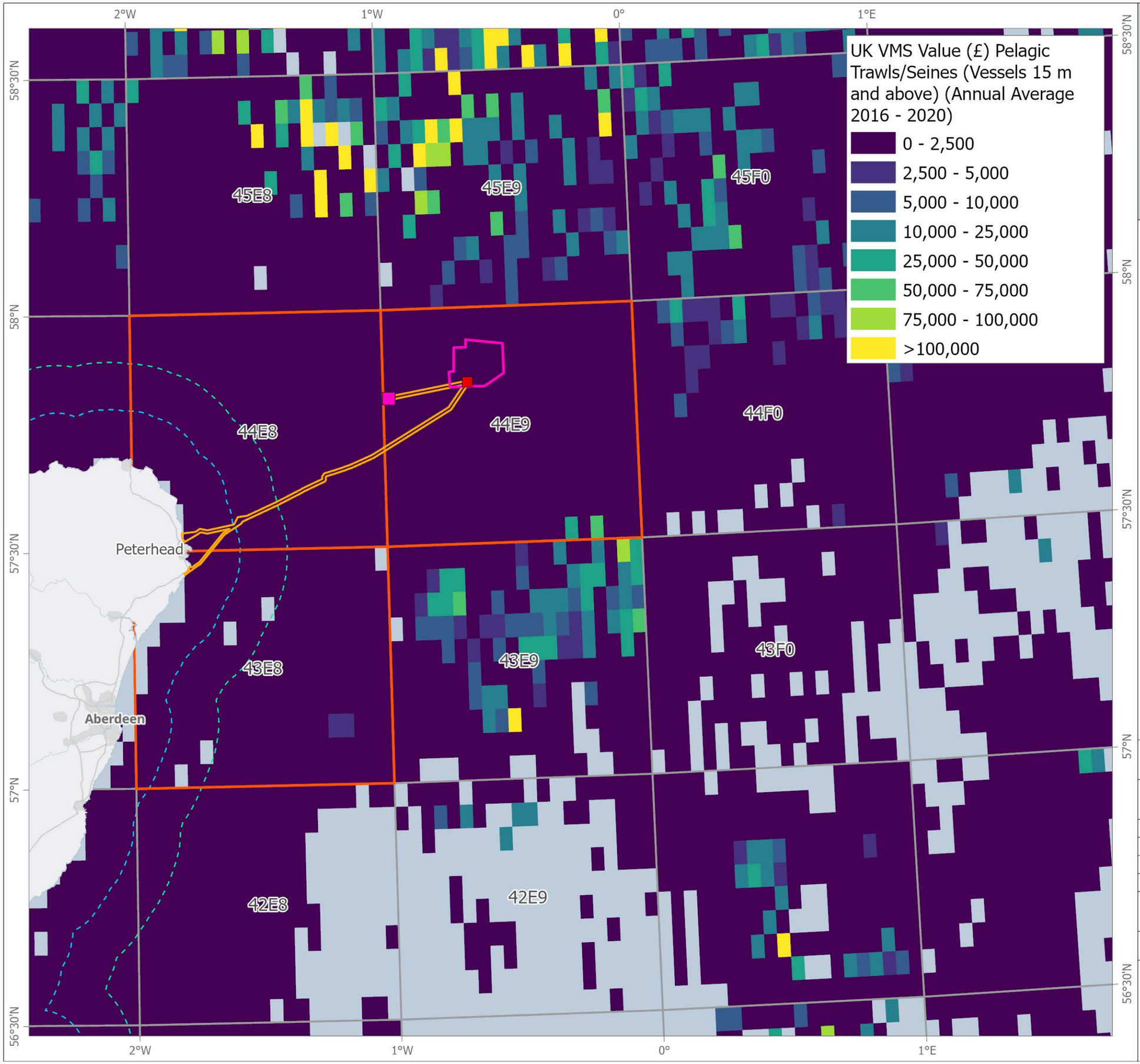



LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60

Kilometres

Data:
MMO, Scottish Government, ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.38 UK VMS Value (£) Pelagic (Annual Average 2016 - 2020)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 10/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
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| 1:850,000 | A3 | WGS 1984 UTM Zone 30N |

GREEN VOLT

### 13.6.6 Inshore Mackerel Fishery

97. The Study Area hosts a mackerel jigging and handline fishery[6]. Mackerel jigging is the practice of fishing with a jig (which is a type of fishing lure), which creates jerky vertical motion designed to resemble prey fish of in the water to attract the target fish (**Figure 13.39**) (Seafish, no date (g)). This method is method commonly used with multiple jigs on one line, which is hauled by machine, to enable several fish to be caught at once. However, jigs can be operated with a single jig on each line and hauled by hand. In north east Scotland, jigging for mackerel has evolved from 'hand lining for mackerel' and is still commonly referred to as such, and takes place along handlining.

98. The majority of vessels targeting mackerel are under 10 m in length (see **Figure 13.4** and **Figure 13.5**).

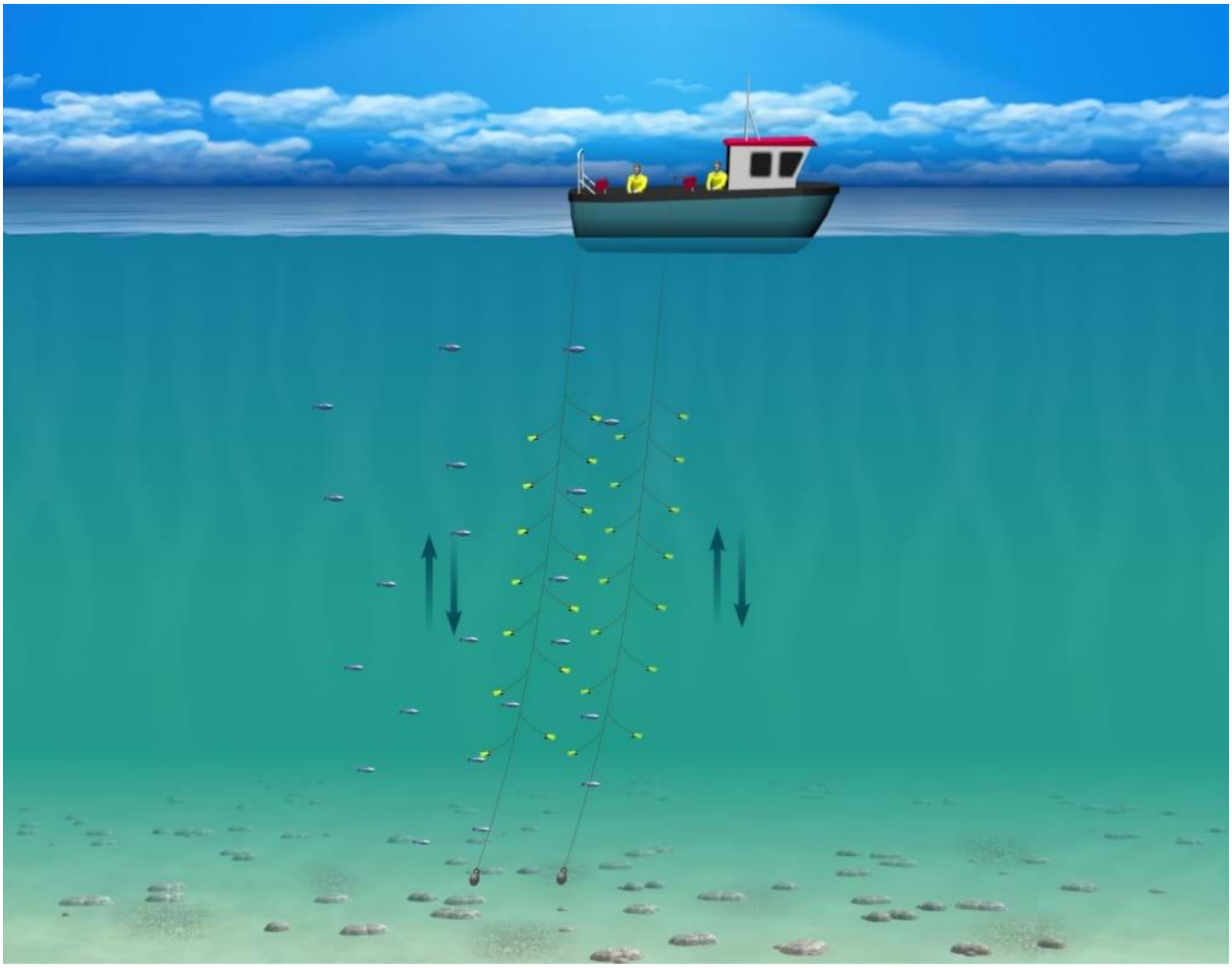


*Figure 13.39 Jigging (Seafish, no date (g))*

99. There is a significant hand-line fishery for mackerel in the summer months between June and September (Kafas et al., 2014). This seasonality is shown in **Figure 13.40**, which indicates that the highest landings of mackerel, caught with gears using hooks and handlines are recorded in July and August each year, with lower landings in June and September and negligible landings in the remainder of the year.

[6] *It should be noted that approximately £47,679 of mackerel landings are from vessels operating demersal trawls/otter trawls. However, the principal fishery in the study area for mackerel concentrates on handlining and jigging, and it is anticipated that mackerel caught by other methods is from a small number of vessels, or bycatch as a result of other demersal trawling fisheries.*

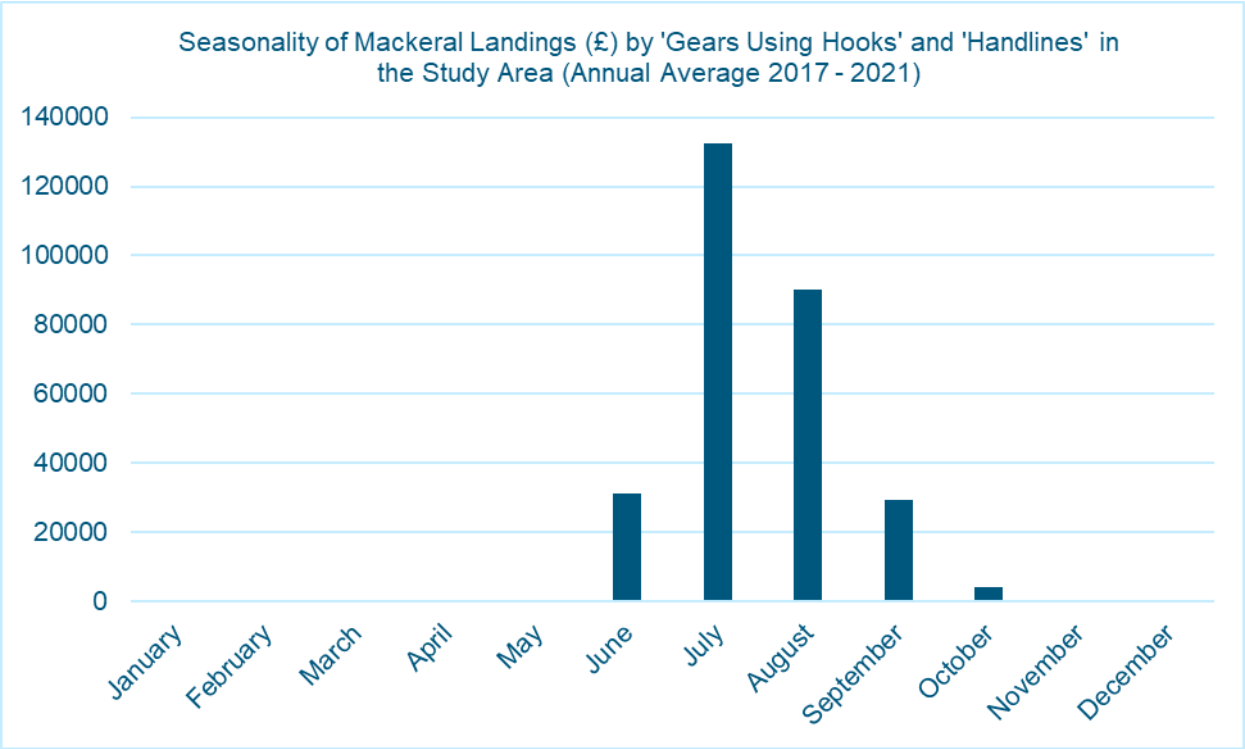
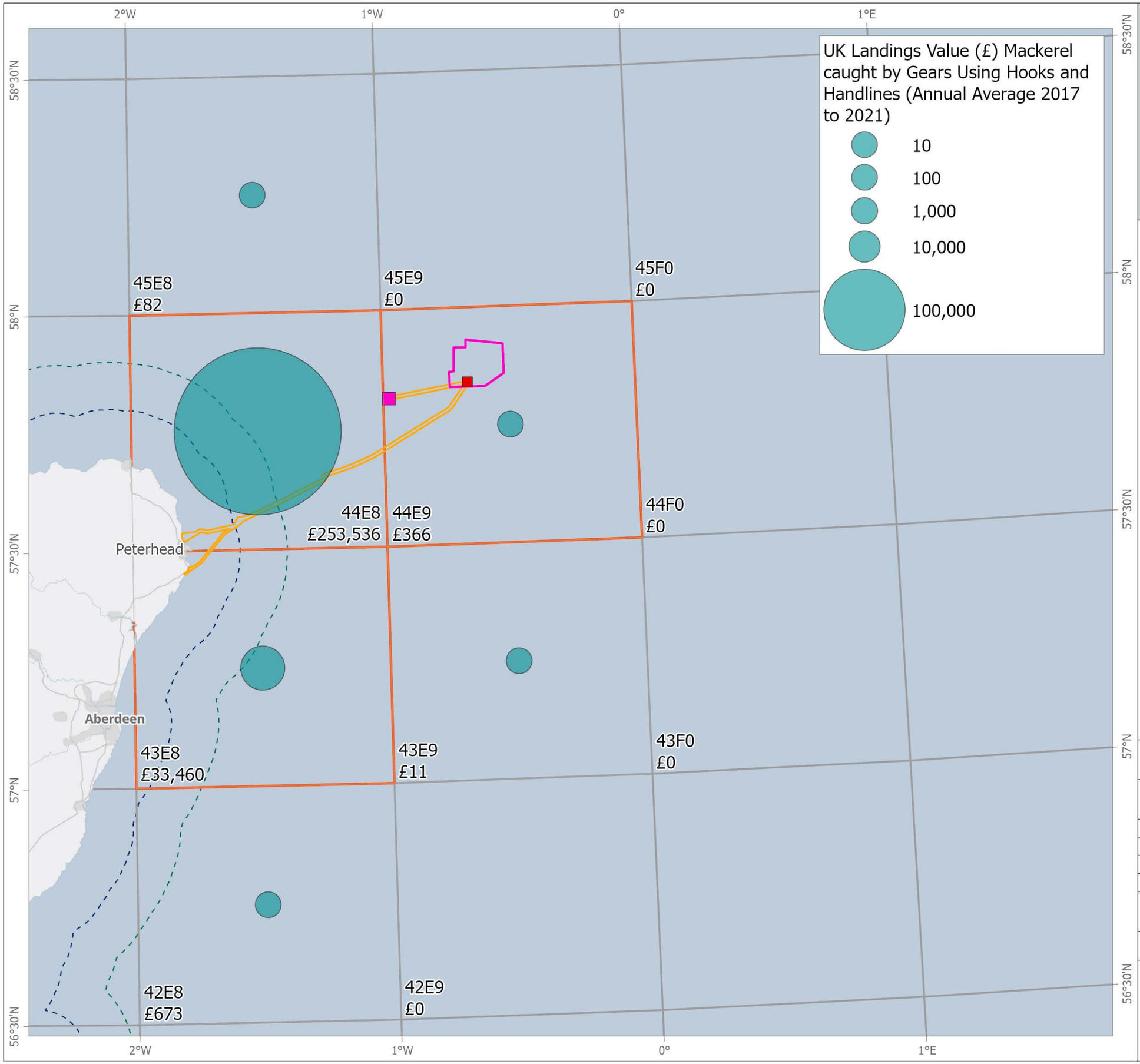



*Figure 13.40 Seasonality of Mackerel Landings (£) by 'Gears Using Hooks' and 'Handlines' in the Study Area (Annual Average 2017 - 2022) (MMO, 2022)*

100. **Figure 13.41** provides an indication of the distribution of landings of mackerel by gears using hooks (jigs), showing the highest landings of approximately £253,536 in ICES rectangle 44E8 and significantly lower values of approximately £33,460 in ICES rectangle 43E8. The fishery is a nearshore fishery taking place within 6 nm, as demonstrated by historic data from Kafas et al. (2014) in **Figure 13.42**, undertaken predominantly by vessels under 10m in length. As described by Kafas et al. (2014), mackerel grounds vary on a year-to-year basis, with mackerel jigging vessels working the areas where mackerel are the most abundant, although typically working out of Peterhead.





LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60

Kilometres

Data:
MMO (2022), ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.41 UK Landings Value (£) Mackerel (Annual Average 2017 to 2021)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 10/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
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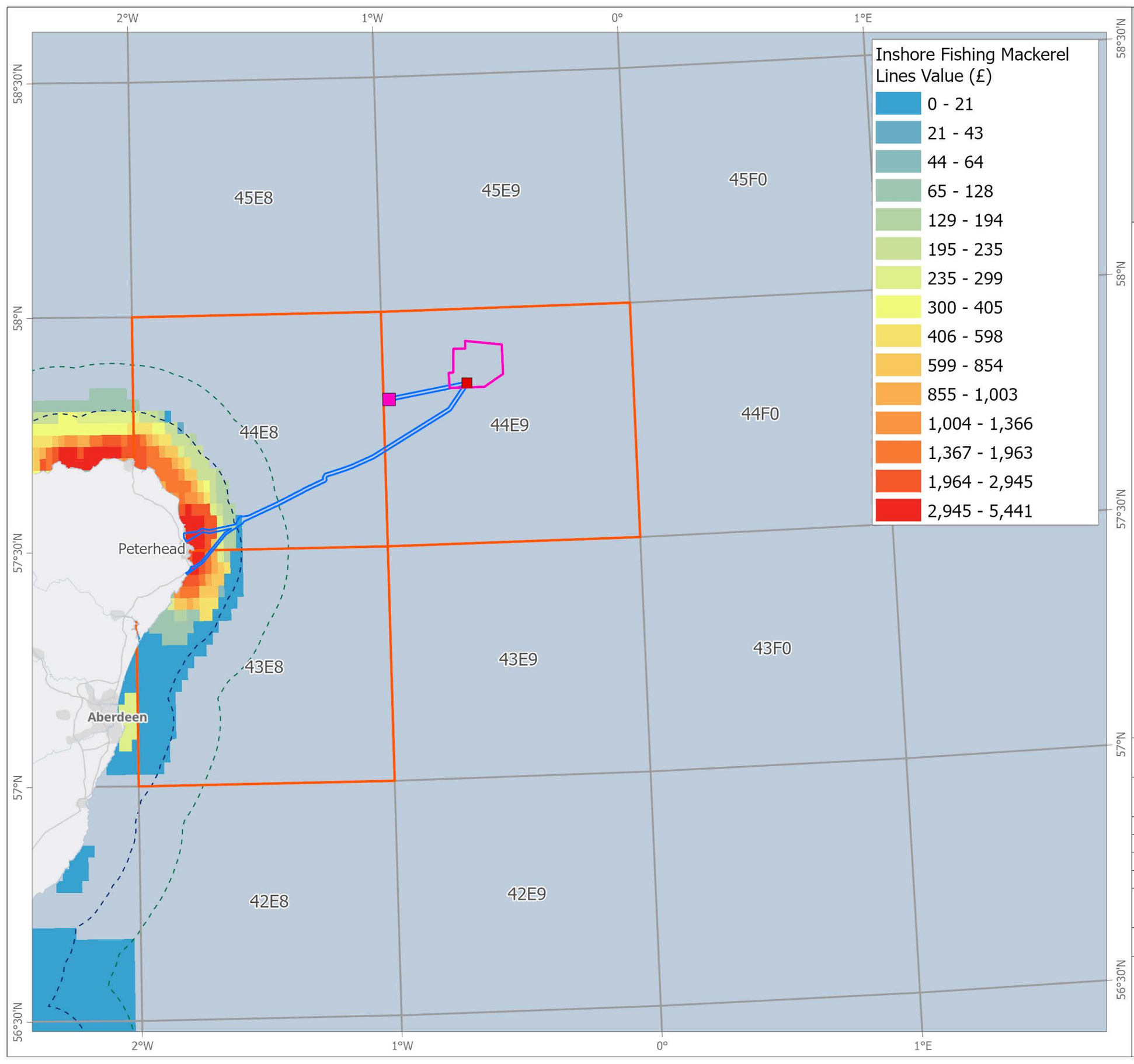



LEGEND

- Windfarm site
- Offshore export cable corridor
- Offshore substation platform
- Buzzard platform
- Commercial fisheries study area
- ICES rectangles
- 6 nm limit
- 12 nm limit

0 20 40 60
Kilometres

Data:
Scottish Government, Kafas et al., (2014). ICES, NSTA, UKHO



PROJECT: GREEN VOLT

TITLE: Fig 13.42 Inshore Fishing Mackerel Lines Value (£)

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 10/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
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| 1:850,000 | A3 | WGS 1984 UTM Zone 30N |

GREEN VOLT

### 13.6.7 Summary of Key Receptors

101. Based on the above presented fisheries baseline for the Study Area, the key commercial fishery receptors of the Project are considered to be the following:

- **Nephrops Fishery**: The Nephrops fishery overlaps only in a small area of the southeastern boundary of the Windfarm Site in ICES rectangle 44E9, but is the highest value fishery in the Study Area. Nephrops trawl vessels are between 18 and 24 m in length, and active in June and July in areas of muddy seabed.
- **Other Demersal Fisheries**:
    - Squid: a relatively low value fishery in the Study Area compared to the regional context of the Moray Firth. Squid fishing in the Study Area takes place in the autumn/winter, with peak landings in November.
    - Whitefish: Haddock is the principal whitefish caught in the Study Area, although here are also substantial landings of monks/anglers, whiting and cod. Whitefish in the Study Area are principally caught by larger class vessels using demersal trawls rather than seines. The fishery is active between June and January, and the highest landings in the Study Area are from ICES rectangle 44E9, however activity is concentrated further south of the Windfarm Site.
- **Creeling – Lobster and Crab Fishery:** This fishery is concentrated inshore within 6 nm in ICES rectangles 44E8 and 43E8 and undertaken by vessels principally under 10 m in length (does not take place offshore). The lobster fishery is most active around August/September, while crab are targeted year round, with the peak occurring in December/January.
- **Dredging – Scallop Fishery**: The scallop fishery is principally comprised of large nomadic dredge vessels that target scallop grounds around the UK on a cyclical basis. Activity is concentrated between 6 and 12 nm in ICES rectangles 44E8 and 43E8, with very limited activity in ICES rectangle 44E9 where the Windfarm Site is located.
- **Pelagic Trawling – Herring Fishery**: Herring in the Study Area are caught in ICES rectangle 44E9, however, at significantly lower levels than elsewhere in the region (e.g. 43E9). The fishery takes place in autumn (August and September).
- **Inshore Mackerel Fishery**: The inshore mackerel fishery consists of vessels under 10 m using either jigs/handlines to target mackerel in the summer, with landings peaking in July. The fishery takes place only in the nearshore of ICES rectangle 44E8 and 43E8, with limited activity recorded offshore.

## 13.7 Future Baseline

102. The baseline characterisation of commercial fisheries above provides an reflection of the current state of the existing environment. The earliest possible date for the start of construction is Q2 2026, with an expected operational life of 35 years. Therefore, there is potential for the baseline to evolve between the time of assessment and point of impact. Changes to the baseline in relation to commercial fisheries can occur over the long-term or short to medium-term.

103. Commercial fisheries patterns change and fluctuate based on a range of natural and management-controlled factors, including the following:

- Stock abundance: fluctuation in the biomass of individual species stocks in response to status of the stock, recruitment, natural disturbances (e.g. due to storms, sea temperature, climate change etc), changes in fishing pressure etc.
- Fisheries management: including changes in TACs leading to the relocation of effort, and/or an overall increase/decrease of effort and catches from specific areas, closed areas and gear restrictions.
- Environmental management: including the potential restriction of certain fisheries within protected areas.

- Improved efficiency and gear technology: with fishing fleets constantly evolving to reduce operational costs e.g. by moving from beam trawl to demersal seine.
- Sustainability: with seafood buyers more frequently requesting certification of the sustainably of fish and shellfish products, such as the Marine Stewardship Council certification, industry is adapting to improve fisheries management and wider environmental impacts.
- Markets: commercial fishing fleets respond to market prices by focusing effort on higher value target species when prices are high and markets in demand.

104. Furthermore, as discussed in **Section 13.2.3.2**, with the UK exit from the EU, the UK is no longer party to the CFP and has agreed to a TCA, applicable on a provisional basis from 1 January 2021. The TCA sets out fisheries rights and confirms that from 1 January 2021 and during a transition period until 30 June 2026, UK and EU vessels will continue to access respective EEZ's to fish.

105. Twenty-five percent of the EU's fisheries quota in UK waters will be transferred to the UK over the five-year transition period. Overall, the biggest gains are for Western and North Sea stocks and associated fisheries, including mackerel, sole and herring. There have been increases in the UK share of TACs for the following species relevant to the study area:

- Cod (10% increase in quota for North Sea);
- Saithe (9% increase in quota for North Sea);
- Herring (8% increase in quota for North Sea); and
- Whiting (7% increase for North Sea).

106. It is therefore anticipated that changes in the baseline will occur as a result of the increase in the TCA quota share and associated end of the five-year transition period.

## 13.8 Potential Impacts

107. An assessment of the potential impacts of the Project on commercial fisheries receptors as summarised in **Section 13.6.7** is given in the following sections of this chapter, for each of the Project phases – construction, O&M and decommissioning.

108. The Project submitted an **Offshore Scoping Report** (Royal HaskoningDHV, 2021) (**Appendix 1.2**) to Scottish Ministers on 15th November 2021, which outlined a baseline understanding of the commercial fisheries activity in the vicinity of the Project. The **Offshore Scoping Report** also outlined an assessment of the potential impacts upon commercial fisheries arising from the three different phases of the Project (construction, O&M, and decommissioning), as presented in **Table 13.8**.

109. The Project received a **Scoping Opinion** from MS-LOT in April 2022 (MS-LOT, 2022) (**Appendix 1.1**). **Table 13.8** presents the impacts that were proposed to be scoped out in the **Offshore Scoping Report** and the impacts that the Scoping Opinion require to be scoped in for the **Offshore EIA Report**.

*Table 13.8 Potential impacts scoped in or out of the EIA for commercial fisheries*

| Potential Impact | Construction | | O&M | | Decommissioning | |
|---|---|---|---|---|---|---|
| | Scoping Report | Scoping Opinion | Scoping Report | Scoping Opinion | Scoping Report | Scoping Opinion |
| Reduction in access to, or exclusion from established fishing grounds | X | ✓ | X | ✓ | X | ✓ |
| Displacement leading to gear conflict and increased fishing pressure on adjacent grounds | X | ✓ | X | ✓ | X | ✓ |
| Displacement or disruption of commercially important fish and shellfish resources | X | ✓ | X | ✓ | X | ✓ |
| Construction activities leading to additional steaming to alternative fishing grounds | X | ✓ | X | ✓ | X | ✓ |
| Physical presence offshore wind farm infrastructure leading to gear snagging | X | ✓ | X | ✓ | X | ✓ |
| Increased vessel traffic within fishing grounds leading to interference with fishing activity | X | ✓ | X | ✓ | X | ✓ |

**110.** A summary of the potential impacts assessed is provided in **Table 13.9.**

*Table 13.9 Potential impact pathways on commercial fisheries receptors*

| Green Volt Project Phase | Potential Impact Pathways |
|---|---|
| Construction | • Reduction in access to, or exclusion from established fishing grounds.<br>• Displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds.<br>• Physical presence of offshore wind farm infrastructure leading to fishing gear snagging.<br>• Displacement or disruption of commercially important fish and shellfish resources.<br>• Construction activities leading to additional steaming to alternative fishing grounds.<br>• Increased vessel traffic within fishing grounds leading to interference with fishing activity. |
| O&M | • Reduction in access to, or exclusion from established fishing grounds.<br>• Displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds.<br>• Physical presence of offshore wind farm infrastructure leading to fishing gear snagging.<br>• Displacement or disruption of commercially important fish and shellfish resources.<br>• O&M activities leading to additional steaming to alternative fishing grounds.<br>• Increased vessel traffic within fishing grounds leading to interference with fishing activity. |
| Decommissioning | • Reduction in access to, or exclusion from established fishing grounds.<br>• Displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds.<br>• Physical presence of offshore wind farm infrastructure leading to fishing gear snagging.<br>• Displacement or disruption of commercially important fish and shellfish resources.<br>• Decommissioning activities leading to additional steaming to alternative fishing grounds.<br>• Increased vessel traffic within fishing grounds leading to interference with fishing activity. |

### 13.8.1 Embedded Mitigation

111. This section outlines the embedded mitigation measures that will be incorporated by the Project into each development phase to mitigate the effects of potential impacts associated with the Project. The Windfarm Site has undergone a number of boundary adjustments. The southeast corner of the Windfarm Site was removed, reducing the site from 123.42 km$^2$ to 116.79 km$^2$, as shown in **Figure 13.43**. During stakeholder engagement and consultation with the local fisheries community, it was identified that the southeast portion of the originally proposed Windfarm Site was of importance to the commercial fishing industry (**Chapter 4: Site Selection & Assessment of Alternatives**). In response, the Project made the decision to completely remove this portion of the original site of the site to minimise adverse impacts on the fisheries community.

630000E
640000E
650000E
6430000N
6420000N
6410000N


LEGEND

- Windfarm site
- Windfarm site (original proposed)
- Offshore export cable corridor
- Offshore substation platform

Mean total value of ≥ 15m UK vessel landings 2016 - 2020 (demersal gear) (£ Sterling)

- 0 - 2,500
- 2,500 - 5,000
- 5,000 - 10,000
- 10,000 - 25,000
- 25,000 - 50,000
- 50,000 - 75,000
- 75,000 - 100,000

0 2 4 6
Kilometres

Data:
MMO



PROJECT: GREEN VOLT

TITLE: Fig 13.43 Windfarm Site Boundary Refinement

| REV | DATE | COMMENTS | DRAWN | CHECKED |
|---|---|---|---|---|
| 001 | 10/10/2022 | | SK | HF |
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ARCGIS REF: FLO_GRE_GIS_PRJ001_GV_EIA_Rev002
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GREEN VOLT

112. Any offshore wind projects within Scottish waters can submit a Safety Zone application to Marine Scotland which will require other marine users to keep a minimum safe distance from a Project contracted vessel or marine infrastructure, such as incomplete offshore wind substructures. The purpose of the Safety Zones is to protect infrastructure that is being installed or vessels which require a large area to operate safely.

113. Safety Zones will be applied for by the Project as per relevant legislation (Energy Act 2004 and Electricity Regulations 2007) and The Department for Business, Energy and Industrial Strategy (BEIS) Guidance on Applying for Safety Zones (BEIS), 2011) to mitigate any potential impacts and to ensure safe and effective construction, O&M of the wind farm. Safety zones for construction, major O&M and decommissioning will be agreed with MS-LOT and located around any structure where construction work is underwater, partially completed structures where work is not underway and completed structures. These are likely to include:

- 50m radius Safety Zone around each turbine location during the operation phase; and
- 500m radius Safety Zone around each turbine location during the construction phase.

114. Guard vessels will also be used where applicable to ensure adherence with Safety Zones or advisory passing distances to mitigate impacts which pose a risk to surface navigation during construction, O&M and decommissioning phases.

115. The Project will additionally ensure that there are appropriate communications to inform other marine users of the progression of the works and the notification of significant construction events which have the potential to temporarily restrict areas for safety purposes. These measures are detailed in **Chapter 16: Shipping and Navigation** and will include:

- A marine coordination centre to monitor vessels contracted by the Project and other marine vessels. This centre will be monitored 24/7 and enable other marine users to contact personnel associated with the Project about any identified issues.
- Notifications to Mariners (NtMs) will be issued to provide updates to other marine users of the construction works that are currently being undertaken and any planned in the near future. Any persons can be added to the NtM distribution list as required.
- A notification will be produced in the fortnightly Kingfisher news bulletin or when a significant construction event is planned to occur with the Project.
- Any cardinal or marker buoys associated with the Project will be communicated to the necessary stakeholders and informed through NtMs, United Kingdom Hydrographic Office (UKHO) and NLB. The information will include detailed maps and coordinates to enable the continuing navigational safety for other marine users.
- Details will be provided to UKHO to facilitate appropriate marking of Project infrastructure on appropriate UKHO Admiralty Charts.
- The UKHO will be notified of both the commencement (within two weeks), progress and completion of offshore construction works (within two weeks) to allow marking of all installed infrastructure on nautical charts.
- Sharing of as-built cable information through UKHO updates and KIS-ORCA (https://kis-orca.org/), including the locations of buried cables and locations of rock protection.
- Should any cable exposures be identified during the O&M phase, the location of the exposure will be shared with fisheries stakeholders, and temporary safety measures implemented.

116. A qualified FLO has been appointed by the Project to liaise with the fishing industry during the construction phase. Fisheries liaison will be undertaken in line with good practice guidance where possible, including Recommendations For Fisheries Liaison: Best Practice' guidance for offshore renewable developers (FLOWW 2014 and 2015). Liaison will additionally be supported by the Project FIR.

117. As detailed in **Chapter 16: Shipping and Navigation**, a series of plans will be developed to protect other marine users, including:

- Vessel Management Plan;
- Navigational Safety Plan;
- Marine Pollution Contingency Plan;
- Development Specification and Layout Plan; and
- Lighting and Marking Plan.

118. Other embedded mitigation measures to be implemented by the Project include:

- A Fisheries Management and Mitigation Strategy (FMMS) will be developed.
- All vessels will follow the International Regulations for Preventing Collisions at Sea 1972 (COLREGS) and International Convention for the Safety of Life at Sea 1974 (SOLAS);Aids to navigation (marking and lighting) will be deployed in accordance with the latest relevant available standard industry guidance and as advised by Trinity House, Maritime and Coastguard Agency (MCA) and Civil Aviation Authority (CAA) and Ministry of Defence (MoD) as appropriate.
- Any cardinal or marker buoys associated with the Project will be communicated to the necessary stakeholders and informed through NtMs and UKHO and NLB. The information will include detailed maps and coordinates to enable the continuing navigational safety for other marine users.
- The Applicant plans to avoid any interactions with fishing equipment, such as creels, during all marine works. However, compensation packages to offset any losses may be available in relevant and appropriate situations. Such packages were offered during the inshore environmental survey works in April 2022 but were not required.
- Cables will be installed and maintained in line with good practice guidance. Cable protection will be monitored as per cable suppliers' recommendations, and in agreement with power purchase customers.
- Cables will be buried where possible to a target depth of 0.6 - 1.5m in accordance with DECC Guidelines (2011) and other guidance as appropriate. Where this is not possible due to seabed conditions, and external protection is required, the rock berm height and slope will be designed to provide the correct level of protection and long-term stability. In areas where fishing activity is likely, the Applicant will engage with relevant stakeholders to ensure berm design is suitable, accounting for potential impacts to commercial fisheries.
- Should creeling vessels be required to be removed/relocate during the construction phase, vessels affected will be offered cooperation agreements in line with FLOWW best practice guidance.

119. Assessments will be undertaken post-installation to determine cable burial status (including cable protection) and identify potential changes to seabed conditions. Post cable installation survey data will be reviewed to confirm cable burial status and confirm any areas of cable protection are within specification (e.g. cable crossings). The findings will then be shared with the fishing industry via the FLO and other channels, where appropriate. Recommendations by FIRs will be considered as appropriate, based on activity levels and the importance of specific areas to the fishing industry. Over-trawl trials will be considered where key fishing areas are identified along the Offshore Export Cable Corridor, as appropriate.

### 13.8.2 Worst Case Scenario

120. The 'worst case' assessment considers the Project parameters which are anticipated to result in the greatest effect to the commercial fisheries receptors. This approach ensures that effects of a greater adverse significance would not arise should any other development scenario be taken forward in the final scheme design. Detailed information on the Project design can be found in **Chapter 5: Project Description**. With regards to the assessment of impacts on commercial fishers, the assessment comprises the project parameters set out in **Table 13.10**.

121. Pre-construction surveys, including UXO clearance, geophysical and geotechnical may be required, resulting in potential short-term reduction in access to fishing grounds and increased vessel traffic. As the surveys will be short term and localised in nature, the magnitude of impact for potential pre-construction surveys is negligible, considering mitigation measures as outlined in **Section 13.8.1.**

*Table 13.10 Worst case assumptions*

| Impacts | Parameters | Notes and Rationale |
|---|---|---|
| **Construction** | | |
| Reduction in access to, or exclusion from established fishing grounds (C1) | **Total Temporary Reduction:**<br><br>**WTGs**<br>• Installation of up to 35 WTGs<br>• 500 m Safety Zones around construction activities = 0.79 km$^2$ per structure under construction at any one time; and<br>• 50 m Safety Zones around incomplete structures = 0.008 km$^2$ per partially constructed structure at any one time.<br><br>**Offshore Cables**<br>Burial of inter-array cables (IAC) by ploughing (134 km length, 10 m indicative total width of disturbance) = 1.34 km $^2$ area of disturbance.<br><br>All cables to be buried to a minimum depth of 0.6 m.<br><br>IAC approaching turbine substructure will be surface laid and protected with rock berm/mattressing (20 m length, rock berm with a width of 5 m = 100 m$^2$ seabed footprint.<br><br>Up to nine cable crossings with rock protection covering 2,100 m$^2$ per crossing (9 crossings, 2,100 m$^2$ per crossing) = 0.0189 km$^2$ total rock protection at cable crossings.<br><br>Burial of Landfall Export Cables (2 cables, 50 m apart) (240 km length from OSP) by ploughing (10 m width total indicative width of disturbance) = 2.40 km$^2$ per cable, 4.80 km$^2$ in total excluding 50 m separation, 16.80 km$^2$ in total including 50 m separation.<br><br>Burial of Buzzard Export Cables (2 cables, 50 m apart) (60 km length) by ploughing (10 m width indicative width of disturbance) = 0.6 km$^2$ per cable, 1.20 km$^2$ in total excluding 50 m separation, 4.20 km$^2$ in total including 50 m separation.<br><br>Roaming 500 m safety zones for mobile cable installation vessels (0.79 km$^2$) (max 1 on site at a time).<br><br>Pre-lay sweeping activities (boulder clearance / sandwave levelling) = 0.05 km$^2$<br><br>**Offshore substation platform**<br>Foundation footprint based on four suction pile jackets (14 m in diameter, maximum 20 m penetration depth) and scour protection (982.5 m$^2$ per pile) = 0.004 km$^2$<br><br>• 500 m Safety Zones around construction activities = 0.79 km$^2$ per structure under construction at any one time; and<br>• 50 m Safety Zones around incomplete structures = 0.008 km$^2$ per partially constructed structure at any one time. | The reduction in access to, or exclusion from established fishing grounds during the construction phase is temporary in nature, anticipated to last from 2025 to 2027.<br><br>The construction footprint comprises the localised areas of construction where infrastructure will be installed, as well as safety zones and preparatory works.<br><br>It is important to note that the temporal aspect of temporary works will not apply in full throughout the construction phase, as activities will be completed sequentially in most cases.<br>Therefore, the worst case assumption presented here is highly precautionary. |

| Impacts | Parameters | Notes and Rationale |
|---|---|---|
| Displacement, leading to gear conflict and increased fishing pressure adjacent grounds (C2) | As per 'Worst Case' assumption for reduction in access to, or exclusion from established fishing grounds during construction. | This represents the maximum duration and extent of temporarily reduced fishing access or exclusion throughout the construction phase and hence the greatest potential for displacement. |
| Physical presence of offshore wind farm infrastructure leading to gear snagging (C3) | **WTGs**<br>• Installation of up to 35 WTGs;<br>• 500 m Safety Zones around construction activities = 0.79 $km^2$ per structure under construction at any one time; and<br>• 50 m Safety Zones around incomplete structures = 0.008 $km^2$ per partially constructed structure at any one time.<br><br>**Offshore Cables**<br>Burial of IAC by ploughing (134 km length, 10 m indicative total width of disturbance) = 1.34 $km^2$ area of disturbance.<br><br>All cables to be buried to a minimum depth of 0.6 m.<br><br>IAC approaching turbine substructure will be surface laid and protected with rock berm/mattressing (20 m length, rock berm with a width of 5 m = 100 $m^2$ seabed footprint.<br><br>Up to nine cable crossings with rock protection covering 2,100 $m^2$ per crossing (9 crossings, 2,100 $m^2$ per crossing) = 0.0189 $km^2$ total rock protection at cable crossings.<br><br>Burial of Landfall Export Cables (2 cables, 50 m apart) (240 km length from OSP) by ploughing (10 m width total indicative width of disturbance) = 2.40 $km^2$ per cable, 4.80 $km^2$ in total excluding 50 m separation, 16.80 $km^2$ in total including 50 m separation.<br><br>Burial of Buzzard Export Cables (2 cables, 50 m apart) (60 km length) by ploughing (10 m width indicative width of disturbance) = 0.6 $km^2$ per cable, 1.20 $km^2$ in total excluding 50 m separation, 4.20 $km^2$ in total including 50 m separation.<br><br>Roaming 500 m safety zones for mobile cable installation vessels (0.79 $km^2$) (max 1 on site at a time).<br><br>**Offshore substation platform**<br>Foundation footprint based on four suction pile jackets (14 m in diameter, maximum 20 m penetration depth) and scour protection (982.5 $m^2$ per pile) = 0.004 $km^2$<br><br>• 500 m Safety Zones around construction activities = 0.79 $km^2$ per structure under construction at any one time; and<br>• 50 m Safety Zones around incomplete structures = 0.008 $km^2$ per partially constructed structure at any one time. | This represents the maximum extent of infrastructure on the seabed and in the water column throughout the construction phase and hence the greatest potential to for gear to get snagged.<br><br>The footprint comprises the full seabed area of structures, scour protection, cable crossings and cable protection, where there is potential for gear snagging during construction. Therefore, the worst case assumption presented here is highly precautionary. |
| Displacement or disruption of commercially important fish and shellfish resources (C4) | See **Chapter 10: Fish and Shellfish Ecology** | The scenarios presented in **Chapter 10: Fish and Shellfish Ecology** provide for the greatest disturbance to fish and shellfish species and therefore the greatest potential knock-on effect to commercial fisheries. |

| Impacts | Parameters | Notes and Rationale |
|---|---|---|
| Construction activities leading to additional steaming to alternative fishing grounds (C5) | As per 'Worst Case' assumption for reduction in access to, or exclusion from established fishing grounds during construction. | This represents the maximum duration and extent of temporarily reduced fishing access or exclusion throughout the construction phase and hence the greatest potential for displacement. |
| Increased vessel traffic within fishing grounds leading to interference with fishing activity (C6) | **Wind Turbine Substructure Installation:**<br><br>Up to 92 return trips over a 6-month period.<br><br>**Wind Turbine Installation:**<br><br>Up to 100 return trips over a 6-month period.<br><br>**Offshore substation platform:**<br><br>Up to 5 return trips over a 6 month period.<br><br>**Inter-Array Cable Installation:**<br><br>Up to 5 return trips over a 6 month period.<br><br>**Offshore Export Cable Installation:**<br><br>Up to 10 return trips over a 6 month period.<br><br>**Total:** Up to 212 return trips over a 6 month construction period. | The maximum number of turbines and associated infrastructure will lead to the highest level of construction activities and therefore highest level of round trips.<br><br>The maximum number of vessels transits and the maximum duration of construction would result in the greatest potential for interference. |
| **Operation & Maintenance** | | |
| Reduction in access to, or exclusion from established fishing grounds (O1) | **Total Permanent Reduction:**<br><br>**WTGs**<br>Up to 35 operational WTGs<br><br>Turbine seabed footprint based on catenary moorings = 0.07 $km^2$ in total based on a maximum of 35 turbines and 1,950 $m^2$ per turbine. A maximum of 6 anchors to be required per turbine.<br><br>Minimum turbine spacing of 1,540 m<br><br>Total footprint of offshore wind farm boundary= 116 $km^2$<br><br>**Offshore Cables**<br><br>Cable protection for unburied IAC (20 m length, 10 m width) = 0.0002 $km^2$ per turbine, 0.007 $km^2$ in total<br>Cable protection for unburied Offshore Export Cables (6 km length, 10 m width) = 0.06 $km^2$ | This represents the maximum extent of long term fishing exclusion throughout the O&M phase (35 years) and hence the greatest potential to restrict access to fishing grounds. The Project footprint comprises the full permanent seabed area of structures, scour protection, cable crossings and cable protection. The impact also incorporates Safety Zones around maintenance activities outside of the Windfarm Site. It is important to note that the temporal aspect of temporary works will not apply in full throughout the construction phase, as activities will be completed with days or weeks depending on the specific requirements. Therefore, the worst case assumption presented here is highly precautionary.<br><br>The worst case scenario assumes full exclusion from the Windfarm Site/complete loss of fishing grounds due to floating turbine design and catenary mooring system, in |

| Impacts | Parameters | Notes and Rationale |
|---|---|---|
| | Rock berms (10 m width, 1.5 m height).<br>Post-lay rock berm area for IAC crossings (two crossings, 300 m length, 7 m width) = 0.0042 $km^2$ in total<br>Post-lay rock berm area for export cable crossings (five crossings, 300 m length, 10 m width) = 0.015 $km^2$<br>Post-lay rock berm area for interconnector crossings = (six crossings, 300 m length, 10 m width) = 0.018 $km^2$<br><br>Total cable protection: 0.1042 $km^2$<br><br>**Offshore Substation Platform**<br>Foundation footprint based on four suction pile jackets (14 m in diameter, maximum 20 m penetration depth) and scour protection (982.5 $m^2$ per pile) = 0.004 $km^2$<br><br>**Temporary Reduction from Maintenance Activities:**<br><br>**Offshore Export Cable Activities**<br><br>500 m Safety Zones around O&M activities = 0.79 $km^2$ per structure under construction at any one time<br><br>**Safety Zones**<br><br>Temporary 500 m safety zones around offshore platforms undergoing major maintenance. | line with Sectoral Marine Plan for Offshore Wind Energy – Social and Economic Impact Assessment Report (Marine Scotland, 2019). |
| Displacement, leading to gear conflict and increased fishing pressure adjacent grounds (O2) | As per 'Worst Case' assumption for reduction in access to, or exclusion from established fishing grounds during O&M. | This represents the maximum duration and extent of long-term fishing exclusion throughout the construction phase and hence the greatest potential for displacement. |
| Physical presence offshore wind farm infrastructure leading to gear snagging (O3) | **Physical Presence of Infrastructure**<br><br>**WTGs**<br>Up to 35 WTGs<br><br>Turbine seabed footprint based on catenary moorings = (0.07 $km^2$ in total, based on a maximum of 35 turbines and 1,950 $m^2$ per turbine<br><br>Minimum turbine spacing of 1,540 m<br><br>Total footprint of offshore wind farm boundary= 116 $km^2$<br><br>**Offshore Cables**<br><br>Rock berms (10 m width, 1.5 m height).<br>Cable protection for IAC (20 m length, 10 m width) = 0.0002 $km^2$, 0.007 $km^2$ in total<br>Cable protection for Offshore Export Cables (6 km length, 10 m width) = 0.06 $km^2$ | This represents the maximum extent of infrastructure on the seabed and in the water column throughout the O&M phase and hence the greatest potential to for gear to get snagged. The footprint comprises the full permanent seabed area of structures, scour protection, cable crossings and cable protection. Therefore, the worst case assumption presented here is highly precautionary.<br><br>As it is assumed that there will be complete loss of grounds/fishing opportunity within the Windfarm Site during the operational life of the Project, the physical presence of offshore wind farm infrastructure leading to gear snagging is assessed principally for the Offshore Export Cable Corridors. |

| Impacts | Parameters | Notes and Rationale |
|---|---|---|
| | Post-lay rock berm area for IAC crossings (two crossings, 300 m length, 7 m width) = 0.0042 $km^2$ in total<br>Post-lay rock berm area for export cable crossings (five crossing, 300 m length, 10 m width) = 0.015 $km^2$<br>Post-lay rock berm area for interconnector crossings = (six crossings, 300 m length, 10 m width) = 0.018 $km^2$<br><br>**Offshore Substation Platform**<br>Foundation footprint based on four suction pile jackets and scour protection (982.5 $m^2$ per pile) = 0.004 $km^2$ | |
| Displacement or disruption of commercially important fish and shellfish resources (O4) | See **Chapter 10: Fish and Shellfish Ecology** | The scenarios presented in **Chapter 10: Fish and Shellfish Ecology** provide for the greatest disturbance to fish and shellfish species and therefore the greatest potential knock-on effect to commercial fisheries. |
| O&M activities leading to additional steaming to alternative fishing grounds (O5) | As per 'Worst Case' assumption for Reduction in access to, or exclusion from established fishing grounds during O&M. | This represents the maximum duration and extent of long term fishing exclusion throughout the construction phase and hence the greatest potential for displacement. |
| Increased vessel traffic within fishing grounds leading to interference with fishing activity (O6) | Total of 8 round trips per year for the project duration (35 years) | 8 round trips per year have been assumed for O&M activities |
| **Decommissioning** | | |
| Reduction in access to, or exclusion from established fishing grounds (D1) | **Total Temporary Reduction:**<br><br>**WTGs**<br><br>• 500 m Safety Zones around decommissioning activities = 0.79 $km^2$ per structure under decommissioning at any one time; and<br>• 50 m Safety Zones around incompletely decommissioned structures = 0.008 $km^2$ per partially decommissioned structure at any one time.<br><br>**Offshore Cables**<br><br>• Removal of IAC (134 km length, 10 m width) = 1.34 $km^2$<br>• Removal of Landfall Export Cable (240 km length, 10 m width) = 2.40 $km^2$<br>• Removal of Buzzard Export Cable (60 km length, 10 m width) = 0.6 $km^2$<br>• Roaming 500 m safe passing distance/safety zone for mobile decommissioning vessels (0.79 $km^2$)<br>• Removal of cable protection for IAC (20 m length, 10 m width) = 0.0002 km2, 0.007 $km^2$ in total<br>• Removal of cable protection for Offshore Export Cables (6 km length, 10 m width) = 0.06 $km^2$<br>• Removal of rock berm area for IAC crossings (two crossings, 300 m length, 7 m width) = 0.0042 $km^2$ | This represents the maximum duration and extent of temporary fishing exclusion throughout decommissioning and hence the greatest potential to restrict access to fishing grounds. The footprint comprises the removal of full permanent seabed area of structures, scour protection, cable crossings and cable protection plus the temporary footprint of works including removal of offshore cables and other infrastructure from the seabed. The impact also incorporates Safety Zones around major activities.<br><br>It is important to note that the temporal aspect of temporary works will not apply in full throughout decommissioning, as activities will be completed sequentially in the majority of cases. Therefore, the worst case assumption presented here is highly precautionary. |

| Impacts | Parameters | Notes and Rationale |
|---|---|---|
| | • Removal of rock berm area for Landfall Export Cable crossings (five crossing, 300 m length, 10 m width) = 0.015 $km^2$<br>• Removal of rock berm area for Buzzard Export Cable crossings = (six crossings, 300 m length, 10 m width) = 0.018 $km^2$<br><br>**Offshore Substation Platform**<br><br>• 500 m Safety Zones around decommissioning activities = 0.79 $km^2$ per structure under decommissioning at any one time; and<br>• 50 m Safety Zones around incompletely decommissioned structures = 0.008 $km^2$ per partially decommissioned structure at any one time. | |
| Displacement, leading to gear conflict and increased fishing pressure in adjacent grounds (D2) | As per 'Worst Case' assumption for reduction in access to, or exclusion from established fishing grounds during decommissioning. | This represents the maximum duration and extent of temporary fishing exclusion throughout the decommissioning phase and hence the greatest potential for displacement. |
| Physical presence offshore wind farm infrastructure leading to gear snagging (D3) | **Physical Presence of Infrastructure**<br><br>**Offshore Cables**<br><br>Rock berms (10 m width, 1.5 m height).<br>Cable protection for IAC (20 m length, 10 m width) = 0.0001 $km^2$<br>Cable protection for Offshore Export Cables (6 km length, 10 m width) = 0.6 $km^2$<br><br>Post-lay rock berm area for IAC crossings (two crossings, 300 m length, 7 m width) = 0.00042 $km^2$<br>Post-lay rock berm area for Offshore Export Cable crossings (five crossing, 300 m length, 10 m width) = 0.0015 $km^2$<br>Post-lay rock berm area for interconnector crossings = (six crossings, 300 m length, 10 m width) = 0.0018 $km^2$ | This represents the maximum extent of cables and associated rock protection which may be left in-situ after decommissioning, subject to stable seabed sediments, and hence the greatest potential to for gear to get snagged.<br><br>Following decommissioning of the project the marine area formally occupied by the Windfarm Site and associated infrastructure will be left to allow ongoing use by other users of the sea. Guidelines applicable at the time of decommissioning will be followed. |
| Displacement or disruption of commercially important fish and shellfish resources (D4) | See **Chapter 10: Fish and Shellfish Ecology** | The scenarios presented in **Chapter 10: Fish and Shellfish Ecology** provide for the greatest disturbance to fish and shellfish species and therefore the greatest potential knock-on effect to commercial fisheries. |
| Decommissioning activities leading to additional steaming to alternative fishing grounds (D5) | As per 'Worst Case' assumption for reduction in access to, or exclusion from established fishing grounds during decommissioning. | This represents the maximum duration and extent of temporary fishing exclusion throughout the decommissioning phase and hence the greatest potential for displacement. |

| Impacts | Parameters | Notes and Rationale |
|---|---|---|
| Increased vessel traffic within fishing grounds leading to interference with fishing activity (D6) | As per 'Worst Case' assumption for increased vessel traffic within fishing grounds during construction leading to interference with fishing activity | The maximum number of turbines and associated infrastructure will lead to the highest level of decommissioning activities and therefore the highest level of round trips. |
| **Cumulative** | | |
| All impacts | As for the 'Worst Case' assumptions given for all impacts for each Project phase above. | All identified other projects that have potential to overlap with this Project are assumed to impact on the same receptors, either simultaneously or sequentially, depending on the greatest impact. |
| Transboundary | | |
| All impacts | As for the 'Worst Case' assumptions given for all impacts for each Project phase above. | The assessment is conducted independent of national geographical boundaries as fishing takes place across borders in line with national and international legislation. |

### 13.8.3 Potential Impacts during Construction

122. The duration of floating offshore wind turbine construction activities is significantly shorter than that of traditional fixed foundation wind turbines, as it is proposed that WTGs are assembled at port facilities prior to being towed to the Windfarm Site.

123. Active construction activities offshore are anticipated to last less than 2 years. The WTGs (up to 35) are expected to be installed by 2027 with the assumption that one substructure and corresponding floating turbine can be assembled and towed out to site each week. It is anticipated that only one WTG (and associated floating substructure) will be installed at one time.

124. Construction will include pre-construction activities, including seabed preparation works such as unexploded ordnance (UXO) removal, boulder clearance, and sandwave excavation as required.

125. The Offshore Export Cables will be buried to minimum 0.6 m Depth of Lowering (DoL), in up to two trenches up to 50 m apart. Installation methods may include trenching, jetting, mechanical cutting and ploughing, with ploughing considered to be the worst case scenario.

126. As described in **Section 13.8.1**, a number of mitigation measures will be implemented to minimise the disturbance to fishing during the construction phase, including:

- Appointment of a Project FLO for the duration of the construction phase;
- Adherence to Good Practice Guidance on the approach to fisheries liaison and mitigation (e.g., FLOWW, 2014; 2015);
- Promulgation of NtMs, Kingfisher Bulletins, and Navigational Warnings prior to commencement of Construction activities; and
- Use of guard vessels to work alongside construction vessels to monitor potential interactions.

127. The full description of construction activities is provided in **Chapter 5: Project Description.**

#### 13.8.3.1 Impact C1: Reduction in access to, or exclusion from established fishing grounds during construction

128. During construction of the Offshore Infrastructure, commercial fisheries may temporarily have reduced access to fishing grounds, or be temporarily excluded from fishing in discrete areas. This could be in response to installation activities and the physical presence of constructed infrastructure, see below.

129. Temporary reduction in access to, or exclusion from fishing grounds will cover areas where construction of WTGs is ongoing, and additionally include up to 500 m safety zones or up to 500m safe passing distance for mobile installation vessels (total 0.79 $km^2$).

130. It is anticipated that only one WTG (and associated floating substructure) will be installed at any one time. After each WTG is installed, but prior to commissioning, 50-m statutory safety zones may be implemented around installed structures until commissioning.

131. During the winter period between the construction stages, if required, the site will be marked or guard vessels will be present and fishing vessels may have restricted access to these grounds in areas where anchors have been pre-installed during this period.

132. During installation of the Offshore Export Cables, temporary loss of access to fishing grounds will occur where 500m advisory safety zones are in place around installation vessels; and in areas of unburied cable which are awaiting burial or additional remedial protection. The cable installation vessels will be present for approximately 6 months, with localised areas of exclusion along the Landfall and Buzzard Export Cable Corridors throughout this time period.

**Demersal Fisheries - Nephrops, Squid and Whitefish**

133. As presented in the baseline of this chapter, Nephrops is the main target species in the Study Area, although there is some additional demersal trawling activity for squid, and for demersal whitefish (haddock, monks/anglers and whiting).

134. As **Figure 13.15** illustrates, the southeastern corner of the Windfarm Site overlaps with Nephrops grounds, where Nephrops trawling takes place at moderate to high levels. Demersal trawling for squid takes place at much lower levels and is of comparatively limited importance in the regional context of the Moray Firth squid fishery (**Figure 13.18**). Demersal whitefish are also targeted in the Study Area, concentrating in areas in ICES rectangle 44E9 where the Windfarm Site is located (**Figure 13.15** and **Figure 13.22**).

135. While the landings value of Nephrops trawling in the Study Area is high and the southeastern boundary of the Offshore Infrastructure Zone overlaps with known Nephrops grounds, this constitutes a very small extent of the available grounds for Nephrops trawlers, with vessels typically 18 to 24 m in length with large operational ranges in areas of suitable Nephrops habitat (**Figure 13.15**). The area of overlap by the Windfarm Site with suitable Nephrops habitat is just 0.1%[7] of the total Nephrops habitat recorded in FU7. Demersal trawlers are therefore considered receptors of low sensitivity.

136. The reduction in access or exclusion from fishing grounds associated with construction activities will be short term (less than two years) in localised areas that overlap with known trawling grounds. Therefore, and in accounting for mitigation measures as outlined in **Section 13.8.1** the impact of reduction in access to or exclusion from fishing grounds during construction activities for demersal trawling is of low magnitude.

137. Considering the low receptor sensitivity and low magnitude of impact, the effect on the demersal trawling fisheries as a result of reduction in access to or exclusion from fishing grounds during construction activities is considered to be **negligible adverse** and therefore **not significant**.

**Creeling – Lobster and Crab Fishery**

138. As described in **Section 13.6.3**, creeling activity predominantly takes place by smaller vessels (under 10 m) in the inshore areas of ICES rectangles 43E8 and 44E8, within 12 nm where the Offshore Export Cable Corridors and landfalls are located (**Figure 13.26** to **Figure 13.28**). Vessels engaged in this fishery account for approximately 16 % of total landings value across the Study Area annually.

139. As the inshore creeling fleet is comprised of smaller size vessels with limited operational ranges and therefore comparatively limited fishing opportunities; the lobster and crab creel fishery is considered to be of medium sensitivity.

140. The reduction in access or exclusion from fishing grounds associated with construction activities will be short term (less than two years) and will be localised to areas where Safety Zones are implemented around vessels engaged in cable installation activities. However, during construction activities, the Offshore Export Cable Corridors must remain clear of static gear, which requires the temporary removal or relocation of creels at these locations. Considering mitigation measures as outlined in **Section 13.8.1**, the impact of reduction in access to or exclusion from fishing grounds during construction activities for creelers is of low magnitude.

141. Considering the medium receptor sensitivity and low magnitude of impact, the effect on the lobster and crab creel fishery as a result of reduction in access to or exclusion from fishing grounds during construction activities is considered to be **minor adverse** and therefore **not significant.**

[7] *The total area of the suitable nephrops habitat within the Fladen FU is 30,541.86 km$^2$. The area of suitable nephrops habitat impacted by the Offshore Development Area is 30.96 km$^2$*

**Dredging – Scallop Fishery**

142. As described in **Section 13.6.4**, the scallop fishing fleet is primarily active along the Offshore Export Cable Corridor in ICES rectangles 43E8 and 44E8, with very limited activity taking place in ICES rectangle 44E9 where the Windfarm Site is located.

143. Activity is shown to be concentrated between the 6 and 12 nm limit in ICES rectangles 43E8 and 44E8, with landings accounting for 63% and 13% of value in these rectangles respectively.

144. Scallop dredgers in the Study Area are generally over 18 m in length and are a high-value fishery in the Study Area, however, considering the wide operational ranges of nomadic scallop dredgers, the sensitivity of the fishery is considered to be low.

145. The reduction in access or exclusion from fishing grounds associated with construction activities will be short term (less than two years) and will be localised to areas where Safety Zones are implemented around vessels engaged in cable installation activities. Considering mitigation measures as outlined in **Section 13.8.1**, the impact of reduction in access to or exclusion from fishing grounds during construction activities for scallop dredgers is of low magnitude.

146. Considering the low receptor sensitivity and low magnitude of impact, the effect on the scallop dredge fishery as a result of reduction in access to or exclusion from fishing grounds during construction activities is considered to be **negligible adverse** and therefore **not significant.**

**Pelagic Trawling – Herring Fishery**

147. The herring fishery in the Study Area is undertaken by vessels principally over 40 m in length, concentrating activity in ICES rectangle 44E9. However, in the regional context, the landings in the Study Area are relatively low, particularly in comparison to ICES rectangle 43E9 (**Figure 13.37**).

148. Considering the large operational ranges and lower value importance of the herring fishery in comparison to other herring grounds in the region, the sensitivity of the herring fishery is considered to be low.

149. The reduction in access or exclusion from fishing grounds associated with construction activities will be short term (less than two years) and will be localised to areas where Safety Zones are implemented around vessels engaged in construction activities. Considering mitigation measures as outlined in **Section 13.8.1**, the impact of reduction in access to or exclusion from fishing grounds during construction activities for the pelagic herring fishery is of low magnitude.

150. Considering the low receptor sensitivity and low magnitude of impact, the effect on the pelagic herring fishery as a result of reduction in access to or exclusion from fishing grounds during construction activities is considered to be **negligible adverse** and therefore **not significant.**

**Inshore Mackerel Fishery**

**151.** As described in **Section 13.6.6**, the inshore mackerel fishery takes place primarily within 6 nm from vessels under 10 m in length, in areas that may overlap with the Landfall Export Cable Corridor and landfall locations, as indicated by **Figure 13.42.**

152. As the mackerel jigging fleet is comprised of smaller size vessels with limited operational ranges, and therefore comparatively limited fishing opportunities, the inshore mackerel fishery is considered to be of medium sensitivity.

153. The reduction in access or exclusion from fishing grounds associated with construction activities will be short term (less than two years) and will be localised to areas where Safety Zones are implemented around vessels engaged in cable installation activities. Considering mitigation measures as outlined in **Section 13.8.1**, the impact of reduction in access to or exclusion from fishing grounds during construction activities for the mackerel fishery is of low magnitude.

154. Considering the medium receptor sensitivity and low magnitude of impact, the e on inshore mackerel fishery as a result of reduction in access to or exclusion from fishing grounds during construction activities is considered to be **minor adverse** and therefore **not significant.**

### 13.8.3.2 Impact C2: Displacement, leading to fishing gear conflict and increased fishing pressure within adjacent grounds during construction

155. As described in **Section 13.8.3.1**, during construction of the Offshore Infrastructure, commercial fisheries may temporarily have reduced access to or be fully restricted from fishing in discrete areas where construction activities are taking place/safety zones are in force.

156. The temporary lack of access to these locations as described above may result in short-term displacement of fishing activity into other areas.

157. For vessels that deploy static gear such as the lobster and crab creel fishery, gear conflict may arise where creels have been relocated into fishing grounds where other creelers/static gear or mobile vessels operate. Vessels using mobile gear, such as scallop dredgers or demersal trawlers, may also be displaced into adjacent grounds where other mobile or static gear vessels work, increasing competition for fishing grounds and leading to gear conflict.

158. The level of displacement of fishing activity will be directly related to the extent of reduction in access to or exclusion from traditional fishing grounds. Therefore, the magnitude of impact, receptor sensitivity and overall significance of the effect will be the same as for the extent of reduction in access to or exclusion from fishing grounds during construction activities, as shown in **Table 13.11**.

*Table 13.11 Assessment of the impacts of displacement leading to fishing gear conflict and increased fishing pressure within adjacent grounds during construction*

| Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|
| Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible adverse |
| Creeling – Lobster and Crab Fisheries | Medium | Low | Minor adverse |
| Dredging – Scallop Fishery | Low | Low | Negligible adverse |
| Pelagic Trawling – Herring Fishery | Low | Low | Negligible adverse |
| Inshore Mackerel Fishery | Medium | Low | Minor adverse |

### 13.8.3.3 Impact C3: Physical presence of offshore wind farm infrastructure leading to fishing gear snagging

159. There is potential for construction activities to create seabed obstacles (e.g. temporary laydown areas) which may present a potential fishing gear snagging risk. To mitigate against this risk, temporary construction Safety Zones will be implemented, restricting the access of all vessels to the Project Site. Should any objects be accidentally dropped, the MCA, MS-LOT and other relevant parties will be informed as soon as possible and the location of the dropped object provided to the commercial fishing industry through Kingfisher charts and UKHO. Dropped objects will be recovered if possible; in which case updated notifications will be sent to all relevant parties.

160. For fishermen, the cost or gear repair or replacement, and the loss of fishing time as a result of gear snagged, has economic implications. Safety implications are assessed separately in **Chapter 14: Shipping and Navigation**.

**All Fisheries**

161. During construction, the principal potential impact pathways for fishing gear snagging are:

- Offshore cables temporarily laid on the seabed awaiting burial/external protection; and
- Seabed obstacles, e.g. accidentally dropped objects.

162. It is assumed that should gear snagging occur, the fishing gear will be damaged or lost. Considering the limited ability of all fisheries to adapt to snagging risks, the sensitivity of all fisheries is considered to be medium.

163. A number of embedded mitigation measures will be applied by the Project to reduce impacts of snagging on fishing vessels:

- 500 m Safety Zones around any structure where construction work is underwater, as indicated by the presence of a large construction vessel(s);
- 50 m Safety Zones around any partially completed structure during the construction phase where work is not underway;
- Guard vessels will also be used where applicable to ensure adherence with Safety Zones or advisory passing distances to mitigate impacts which pose a gear snagging risk during construction
- Development of a procedure for the claim of loss of/or damage to fishing gear; and
- Appointment of a Project FLO for the duration of the construction phase.

164. Snagging risks will be limited to discrete areas where construction works are ongoing, and will be short-term in nature (less than two years). Accounting for embedded mitigation measures as above, the magnitude of impact is considered to be low.

165. Considering the medium receptor sensitivity and low magnitude of impact, the effect on all fisheries as a result of physical presence of offshore wind farm infrastructure leading to gear snagging during construction is considered to be **negligible adverse** and therefore **not significant**.

#### 13.8.3.4 Impact C4: Displacement or disruption of commercially important fish and shellfish resources during construction

166. There is potential for construction activities to result in displacement or disruption of commercially important fish and shellfish resources, with subsequent negative effects on the productivity of commercial fisheries in the area.

167. **Chapter 10: Fish and Shellfish Ecology** assesses the potential impacts of the construction phase on commercially important fish and shellfish, and includes consideration of the following for the construction phase:

- Physical disturbance and temporary habitat loss;
- Increased suspended sediments and sediment re-deposition;
- Re-mobilisation of contaminated sediments and sediment redistribution; and
- Underwater noise and vibration.

168. No effects above minor adverse were identified in **Chapter 10: Fish and Shellfish Ecology.** As such, no effects associated with this are anticipated to exceed **minor adverse** significance for commercial fisheries, and are therefore deemed **not significant**.

#### 13.8.3.5 Impact C5: Construction activities leading to additional steaming to alternative fishing grounds

169. As described in **Section 13.8.3.1**, during construction of the Offshore Infrastructure, commercial fisheries may temporarily have reduced access to or be excluded from fishing in discrete areas where construction activities are taking place/Safety Zones are in force.

170. The temporary lack of access to these locations as described above may result in short-term displacement of fishing activity into other areas, and in increased steaming to alternative fishing grounds, and therefore increased operational costs for the affected fishing vessels.

171. The level of additional steaming will be directly related to the extent of reduction in access to or exclusion from traditional fishing grounds. Therefore, the magnitude of impact, receptor sensitivity and overall significance of the effect will be the same as for the extent of reduction in access to or exclusion from fishing grounds during construction activities, as shown in **Table 13.11**.

*Table 13.12 Assessment of the impacts of construction activities leading to additional steaming to alternative fishing grounds*

| Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|
| Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible adverse |
| Creeling – Lobster and Crab Fisheries | Medium | Low | Minor adverse |
| Dredging – Scallop Fishery | Low | Low | Negligible adverse |
| Pelagic Trawling – Herring Fishery | Low | Low | Negligible adverse |
| Inshore Mackerel Fishery | Medium | Low | Minor adverse |

#### 13.8.3.6 Impact C6: Increased vessel traffic within fishing grounds during construction leading to interference with fishing activity

172. For construction, there are a large number of vessel movements with vessels transiting to and from port and the Windfarm Site/active construction areas in the Offshore Development Area. Potential effects on fishing vessels include fouling of gear, and alteration of course. The assessment assumes up to 212 return trips over a 6 month construction period.

**Creeling – Lobster and Crab Fishery**

173. It is anticipated that the primary impact interfering with the creel fishery as a result of increased vessel traffic within fishing grounds during construction is the fouling of gear markers. While there are specific requirements for the marking of static gear (MMO, 2016), it is acknowledged that marker buoys are often marked incorrectly and are therefore not visible in all conditions. As local creel fisheries have limited operational range and the static nature of the creels, the sensitivity of the fishery is medium.

174. The impact will be localised to discrete areas and occur infrequently, with a range of mitigation measures implemented:

- As described in **Section 13.8.1**, the Project will ensure to maintain effective communications with the fishing industry, and to disseminate key information on construction activities. Communications will include NtMs, Kingfisher Bulletins, Radio Navigational Warnings. Additionally, the Project FLO will relay up to date information to fishermen in the area, and notify construction vessels of static gear locations where appropriate.
- All Project vessels will follow the COLREGS and SOLAS regulations.
- A procedure for the claim of loss of/or damage to fishing gear will be developed.

175. Therefore the magnitude of impact is considered to be low.

176. Considering the medium receptor sensitivity and magnitude of impact, the effecton lobster and crab creel fisheries as a result of increased vessel traffic within fishing grounds during construction leading to interference with fishing activity is considered to be **minor adverse** and therefore **not significant**.

**Mobile Fisheries**

177. Vessels operating mobile gears (mackerel jigging, demersal trawlers, seines, scallop dredgers and pelagic trawlers), have higher mobility and therefore, the sensitivity to interference is considered to be low. As for creel fisheries, the impact will be localised to discrete areas and occur infrequently, with a range of mitigation measures applied, including dissemination of effective communications

from the Project to fishermen on the nature of construction works and associated vessel movements, and adherence of Project vessels to COLREGS and SOLAS.

178. In light of these mitigation measures, there should be no requirement for fishing vessels operating mobile gears to alter course or pose any risk to gear snagging. The magnitude of impact is therefore considered to be low.

179. Considering the low receptor sensitivity and low magnitude of impact, the effect on mobile fisheries as a result of increased vessel traffic within fishing grounds during construction leading to interference with fishing activity is considered to be **negligible adverse** and therefore **not significant**.

### 13.8.4 Potential Impacts during Operation and Maintenance

180. In line with the Sectoral Marine Plan for Offshore Wind Energy – Social and Economic Impact Assessment Report – Final (2019), the worst case scenario assumes full exclusion from the Windfarm Site/complete loss of fishing grounds due to floating turbine design and catenary mooring system during the 35-year operational lifetime of the Project. However, it is noted that transit through the site may be undertaken at the mariners discretion with turbines spacing at minimum 1,540 m.

181. Fishing may continue at the mariner's own discretion[8] along the Offshore Export Cable Corridors. The Offshore Export Cables will be buried to a minimum DoL of 0.6 m. Where this is not possible due to seabed conditions, and external protection is required, the rock berm height and slope will be designed to provide the correct level of protection and long-term stability. In areas where fishing activity is likely, the Applicant will engage with relevant stakeholders to ensure berm design is suitable, accounting for potential impacts to commercial fisheries. Approximately 0.1042 km$^2$ of rock protection is anticipated to be required along the Offshore Export Cable Corridors, including all crossings.

182. As described in **Section 13.8.1**, a number of mitigation measures will be implemented to minimise the disturbance to fishing during the O&M phase, including:

- Adherence to Good practice guidance on the approach to fisheries liaison and mitigation (e.g., FLOWW, 2014; 2015).
- Should any cable exposures be identified during the O&M phase, the location of the exposure will be shared with fisheries stakeholders, and temporary safety measures implemented, including 500m safety zones implemented where requires around active maintenance works.
- Use of guard vessels where appropriate during maintenance works to monitor potential interactions.
- 50 m safety zones implemented around operational WTGs.
- Development of an FMMS to set out the Project's approach to fisheries management and mitigation during the lifetime of the Project.
- Assessments will be undertaken post-installation to determine cable burial status (including cable protection) and identify potential changes to seabed conditions. Post cable installation survey data will be reviewed to confirm cable burial status and confirm any areas of cable protection are within specification (e.g. cable crossings). The findings will then be shared with the fishing industry. Recommendations by FIRs will be considered as appropriate, based on activity levels and the importance of specific areas to the fishing industry. Over-trawl trials will be considered where key fishing areas are identified along the export cable route, as appropriate.

183. A description of all O&M activities anticipated throughout the 35-year life of the Project is given in **Chapter 5: Project Description**.

184. The same receptor sensitives identified for the construction phase apply to the assessment of impacts during O&M.

[8] *It is recommended that mariners follow the guidance issued in MGN 661 (M+F) Navigation - safe and responsible anchoring and fishing practices*

185. In some instances, it has been relevant to separate impacts for the Windfarm Site and the Offshore Export Cable Corridors. However, the effect with the highest significance will be taken forward to the Summary (see **Section 13.12**) as representative effect significance for the Offshore Development Area as a whole.

#### 13.8.4.1 Impact O1: Reduction in access to, or exclusion from established fishing grounds during O&M

186. While UK legislation does not preclude fishing activity from taking place within operational wind farms, as noted above, it is assumed that fishing activities will be permanently restricted in the ability to operate within the Windfarm Site during O&M due to the floating design. The worst case assumption therefore considers that vessels using mobile fishing gear will be excluded within the Windfarm Site, covering 116 $km^2$. It is anticipated that fishing activity may resume in areas that overlap with the Offshore Export Cable Corridors during O&M.

**Demersal Fisheries - Nephrops, Squid and Whitefish**

187. The sensitivity of demersal fisheries to the loss of fishing grounds during O&M is as described for construction (see **Section 13.8.3.1**) – low.

188. The potential reduction in access to, or exclusion from established fishing grounds during O&M for demersal fisheries will include full exclusion from the Windfarm Site. However, it is only a small area of the southeastern boundary where Nephrops trawling may take place, with limited activity by demersal fisheries elsewhere in the Windfarm Site.

189. In the context of the range of available Nephrops grounds and the lower importance of other demersal fisheries in the Study Area, and in considering the embedded mitigation measures as described in **Section 13.8.1**, the magnitude of impact for demersal fisheries is medium in the Windfarm Site.

190. Short term exclusions may also apply along the Offshore Export Cable Corridors. These maintenance works will be short term and infrequent in highly localised areas, with Safety Zones of 500 m radius around maintenance vessels. The magnitude of impact for the demersal fisheries in the Offshore Export Cable Corridor is negligible.

191. Considering the low receptor sensitivity and medium magnitude of impact, the effect on demersal fisheries, including the Nephrops fishery as a result of reduction in access to or exclusion from fishing grounds during O&M in the Windfarm Site is considered to be **minor adverse** and therefore **not significant**.

**Creeling – Lobster and Crab Fishery**

192. The sensitivity of creelers to the loss of fishing grounds during O&M is as described for construction (see **Section 13.8.3.1**) – medium.

193. The potential reduction in access to, or exclusion from established fishing grounds during O&M for creelers will be limited to exclusions associated with maintenance works on the inshore sections of the Offshore Export Cable Corridors. These maintenance works will be short term and infrequent in highly localised areas, with Safety Zones of 500 m radius around maintenance vessels. In taking account of the embedded mitigation measures as described in **Section 13.8.1**, the magnitude of impact is considered to be low.

194. Given that the creel fishery is not active in the Windfarm Site, exclusion from these grounds can be precluded and therefore the magnitude of impact negligible.

195. Considering the medium receptor sensitivity and low magnitude of impact, the effect on the lobster and crab creel fishery as a result of reduction in access to or exclusion from fishing grounds during O&M along the Offshore Export Cable Corridors is considered to be **minor adverse** and therefore **not significant**.

**Dredging – Scallop Fishery**

196. The sensitivity of scallop dredgers to the loss of fishing grounds during O&M is as described for construction (see **Section 13.8.3.1**) – low.

197. The potential reduction in access to, or exclusion from established fishing grounds during O&M for scallop dredgers will be limited to exclusions associated with maintenance works on the Offshore Export Cable Corridors, primarily between 6 and 12 nm, and in areas where external cable protection is used. Maintenance works will be short term and infrequent in highly localised areas, with Safety Zones of 500 m radius around maintenance vessels. External cable protection is a long-term impact, however will only be deployed in areas where burial cannot be achieved, and constitute a small percentage of areas targeted by scallop dredgers in the Offshore Development Area, and only a minimal proportion of the total areas that are available to scallop dredgers. In taking account of the embedded mitigation measures as described in **Section 13.8.1**, the magnitude of impact is considered to be negligible.

198. The activity of scallop dredgers within the Windfarm Site is limited, and therefore, exclusion from these grounds can be precluded, and therefore the magnitude of impact negligible.

199. Considering the low receptor sensitivity and negligible magnitude of impact, the effect on scallop dredge fishery as a result of reduction in access to or exclusion from fishing grounds during O&M along the Offshore Export Cable Corridors is considered to be **negligible adverse** and therefore **not significant**.

**Pelagic Trawling – Herring Fishery**

200. The sensitivity of pelagic herring trawlers to the loss of fishing grounds during O&M is as described for construction (see **Section 13.8.3.1**) – low.

201. Considering the large operational ranges and lower value importance of the herring fishery in comparison to other herring grounds in the region, the sensitivity of the herring fishery is considered to be low.

202. The potential reduction in access to, or exclusion from established fishing grounds during O&M for the herring fishery will include full exclusion from the Windfarm Site. However, in the context of the fishing grounds available to herring trawlers, and the comparatively lower value of the fishery in ICES rectangle 44E9 compared to rectangles such as 43E9 outside the Study Area, the magnitude of impact is considered to be low. Other short term and localised exclusions may apply during the implementation of Safety Zones around maintenance works on the Offshore Export Cable Corridors, however, the herring fishery is only minimally active in these areas and therefore the impact is anticipated to be negligible.

203. Considering the low receptor sensitivity and low magnitude of impact, the effect on the pelagic herring fishery as a result of reduction in access to or exclusion from fishing grounds during O&M is considered to be **negligible adverse** and therefore **not significant**.

**Inshore Mackerel Fishery**

204. The sensitivity of the inshore mackerel fishery to the loss of fishing grounds during O&M is as described for construction (see **Section 13.8.3.1**) – medium.

205. The potential reduction in access to, or exclusion from established fishing grounds during O&M for the inshore mackerel fishery will be limited to exclusions associated with maintenance works on the inshore sections of the Offshore Export Cable Corridors. These maintenance works will be short term and infrequent in highly localised areas, with Safety Zones of 500 m radius around maintenance vessels. In taking account of the embedded mitigation measures as described in **Section 13.8.1**, the magnitude of impact is considered to be low.

206. Given that the fishery is not active in the Windfarm Site, exclusion from these grounds can be precluded and therefore the magnitude of impact negligible.

207. Considering the medium receptor sensitivity and low magnitude of impact, the effect on inshore mackerel fishery as a result of reduction in access to or exclusion from fishing grounds during O&M is considered to be **minor adverse** and therefore **not significant**.

### 13.8.4.2 Impact O2: Displacement, leading to fishing gear conflict and increased fishing pressure adjacent grounds during O&M

208. As it is assumed that exclusion from the Windfarm Site, cable protection measures and ad-hoc maintenance works will result in long term loss of fishing grounds, there is potential for displacement of fishing, leading to gear conflict and increased fishing pressure in adjacent fishing grounds during O&M.

209. As described in **Section 13.8.3.2**, for vessels that deploy static gear, gear conflict may arise where creels have been relocated into fishing grounds where other creelers/static gear or mobile vessels operate. Vessels using mobile gear may also be displaced into adjacent grounds where other mobile or static gear vessels work, increasing competition for fishing grounds and leading to gear conflict.

210. The level of displacement of fishing activity will be directly related to the extent of reduction in access to or exclusion from traditional fishing grounds. Therefore, the magnitude of impact, receptor sensitivity and overall significance of the effect will be the same as for the extent of reduction in access to or exclusion from fishing grounds during O&M, as shown in **Table 13.13**.

*Table 13.13 Assessment of the imapcts of displacement leading to fishing gear conflict and increased fishing pressure within adjacent grounds during O&M*

| Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|
| **Windfarm Site** | | | |
| Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Medium | Minor adverse |
| Creeling – Lobster and Crab Fisheries | Medium | Negligible | Negligible adverse |
| Dredging – Scallop Fishery | Low | Negligible | Negligible adverse |
| Pelagic Trawling – Herring and Mackerel | Low | Low | Negligible adverse |
| Mackerel Jigging | Medium | Negligible | Negligible adverse |
| **Export Cable Corridor** | | | |
| Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Negligible | Negligible adverse |
| Creeling – Lobster and Crab Fisheries | Medium | Low | Minor adverse |
| Dredging – Scallop Fishery | Low | Negligible | Negligible adverse |
| Pelagic Trawling – Herring and Mackerel | Low | Negligible | Negligible adverse |
| Mackerel Jigging | Medium | Low | Minor adverse |

### 13.8.4.3 Impact O3: Physical presence of offshore wind farm infrastructure leading to fishing gear snagging

211. There is potential for the physical presence of offshore wind farm infrastructure to result in gear snagging, and associated damage or loss of fishing gear. For fishermen, the cost of gear repair or replacement, and the loss of fishing time, has economic implications. Safety implications are assessed separately in **Chapter 14: Shipping and Navigation**.

212. As it is assumed that fishing will be excluded from the Windfarm Site, with only transiting taking place through the Windfarm Site, the impact of gear snagging due to infrastructure within the Windfarm Sites is of negligible magnitude for all receptors.

213. Snagging impacts arising from the presence of the Offshore Export Cable Corridors is assessed for commercial fisheries receptors in further detail below. The assessment includes areas where external cable protection is used, as well as areas where cables may become temporarily exposed.

**All Fisheries**

214. It is assumed that should fishing gear snag on the Offshore Export Cables, the fishing gear will be damaged or lost. Considering the limited ability of all fisheries to adapt to snagging risks, the sensitivity of all fisheries is considered to be medium, as for construction (see **Section 13.8.3.3**)

215. A number of embedded mitigation measures will be applied by the Project to reduce impacts of snagging on fishing vessels:

- Should any cable exposures be identified during the O&M phase, the location of the exposure will be shared with fisheries stakeholders, and temporary safety measures implemented, including 500m Safety Zones implemented where required around active maintenance works or guard vessels where appropriate.
- Development of a procedure for the claim of loss of/or damage to fishing gear, which will require evidence to show activity levels and value of landings, also vessel certification (UK Fishing Vessel Certificate, fishing licence and inspection report).
- Cables will be installed and maintained in line with good practice guidance.
- Cables will be buried where possible. Where this is not possible due to seabed conditions, and external protection is required, the rock berm height and slope will be designed to provide the correct level of protection and long-term stability. In areas where fishing activity is likely, the Applicant will engage with relevant stakeholders to ensure berm design is suitable, accounting for potential impacts to commercial fisheries.
- Assessments will be undertaken to determine cable burial status (including cable protection) and identify potential changes to seabed conditions. Post cable installation survey data will be reviewed to confirm cable burial status and confirm any areas of cable protection are within specification (e.g. cable crossings). The findings will then be shared with the fishing industry. Recommendations by FIRs will be considered as appropriate, based on activity levels and the importance of specific areas to the fishing industry. Over-trawl trials will be considered where key fishing areas are identified along the export cable route, as appropriate.

216. Snagging risks will be limited to discrete areas where external cable protection is used, and in areas where cables become temporarily exposed, but impacts will be long-term throughout the life of the Project. Accounting for embedded mitigation measures as above, the magnitude of impact is considered to be low.

217. Considering the medium receptor sensitivity and low magnitude of impact, the effect on all fisheries as a result of physical presence of offshore wind farm infrastructure leading to gear snagging during O&M along the Offshore Export Cable Corridors and the Windfarm Site is considered to be **minor adverse** and therefore **not significant.**

### 13.8.4.4 Impact O4: Displacement or disruption of commercially important fish and shellfish resources during O&M

218. There is potential for O&M activities to result in displacement or disruption of commercially important fish and shellfish resources, with subsequent negative effects on the productivity of commercial fisheries in the area.

219. **Chapter 10: Fish and Shellfish Ecology** assesses the potential impacts of the O&M phase on commercially important fish and shellfish, and includes consideration of the following for the O&M phase:

- Temporary and permanent habitat loss;

- Re-mobilisation of contaminated sediments and sediment redistribution;
- Introduction of foundations, scour protection, hard substrate and habitats;
- Underwater noise and vibration; and
- EMF's.

220. No effects above minor adverse were identified in **Chapter 10: Fish and Shellfish Ecology.** As such, no effects associated with this are anticipated to exceed **minor adverse/beneficial** significance for commercial fisheries, and are therefore deemed **not significant**.

#### 13.8.4.5 Impact O5: O&M activities leading to additional steaming to alternative fishing grounds

221. As described in **Section 13.8.4.1**, during the O&M phase, it is assessed that commercial fisheries will be permanently excluded from fishing within the Windfarm Site, and may temporarily have reduced access to or be fully excluded from fishing in discrete areas where maintenance activities are taking place/Safety Zones are in force along the Offshore Export Cable Corridors.

222. The long-term exclusion from the Windfarm Site and temporary lack of access to areas of maintenance along the Offshore Export Cable Corridors may result in displacement of fishing activity into other areas, and in increased steaming to alternative fishing grounds, and therefore increased operational costs for the affected fishing vessels. It should be noted that transit through the Windfarm Site may continue at the mariners discretion.

223. The level of additional steaming will be directly related to the extent of reduction in access to or exclusion from traditional fishing grounds. Therefore, the magnitude of impact, receptor sensitivity and overall significance of the effect will be the same as for the extent of reduction in access to or exclusion from fishing grounds during O&M, as shown in **Table 13.14**.

*Table 13.14 Assessment of the impact of O&M activities leading to additional steaming to alternative fishing grounds*

| Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|
| **Windfarm Site** | | | |
| Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Medium | Minor adverse |
| Creeling – Lobster and Crab Fisheries | Medium | Negligible | Negligible adverse |
| Dredging – Scallop Fishery | Low | Negligible | Negligible adverse |
| Pelagic Trawling – Herring and Mackerel | Low | Low | Negligible adverse |
| Mackerel Jigging | Medium | Negligible | Negligible adverse |
| **Export Cable Corridor** | | | |
| Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Negligible | Negligible adverse |
| Creeling – Lobster and Crab Fisheries | Medium | Low | Minor adverse |
| Dredging – Scallop Fishery | Low | Negligible | Negligible adverse |
| Pelagic Trawling – Herring and Mackerel | Low | Negligible | Negligible adverse |
| Mackerel Jigging | Medium | Low | Minor adverse |

#### 13.8.4.6 Impact O6: Increased vessel traffic within fishing grounds during O&M leading to interference with fishing activity

224. During O&M, the only vessel activity associated with the Project is anticipated to be as a result of maintenance works. As for vessel traffic associated with construction activities, the potential effects on commercial fisheries receptors include fouling of gear, and alteration of course. The assessment assumes up to 8 return trips per year throughout the operational life of the Project (35 years).

**Creeling – Lobster and Crab Fishery**

225. As for the construction phase (see **Section 13.8.3.6**), the sensitivity of the creel fishery is assessed to be medium.

226. The same mitigation measures as described for the construction phase (see **Section 13.8.3.6**) would continue to apply, including:

- Maintaining effective communications and disseminating key information on any maintenance works to be undertaken;
- Adherence of Project vessels to COLREGS and SOLAS; and
- Implementation of procedure to claim of loss of/or damage to fishing gear.

227. Given the low level of vessel traffic anticipated, the magnitude of impact is considered to be negligible.

228. Considering the medium receptor sensitivity and negligible magnitude of impact, the effect on lobster and crab creel fisheries as a result of increased vessel traffic within fishing grounds during O&M leading to interference with fishing activity is considered to be **minor adverse** and therefore **not significant**.

**Mobile Fisheries**

229. As for the construction phase (see **Section 13.8.3.6**), the sensitivity of mobile fisheries is assessed to be low.

230. As for creel fisheries, the impact will be localised to discrete areas and occur infrequently, with a range of mitigation measures applied, including dissemination of effective communications from the Project to fishermen on the nature of maintenance works and associated vessel movements, and adherence of Project vessels to COLREGS and SOLAS. The magnitude of impact is therefore considered to be negligible.

231. Considering the low receptor sensitivity and negligible magnitude of impact, the effect on mobile fisheries as a result of increased vessel traffic within fishing grounds during O&M leading to interference with fishing activity is considered to be **negligible adverse** and therefore **not significant**.

### 13.8.5 Potential Impacts during Decommissioning

232. In undertaking decommissioning of the Project at end-of-life, the Project will consider the option that delivers the most benefit or least damage to the environment, at an acceptable cost, alongside safety of navigation and other users of the sea. As described in **Chapter 5: Project Description,** prior to decommissioning, the Project will develop a Decommissioning Programme

233. Decommissioning impacts are considered to have largely the same effect as reversal of the construction process. It is anticipated the that WTGs and associated substructures and any foundations will be removed. As such, the effects identified in the impact assessment for the construction phase are applicable to the decommissioning phase.

234. However, if there are no issues with stakeholders/regulators and the risk of the cables becoming exposed is minimal, then the cables (and relevant scour protection) may be left in-situ to avoid disturbing the seabed unnecessarily. This will be determined through the undertaking of a comparative assessment. Should this infrastructure remain in-situ, the impacts identified in respect of the O&M phase for the reduction and exclusion from fishing grounds and displacement leading to

gear conflict, and physical infrastructure with potential to cause gear snagging, will also apply to the decommissioning phase, however, for the Offshore Export Cables only.

235. Embedded mitigation measures as described in **Section 13.8.1** will, where applicable, also apply to the decommissioning phase.

236. As such, **Table 13.15**, summarises the impact significance effects for commercial fisheries receptors during decommissioning. **Table 13.15** includes information on which phase decommissioning effects are identified in respect of, as well as indicating whether this applies to the Windfarm Site only, or the Offshore Export Cables only. However, the effect with the highest significance will be taken forward to the Summary (see **Section 13.12**) as representative effect significance for the Offshore Development Area as a whole.

*Table 13.15 Assessment of the impacts of decommissioning*

| Impact | Comparable Phase | Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|---|---|
| Reduction in access to, or exclusion from established fishing grounds during decommissioning (D1) | Construction – Windfarm Site only | Demersal Fisheries | Low | Low | Negligible adverse |
| | | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse |
| | | Dredging – Scallop Fishery | Low | Low | Negligible adverse |
| | | Pelagic Trawling - Herring Fishery | Low | Low | Negligible adverse |
| | | Mackerel Jigging | Medium | Low | Minor adverse |
| | O&M – Export Cables only | Demersal Fisheries | Low | Negligible | Negligible adverse |
| | | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse |
| | | Dredging – Scallop Fishery | Low | Negligible | Negligible adverse |
| | | Pelagic Trawling -Herring Fishery | Low | Negligible | Negligible adverse |
| | | Mackerel Jigging | Medium | Low | Minor adverse |
| Displacement, leading to fishing gear conflict and increased fishing pressure within adjacent grounds during decommissioning (D2) | Construction – Windfarm Site only | Demersal Fisheries | Low | Low | Negligible adverse |
| | | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse |
| | | Dredging – Scallop Fishery | Low | Low | Negligible adverse |
| | | Pelagic Trawling -Herring Fishery | Low | Low | Negligible adverse |
| | | Mackerel Jigging | Medium | Low | Minor adverse |
| | O&M – Export Cables only | Demersal Fisheries | Low | Negligible | Negligible adverse |
| | | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse |

| Impact | Comparable Phase | Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|---|---|
| | | Dredging – Scallop Fishery | Low | Negligible | Negligible adverse |
| | | Pelagic Trawling -Herring Fishery | Low | Negligible | Negligible adverse |
| | | Mackerel Jigging | Medium | Low | Minor adverse |
| Physical presence of offshore wind farm infrastructure leading to fishing gear snagging (D3) | O&M – Export Cables only | All fisheries | Medium | Low | Minor adverse |
| Displacement or disruption of commercially important fish and shellfish resources during decommissioning (D4) | Construction – Offshore Development Area | See **Chapter 10; Fish and Shellfish Ecology** | | | Minor adverse |
| Decommissioning activities leading to additional steaming to alternative fishing grounds (D5) | Construction – Offshore Development Area | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible adverse |
| | | Creeling – Lobster and Crab Fisheries | Medium | Low | Minor adverse |
| | | Dredging – Scallop Fishery | Low | Low | Negligible adverse |
| | | Pelagic Trawling – Herring Fishery | Low | Low | Negligible adverse |
| | | Inshore Mackerel Fishery | Medium | Low | Minor adverse |
| Increased vessel traffic within fishing grounds during decommissioning leading to interference with fishing activity (D6) | Construction – Offshore Development Area | Creeling – Lobster and Cab Fishery | Medium | Low | Minor adverse |
| | | Mobile Fisheries | Low | Low | Negligible adverse |

## 13.9 Cumulative Impacts

237. As discussed in **Section 13.6**, commercial fisheries work in a number of locations, with some fleets having larger operational ranges than others. Commercial fisheries may be exposed to multiple instances of impacts from different projects at the same time, e.g. reduction in access to, or exclusion from, multiple fishing grounds due to construction works. The potential for cumulative impacts arise where impacts occur, from multiple projects, within the same timeframes, within a vessel's operational range. The potential for cumulative impacts is assessed in **Table 13.16**.

238. The projects and activities considered for inclusion within the CIA for commercial fisheries are set out in **Table 13.17.** All projects considered for CIA for the Project are given in **Chapter 20: Transboundary and Cumulative Impacts,** including rationale for projects that have been screened out. As agreed with MS-LOT, a cut-off date for scoping submission of three months prior to this **Offshore EIA Report** submission has been used when including projects.

239. For the purposes of this assessment, operational offshore wind farms and other projects are considered to form part of the existing environment, with commercial fisheries pre-adapted to them, and any potential impacts on commercial fisheries already reflected in the baseline, as described in **Section 13.6**. It was not considered that any cumulative impacts would arise with the decommissioning of O&G facilities, and therefore, Decommissioning Plans have not been screened in for commercial fisheries.

*Table 13.16 Potential Cumulative Impacts*

| Potential Impact | Construction | O&M | Decommissioning | Data confidence | Rationale |
|---|---|---|---|---|---|
| Reduction in access to, or exclusion from established fishing grounds | ✓ | ✓ | ✓ | High | Where any potential impact has been identified as having a minor adverse or above significance for any commercial fisheries receptors assessed, there is potential for cumulative impactsto occur, and this has been taken forward into the CIA.<br><br>However, cumulative impacts have only been assessed where fisheries have potential for spatial interaction with projects screened in as given in **Table 13.17**.<br><br>As given in **Table 13.17,** the rationale for inclusion of each project identified the relevant fisheries and relevant project phases for the cumulative assessment. |
| Displacement of fishing vessels leading to gear conflict and increased fishing pressure on adjacent grounds | ✓ | ✓ | ✓ | High | |
| Physical presence of other offshore wind farm infrastructure leading to fishing gear snagging[9] | ✓ | x | ✓ | High | |
| Displacement or disruption of commercially important fish and shellfish resources | No – Please refer to **Chapter 10: Fish and Shellfish Ecology** | | | | |
| Project activities leading to additional steaming to alternative fishing grounds | ✓ | ✓ | ✓ | High | As above |
| Increased vessel traffic within fishing grounds leading to interference with fishing activity | ✓ | ✓ | ✓ | High | |

[9] *Information on location, proximity and development stage of other marine infrastructure is given in **Chapter 17: Infrastructure and Other Marine Users***

*Table 13.17 Summary of projects considered for the CIA in Relation to commercial fisheries*

| Project | Status | Development period | Distance from Green Volt Site (km)[10] | Project definition | Project data confidence | Included in CIA? | Rationale |
|---|---|---|---|---|---|---|---|
| MarramWind Floating Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 8.68 km north of the Offshore Development Area | Floating wind farm site located 75 km off the northeast coast of Scotland in water depths averaging 100 m, the proposed MarramWind floating Offshore Windfarm could deliver up to 3 Gigawatt (GW) of power. | Low | No | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the MarramWind Floating Offshore Windfarm, it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for MarranWind should the project progress. |
| Salamander Floating Wind Farm | Pre-Application | Site investigation planned for summer 2022. A Marine Licence Application is also anticipated in 2022. Construction in 2026 (earliest)) | Approx. 36 km southwest of the Offshore Development Area | The Salamander project is a pre-commercial size project, up to 200 Megawatt (MW) capacity, located off Peterhead in the East coast of Scotland. The project is the planning stage currently and is aiming to secure a Contracts for Difference (CfD) in 2025 if this is the route to market taken. The project is also looking at potential offtake agreements for hydrogen. Looking to begin construction in 2026 at the earliest. Salamander has signed a memorandum of understanding with ERM to utilise the Dolphyn electrolysis, desalination and hydrogen production concept for the project | Low | Yes | Potential for temporal overlap with all Project phases given Salamanders anticipated lifespan and timeline and close vicinity.<br><br>Commercial fisheries receptors anticipated may be impacted include:<br>• demersal whitefish fishery; and<br>• pelagic herring fishery.<br><br>No cumulative impacts to other fisheries (creel fishery, inshore mackerel fishery, scallop dredgers) is anticipated.<br><br>Information on export cable is unavailable and therefore cumulative interactions with export cables should be assessed in the Salamander Floating Wind Farm EIA. |
| Muir Mhòr Floating Wind Farm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 38.5 km south of the Offshore Development Area | Floating wind farm site located 67 km off the northeast coast of Scotland, the proposed floating offshore wind farm could deliver up to 11 GW of power by 2030. | Low | No | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the Muir Mhòr Floating Offshore Windfarm, it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for Muir Mhòr should the project progress. |
| CampionWind Floating Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 45 km southeast of the Offshore Development Area | Floating wind farm site located 100 km off the northeast coast of Scotland in water depths averaging 77 m, the proposed CampionWind floating offshore windfarm could deliver up to 2 GW of power. | Low | No | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the CampionWind Floating Offshore Windfarm, it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for CampionWind should the project progress. |

[10] *Shortest distance between the considered project and the Offshore Development Area – unless specified otherwise.*

| Project | Status | Development period | Distance from Green Volt Site (km)[10] | Project definition | Project data confidence | Included in CIA? | Rationale |
|---|---|---|---|---|---|---|---|
| Buchan Floating Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 49 km northwest of the Offshore Development Area | Floating offshore wind farm site off the northeast coast of Scotland with a proposed approximate capacity of 1 GW. | Low | No | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the Floating Energy Alliance Floating Offshore Windfarm, it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for the project should the project progress. |
| Hywind Scotland Pilot Park | Operational | Operational | Approx. 51.5 km southwest of the Offshore Development Area | A floating offshore pilot wind farm at Buchan Deep, approximately 25 km east of Peterhead on the east coast of Scotland. Beginning production in October 2017 and currently the largest floating offshore wind farm, the site extends over 4 km² area in water depths between 95 m and 120 m. The location witnesses an average wind speed of 10m/s. | High | No | Operational – considered part of existing environment. |
| Broadshore Floating Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 68 km northwest of the Offshore Development Area | One of three lease sites secured by Falck Renewables and BlueFloat Energy during the recent Scotwind leasing round, together all three sites could accommodate a total of approximately 3.0 GW of offshore wind capacity with the projects scheduled to be operational by the end of the decade, subject to securing consent, commercial arrangements and grid connections. | Low | No | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the Broadshore Floating Offshore Windfarm, it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for Broadshore should the project progress. |
| Cluaran Deas Ear Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 94.8 km south of the Offshore Development Area | Proposed fixed foundation offshore wind farm with a 1 GW generating capacity. | Low | No | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the Cluaran Deas EarOffshore Windfarm, it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for Cluaran Deas Ear should the project progress. |
| Caledonia Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 96.9 km west of the Offshore Development Area . | A planned fixed foundation wind farm to be located in the Moray Firth, the project has a proposed total capacity of 1,000 MW spread over an area of 440 km². | Medium | No | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the Caledonia Offshore Windfarm , it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for Caledonia should the project progress. |
| Aberdeen Offshore Wind Farm | Operational | Main array is operational. Screening opinion | Approx. 97.5 km south of the Offshore | The European Offshore Wind Deployment Centre, otherwise known as Aberdeen Offshore Wind Farm is located just off the | High | No | Operational – considered part of existing environment. |

| Project | Status | Development period | Distance from Green Volt Site (km)[10] | Project definition | Project data confidence | Included in CIA? | Rationale |
|---|---|---|---|---|---|---|---|
| | | request for hydrogen producing equipment submitted January 2022. | Development Area | coast of Aberdeen in Scotland. Installed at the site are 11 x 8.8 MW turbines, paired with suction bucket jacket foundations. First power was generated in July 2018. The project is now looking to demonstrate the feasibility of offshore hydrogen production by installing hydrogen generating equipment on an extended transition piece platform at one of the Aberdeen turbines. The hydrogen generating equipment would be connected to land via an 8" internal diameter (maximum) buried flowline, where the hydrogen would be stored for offtake. | | | Additional hydrogen producing equipment anticipated to be a small spatial scale of the Development, and distance from the Project indicates limited potential for cumulative impacts. |
| Stromar Floating Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 98.7 km northwest of the Offshore Development Area | One of three lease sites secured by Falck Renewables and BlueFloat Energy during the recent Scotwind leasing round, together all three sites could accommodate a total of approximately 3.0 GW of offshore wind capacity with the projects scheduled to be operational by the end of the decade, subject to securing consent, commercial arrangements and grid connections. | Low | No | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the Stromar Floating Windfarm , it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for Stromar should the project progress. |
| Ossian Floating Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 101 km south of the Offshore Development Area | Proposed floating offshore wind farm with a potential total capacity of 2,600 MW. | Low | No | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the Marubeni Floating Offshore Windfarm , it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for Marubeni should the project progress. |
| Morven Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 105.4 km south of the Offshore Development Area | Proposed fixed foundation offshore wind farm with a 2.9 GW generating capacity. The approximately 860 km² lease area is located around 60 km off the coast of Aberdeen. | Medium | Low | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the Morven Offshore Windfarm , it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for Morven should the project progress. |
| Bellrock Floating Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 106.6 km south of the Offshore Development Area | One of three lease sites secured by Falck Renewables and BlueFloat Energy during the recent Scotwind leasing round, together all three sites could accommodate a total of approximately 3.0 GW of offshore wind capacity with the projects scheduled to be operational by the end of the decade, subject | Medium | Low | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the Bellrock Floating Offshore Windfarm , it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for Bellrock should the project progress. |

| Project | Status | Development period | Distance from Green Volt Site (km)[10] | Project definition | Project data confidence | Included in CIA? | Rationale |
|---|---|---|---|---|---|---|---|
| | | | | to securing consent, commercial arrangements and grid connections | | | |
| Kincardine Floating Offshore Windfarm | Operational | Operational | Approx. 110.7 km southwest of the Offshore Development Area | The 50 MW Kincardine Floating Offshore Windfarm consists of five Vestas V164-9.5 MW and one V80-2 MW turbine, each installed on WindFloat® semi-submersible platforms designed by Principle Power. | High | No | Operational – considered part of existing environment. |
| Moray East Offshore Windfarm | Operational | Operational | Approx. 112.6 km west of the Offshore Development Area | The 950 MW Moray East offshore wind farm is located in the Outer Moray Firth, 22 km off the coast of Scotland. The site is equipped with 100 MHI Vestas V164-9.5 MW offshore wind turbine generators installed on 85m-long steel jacket foundations and steel piles. It will also feature an 86 km underground export cable, of which 52 km is offshore. | High | No | Operational – considered part of existing environment. |
| Cluaran Ear-Thuath Floating Offshore Windfarm | Pre-Application | In early planning: ScotWind seabed lease secured. | Approx. 122.3 km northwest of the Offshore Development Area | Proposed floating offshore wind farm with a 1 GW generating capacity. | Low | No | Construction period unlikely to overlap with the construction phase of the Project. Due to a paucity of information on the Cluaran Ear-Thuath Floating Offshore Windfarm , it is not possible to assess cumulative impacts in this EIA. Cumulative impacts should be assessed in the EIA for Cluaran Ear-Thuath should the project progress. |
| Moray West Offshore Windfarm | Post-consent | Post-consent - Construction is yet to begin. | Approx. 127.5 km west of the Offshore Development Area | The 900 MW Moray West Offshore Windfarm is located in the Outer Moray Firth, off the coast of Scotland. The project will consist of up-to 85 turbines, with construction expected to begin in 2022. | High | Yes | Potential for Moray West construction to overlap with the construction phase of the Project, resulting in potential for cumulative impacts to squid fisheries during construction only.<br><br>No cumulative impacts to other fisheries or during other phases are anticipated. |
| Beatrice Offshore Windfarm | Operational | Operational | Approx. 130.3 km west of the Offshore Development Area | Located approximately 13 km from the Caithness coast, Beatrice became fully operational in June 2019 following seven years of development and three years of construction. The site has 84 installed turbines with a 588 MW installed capacity. | High | No | Operational – considered part of existing environment. |
| Berwick Bank Offshore Windfarm | Pre-application | Scoping report submitted to MS-LOT in October 2021. | Approx. 140 km southwest of the Offshore | Berwick Bank, located in the outer Firth of Forth (40 km offshore), has the potential to deliver up to 4.1 GW of renewable energy. | Medium | No | Due to the distance of the Project from Berwick Bank, the potential for cumulative effects is very unlikely. |

| Project | Status | Development period | Distance from Green Volt Site (km)[10] | Project definition | Project data confidence | Included in CIA? | Rationale |
|---|---|---|---|---|---|---|---|
| | | | Development Area | | | | |
| Seagreen Offshore Wind Farm | Under construction. | Under construction. | Approx. 140 km southwest of the Offshore Development Area | Located 27 km off the coast of Angus, Seagreen Offshore Windfarm is under construction installing 114 turbines. First power was achieved in August 2022 and it is anticipated to be fully operational in Q2 2023. | High | No | Construction period will be completed in 2023, and due to the distance of the Project from Seagreen, the potential for cumulative effects is very unlikely. |
| Inch Cape Offshore Windfarm | Post-consent | Post-consent - Construction is yet to begin. | Approx. 163.7 km southwest of the Offshore Development Area. | The Inch Cape Offshore Windfarm, currently in late stage development, will see up to 72 turbines with an installed capacity of over 1 GW, located 15 km off the Angus Coast and connect to the National Grid at Cockenzie, East Lothian. | High | No | Construction period could overlap with the Project. However, due to the distance of the Project from NNG, the potential for cumulative effects is very unlikely. |
| Neart na Gaoithe (NNG) Offshore Windfarm | Construction | Under construction - completion scheduled for 2024. | Approx. 191.4 km southwest of the Offshore Development Area | The Neart na Gaoithe Offshore Windfarm will be located 15.5 km off the Fife coast and covers an area of approximately 105 km². The project consists of 54 turbines totalling 450 MW in generating capacity. | High | No | Construction period could overlap with the Project. However, due to the distance of the Project from NNG, the potential for cumulative effects is very unlikely. |
| 2B Energy Methil Demonstration | Operational | Single turbine in operation since 2013. | Approx. 236.4 km southwest of the Offshore Development Area | A demonstrator site for experimental offshore wind turbines off the coast of Methil, Fife in Scotland. A single 7 MW turbine was installed at the site in 2013, with a further two turbines receiving consent in 2017. | High | No | Construction period for additional turbines could overlap with the Project. However, due to the distance of the Project from the Demonstration Site, the potential for cumulative effects is very unlikely. |
| Acorn Carbon Capture and Storage Site | Pre-consent | Section 36 Application submitted end of March 2022 for Peterhead Carbon Capture Power Station | Approx. 2 km north of Offshore Development Area | Based at the St Fergus gas terminal in North East Scotland, Acorn Carbon Capture and Storage (CCS) can repurpose existing gas pipelines to take $CO_2$ directly to the Acorn $CO_2$ Storage Site in the North Sea. The project aims to enter operation in the mid-2020s. | High | No | Potential for cumulative impacts unlikely due to onshore location of the Peterhead Carbon Capture Power Station and due to small spatial scope of works. It is unlikely that there will be any overlap or interaction between the two projects in terms of marine space. |
| North Buchan Ness Disposal Site | Open | Open | Approx. 1.17 km from the Offshore Development Area (Offshore | Open dredge spoil disposal site located approximately 2 km from the Scottish coast. | Medium | No | Operational – considered part of existing environment. |

| Project | Status | Development period | Distance from Green Volt Site (km)[10] | Project definition | Project data confidence | Included in CIA? | Rationale |
|---|---|---|---|---|---|---|---|
| | | | Export Cable Corridor) | | | | |
| NorthConnect HVDC Link | Pre-construction | Post-consent. Awaiting development consent in Norwegian waters. | This cable will be installed through the southeast section of the Offshore Development Area | HVDC Interconnector cable route. Proposed to carry 1,400 MW of power. The HVDC cables will connect the Interconnector Converter Station on the 'Fourfields' site near Boddam, Peterhead to the Converter Station located in Simadalen, Norway. | High | Yes | Construction could overlap with the Project, and overlaps the Offshore Development Area, resulting in potential impacts to all commercial fisheries receptors during construction only.<br><br>No cumulative impacts during other phases are anticipated. |
| Eastern Green Link 2 | Under development | Non-statutory environmental appraisal to Support a Marine Licence Application was submitted to MS-LOT in July 2022 for the project. | Within the southern branch of the Projects Offshore Export Cable Corridor near the Scottish coast. | A joint proposal between SHE Transmission and National Grid, Eastern Link 2 is a HVDC cable spanning between Peterhead, Scotland and Drax in North Yorkshire. | High | Yes | Construction could overlap with the Project, and with close proximity to the Offshore Development Area, resulting in potential impacts to creel and inshore mackerel fishery, as well as scallop dredge fishery during construction only.<br><br>No cumulative impacts to other fisheries or during other phases are anticipated. |
| Sea Wall Repair and Extension - Alexandra Parade | Pre-construction. | Post-consent | Approx. 2.41 km south of the northern branch of the Projects export cable corridor. | Works to repair the Alexandra Parade seawall and revetment is located on the northern boundary of Peterhead Harbour adjacent to North harbour, damaged during a storm event in 2012. The seawall and revetment acts as a sea defence to the fish processing facility and harbour related businesses that are vital to the operation of the harbour located behind the revetment. Works to involve re-profiling of the existing revetment, formation of a toe trench and placement of various sizes of rock armour and pre-cast concrete units within the toe trench to create the toe mound, on the existing embankment and along the crest extending to the existing seawall. | High | No | Potential for cumulative impacts unlikely due to small spatial scope of works, and construction likely to be completed prior to construction phase for the Project begins. |
| Construction of Outfall Pipe - North Base Jetty, Peterhead Harbour | Application submitted | Pre-consent | Approx. 0.3 km north of the southern branch of the Offshore | Installation of new sea outfall and intake at existing ASCO North Base jetty in Peterhead Harbour, consisting of three submersible pumps suspended from the jetty and a diffuser consisting of three 5x5m frames. | Medium | No | Potential for cumulative impacts unlikely due to small spatial scope of works, and construction likely to be completed prior to construction phase for the Project begins. |

| Project | Status | Development period | Distance from Green Volt Site (km)[10] | Project definition | Project data confidence | Included in CIA? | Rationale |
|---|---|---|---|---|---|---|---|
| | | | Export Cable Corridor. | | | | |
| Aberdeen Harbour Expansion | Under construction | Construction began in 2017, due to conclude in October 2022. | Approx. 110 km south of the Offshore Development Area | Aberdeen Harbour – South Harbour expansion project. The Aberdeen Harbour expansion will mainly involve dredging within Nigg Bay to construct two breakwaters and develop quayside on the north and west sides of the bay.<br><br>It will include 1,400m of new quay with a water depth of up to 10.5m and 125,000m² of lay-down area. The turning circle of the harbour will be 300m, while its channel width will be 165m.<br><br>Two rubble mound breakwaters 634m-long and 640m-long will be built around the south harbour to protect it from the wave climate. More than 1,424m of quayside will be built for the berthing of vessels.<br><br>The existing bay will also be dredged to a depth of 9m and temporary road and coastal path diversions will be built as part of the expansion. | High | No | Construction likely to be completed prior to construction phase for the Project begins, and significant distance from the Offshore Development Area. |

240. As per the rationale given in **Table 13.17** above, the following projects are assessed for cumulative impacts with the Project for the following phases and commercial fisheries receptors:

- Salamander Floating Wind Farm[11]: for the demersal whitefish fishery and for the pelagic herring fishery, for all Project phases;
- Moray West Offshore Windfarm: for the squid fishery only during the Project's construction phase;
- NorthConnect HVDC Link: all commercial fisheries receptors during construction only; and
- Eastern Green Link 2 for the creel and inshore mackerel fishery, as well as the scallop dredge fishery, during construction only.

241. The potential for cumulative impacts to occur depends on the operating practices of local fishing vessels, and the location and range of existing fishing grounds, in relation to other projects/developments.

242. The sensitivity of receptors is as described for the construction phase for the Project alone (see **Section 13.8.3**).

243. A summary of the potential cumulative impacts assessed for commercial fisheries is provided in **Table 13.25**.

### 13.9.1 Potential Cumulative Impacts during Construction

#### 13.9.1.1 CIA - C1: Reduction in access to, or exclusion from established fishing grounds

244. There may be potential for cumulative impacts to all commercial fisheries receptors as a result of reduction in access to, or exclusion from established fishing grounds during the construction phase from the Salamander, Moray West, NorthConnect and Eastern Green Link 2 projects.

245. For the demersal fisheries, the following cumulative interactions during construction are anticipated:

- Whitefish fishery: reduction in access to or exclusion from the Salamander Floating Windfarm during WTG construction/installation of IAC and for installation of cables for NorthConnect.
- Squid fishery: reduction in access to or exclusion from the Moray West Offshore Windfarm during WTG construction/installation of cables and for installation of cables for NorthConnect.
- Nephrops fishery: for installation of cables for NorthConnect only.

246. It is anticipated that demersal fisheries will be temporarily restricted in areas of active construction and where Safety Zones are implemented around construction of WTGs for Salamander and Moray West, and installation of cables for all projects. As demersal fisheries will only be temporarily restricted in small discrete locations around active installation/construction activities, and accounting for the wide operational ranges of the different demersal fisheries, the magnitude of impact is low. Considering the low receptor sensitivity and low magnitude of impact, the cumulative effect on demersal fisheries as a result of reduction in access to or exclusion from fishing grounds during construction activities is considered to be **negligible adverse** and therefore **not significant.**

247. For the lobster and crab creel fishery and inshore mackerel fishery, cumulative impacts are anticipated as a result of interactions with the NorthConnect HVDC Link and Eastern Green Link 2 during construction periods only. As both cable projects will make landfall in the areas around Peterhead, there is potential for installation activities associated with cable laying, e.g. Safety Zones around cable installation vessels, to reduce access to fishing grounds. It is additionally anticipated that construction areas will be required to remain clear of static gear while installation is ongoing. While the impacts will be localised and temporary in nature, installation activities by each project may occur sequentially, increasing the timeframe. However, it is assessed that installation activities from each project will last less than two years cumulatively, and therefore, the magnitude of impact is

[11] *Information on the proposed export cable route for the Salamander Floating Windfarm was not available at the time of writing. Cumulative impacts as a result of the export cable corridor to be assessed in the Salamander Floating Windfarm EIA.*

assessed to be low. Therefore, the cumulative effect on the lobster and crab creel fishery, and the inshore mackerel fishery, as a result of reduction in access to, or exclusion from established fishing grounds during construction is **minor adverse** and therefore **not significant**.

248. For the scallop dredge fishery, cumulative impacts are anticipated as a result of interactions with NorthConnect and Eastern Green Link 2 projects. Both cable projects will make landfall in the areas around Peterhead, with potential for installation activities associated with cable laying, e.g. Safety Zones around cable installation vessels, to reduce access to fishing grounds in the areas between 6 and 12 nm in ICES rectangles 43E8 and 44E8. While the impacts will be localised and temporary in nature, installation activities by each project may occur sequentially, increasing the timeframe. However, it is assessed that installation activities from each project will last less than two years cumulatively, and therefore, the magnitude of impact is assessed to be low. Therefore, the cumulative effect on the scallop dredge fishery as a result of reduction in access to, or exclusion from established fishing grounds during construction is **negligible adverse** and therefore **not significant**.

249. For pelagic herring trawlers, cumulative impacts may arise as a result of interactions with the Salamander Floating Windfarm and NorthConnect HVDC Link. However, given the scale and operational range of the fishery, the magnitude of impact is considered to be low, and therefore the potential cumulative effect as a result of reduction in access to, or exclusion from established fishing grounds during construction is **negligible adverse** and therefore **not significant**.

#### 13.9.1.2 CIA - C2: Displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds.

250. As described in **Section 13.9.1.1**, commercial fisheries may experience cumulative impacts due to temporary reduced access to or full exclusion from fishing in discrete areas where construction activities are taking place/safety zones are in force for multiple projects. The temporary lack of access to these locations as described above may result in short-term displacement of fishing activity into other areas.

251. The level of displacement of fishing activity will be directly related to the extent of reduction in access to or exclusion from traditional fishing grounds as a result of cumulative impacts from the Salamander Floating Offshore Windfarm, Moray West Offshore Windfarm, NorthConnect HVDC Link and Eastern Green Link 2. Therefore, the magnitude of impact, receptor sensitivity and overall significance of the effect will be the same as for the extent of reduction in access to or exclusion from fishing grounds during construction activities, as shown in **Table 13.18**.

*Table 13.18 Cumulative assessment of the impacts of displacement leading to fishing gear conflict and increased fishing pressure within adjacent grounds during construction*

| Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|
| Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible adverse |
| Creeling – Lobster and Crab Fisheries | Medium | Low | Minor adverse |
| Dredging – Scallop Fishery | Low | Low | Negligible adverse |
| Pelagic Trawling – Herring Fishery | Low | Low | Negligible adverse |
| Inshore Mackerel Fishery | Medium | Low | Minor adverse |

#### 13.9.1.3 CIA - C3: Physical presence of offshore wind farm infrastructure leading to fishing gear snagging.

252. In addition to potential snagging risks from the Project in isolation, there is potential for cumulative impacts from fishing gear snagging.

253. It is anticipated, that as for the Project, other projects will implement mitigation measures to minimise potential gear snagging impacts, including implementation of Safety Zones, use of guard vessels, and communication of seabed obstacles to the local fishing industry.

254. Snagging risks will be limited to discrete areas where construction works are ongoing, and will be short-term in nature (less than two years). Accounting for the embedded mitigation measures as above, the magnitude of impact is considered to be low.

255. Considering the medium receptor sensitivity and low magnitude of impact, the cumulative effect on all fisheries as a result of physical presence of offshore wind farm infrastructure leading to gear snagging during construction is considered to be **negligible adverse** and therefore **not significant**.

#### 13.9.1.4 CIA - C4: Displacement or disruption of commercially important fish and shellfish resources

256. As described in **Chapter 10: Fish and Shellfish Ecology,** there may be potential for the construction and decommissioning phases of the Project to result in cumulative impacts from the loss of spawning and nursery grounds and simultaneous noise during the installation and construction of the Project for the following two projects:

- Salamander Floating Windfarm; and
- Acorn Carbon Capture and Storage Site.

257. These projects may have a construction periods overlapping with the Project. This could cause overlap in loss of spawning and nursery grounds and simultaneous noise.

258. However, as the impacts of construction will be short-term and will only occur over a small geographical area in relation to the wider geographical context of available habitats, the cumulative effect is **not significant**.

#### 13.9.1.5 CIA – C5: Construction activities leading to additional steaming to alternative fishing grounds.

259. As described in **Section 13.9.1.1**, commercial fisheries may experience cumulative impacts due to temporary reduced access to or full exclusion from fishing in discrete areas where construction activities are taking place/safety zones are in force for multiple projects. The temporary lack of access to these locations as described above may result in cumulative short-term displacement of fishing activity into other areas, and in increased steaming to alternative fishing grounds, and therefore increased operational costs for the affected fishing vessels.

260. The level of additional steaming will be directly related to the extent of reduction in access to or exclusion from traditional fishing grounds. Therefore, the magnitude of impact, receptor sensitivity and overall significance of the effect will be the same as for the extent of cumulative impacts for reduction in access to or exclusion from fishing grounds during construction activities, as shown in **Table 13.23**.

*Table 13.19 Cumulative assessment of the impacts of construction activities leading to additional steaming to alternative fishing grounds*

| Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|
| Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible adverse |
| Creeling – Lobster and Crab Fisheries | Medium | Low | Minor adverse |
| Dredging – Scallop Fishery | Low | Low | Negligible adverse |
| Pelagic Trawling – | Low | Low | Negligible adverse |

| Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|
| Herring Fishery | | | |
| Inshore Mackerel Fishery | Medium | Low | Minor adverse |

#### 13.9.1.6 CIA – C6: Increased vessel traffic within fishing grounds leading to interference with fishing activity.

261. The increase in vessel movements associated with the construction phase of the Project together with other projects could result in cumulative impacts in terms of interference with fishing activities.

262. As for the Project in isolation, it is anticipated that mitigation measures will be implemented by each project in questions, including maintaining effective communications and adherence to COLREGs and SOLAS.

263. In light of these mitigation measures, there should be no requirement for fishing vessels operating mobile gears to alter course or pose any risk to gear snagging. The magnitude of impact is therefore considered to be low for all fisheries.

264. Therefore, it is considered for the lobster and crab creel fishery, that potential for cumulative effects of increased vessel traffic within fishing grounds leading to interference with fishing activity from interactions between the Project and Eastern Green Link 2 and NorthConnect HVDC Link is **minor adverse** and therefore **not significant.**

265. For mobile fisheries, the cumulative effect as a result of increased vessel traffic within fishing grounds during construction for the Salamander Floating Windfarm, Moray West Offshore Windfarm, NorthConnect HVDC Link and Eastern Green Link 2 projects leading to interference with fishing activity is considered to be **negligible adverse** and therefore **not significant**.

### 13.9.2 Potential Cumulative Impacts during Operation and Maintenance

266. As identified in **Table 13.17**, no cumulative impacts are anticipated during the O&M phase except for the demersal whitefish and pelagic herring trawling fisheries active in the Salamander Floating Windfarm area in addition to the Offshore Development Area. All other fisheries receptors identified are anticipated not to experience adverse cumulative impacts during O&M (No Change) due to not being present in the Salamander Site, and therefore, the cumulative impact is assessed as **No Cumulative Impact anticipated** for all other fisheries receptors.

267. Cumulative impacts on the demersal whitefish and pelagic herring trawling fishery during O&M are assessed in **Sections 13.9.2.1** to **13.9.2.6** below.

#### 13.9.2.1 CIA - O1: Reduction in access to, or exclusion from established fishing grounds

268. It is anticipated that fisheries will be restricted on the use of mobile commercial fishing gear within the Salamander Floating Windfarm site due to the floating design.

269. The sensitivity of the whitefish fishery and pelagic herring trawling fishery to the loss of fishing grounds during O&M is as described for construction (see **Section 13.9.1**) – low.

270. The potential reduction in access to, or exclusion from established fishing grounds during O&M for demersal fisheries will include full exclusion from the Windfarm Site from both the Project and the Salamander Floating Windfarm. Short term exclusions may also apply along the Offshore Export Cable Corridors. These maintenance works will be short term and infrequent in highly localised areas, with Safety Zones of 500 m radius around maintenance vessels.

271. Demersal whitefish fisheries and pelagic herring trawlers are only minimally active in the Windfarm Site, and in the context of the operational ranges of these fisheries, and the availability of alternate

fishing grounds, the magnitude of impact is considered to be low, despite full exclusion from these areas.

272. Considering the low receptor sensitivity and low magnitude of impact, the cumulative effect on the demersal whitefish and pelagic herring trawling fishery as a result of reduction in access to or exclusion from fishing grounds during O&M is considered to be **negligible adverse** and therefore **not significant**.

#### 13.9.2.2 CIA - O2: Displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds.

273. As described in **Section 13.9.2.1**, the demersal whitefish and pelagic herring trawling fishery may experience cumulative impacts due to reduced access to or full exclusion from fishing in discrete areas during O&M for multiple projects. The lack of access to these locations as described above may result in short-to-long term displacement of fishing activity into other areas.

274. The level of displacement of fishing activity will be directly related to the extent of reduction in access to or exclusion from traditional fishing grounds as a result of cumulative impacts from the Salamander Floating Windfarm. Therefore, the magnitude of impact, receptor sensitivity and overall significance of the effect will be the same as for the extent of reduction in access to or exclusion from fishing grounds during construction activities, as shown in **Table 13.24**.

*Table 13.20 Cumulative assessment of the impacts of displacement leading to fishing gear conflict and increased fishing pressure within adjacent grounds during O&M*

| Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|
| Demersal Fisheries – Whitefish | Low | Low | Negligible adverse |
| Demersal Fisheries – Nephrops, Squid | No cumulative impact anticipated | | |
| Creeling – Lobster and Crab Fisheries | No cumulative impact anticipated | | |
| Dredging – Scallop Fishery | No cumulative impact anticipated | | |
| Pelagic Trawling – Herring Fishery | Low | Low | Negligible adverse |
| Inshore Mackerel Fishery | No cumulative impact anticipated | | |

#### 13.9.2.3 CIA - C3: Physical presence of offshore wind farm infrastructure leading to fishing gear snagging

275. Physical presence of offshore infrastructure leading to gear snagging is not assessed for the O&M phase, as information on the export cable corridor is not available for Salamander Floating Windfarm and the assessment assumes that fisheries will be permanently restricted from fishing in the wind farm during O&M, therefore not at risk for cumulative impacts to gear snagging.

#### 13.9.2.4 CIA – O4: Displacement or disruption of commercially important fish and shellfish resources

276. As described in **Chapter 10: Fish and Shellfish Ecology, d**uring the O&M phase of the Project, due to the very small geographical extent of any impacts, these are not deemed significant. Therefore, there is little likelihood of cumulative effects from the Project and other projects identified in **Table 13.17**.

#### 13.9.2.5 CIA – O5: O&M activities leading to additional steaming to alternative fishing grounds.

277. As described in **Section 13.9.2.1**, commercial fisheries may experience cumulative impacts due to temporary reduced access to or full exclusion from fishing in discrete areas where construction activities are taking place/safety zones are in force for multiple projects. The temporary lack of access to these locations as described above may result in cumulative short-term displacement of fishing activity into other areas, and in increased steaming to alternative fishing grounds, and therefore increased operational costs for the affected fishing vessels.

278. The level of additional steaming will be directly related to the extent of reduction in access to or exclusion from traditional fishing grounds. Therefore, the magnitude of impact, receptor sensitivity and overall significance of the effect will be the same as for the extent of cumulative impacts for reduction in access to or exclusion from fishing grounds during O&M activities, as shown in **Table 13.21**.

*Table 13.21 Cumulative assessment of the effects of O&M activities leading to additional steaming to alternative fishing grounds*

| Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|
| Demersal Fisheries – Whitefish | Low | Low | Negligible adverse |
| Demersal Fisheries – Nephrops, Squid | No cumulative impact anticipated | | |
| Creeling – Lobster and Crab Fisheries | No cumulative impact anticipated | | |
| Dredging – Scallop Fishery | No cumulative impact anticipated | | |
| Pelagic Trawling – Herring Fishery | Low | Low | Negligible adverse |
| Inshore Mackerel Fishery | No cumulative impact anticipated | | |

#### 13.9.2.6 CIA – O6: Increased vessel traffic within fishing grounds leading to interference with fishing activity.

279. During O&M, the only vessel activity associated with the Project is anticipated to be as a result of maintenance works, and could result in cumulative impacts in terms of interference with fishing activities.

280. As for the Project in isolation, it is anticipated that mitigation measures will be implemented by each project in questions, including maintaining effective communications and adherence to COLREGs and SOLAS.

281. In light of these mitigation measures, there should be no requirement for fishing vessels operating mobile gears to alter course or pose any risk to gear snagging. The magnitude of impact is therefore considered to be negligible for demersal whitefish and pelagic herring fisheries, and cumulative effect in total considered to be **negligible adverse** and therefore **not significant**.

### 13.9.3 Potential Cumulative Impacts during Decommissioning

282. The scope of decommissioning works for other projects are likely to be similar to that described in **Section 13.8.5** for the Project (applicable only to the decommissioning of Offshore Export Cables for the NorthConnect HVDC Link and Eastern Green Link 2).

283. This assessment therefore anticipates that the cumulative impacts during decommissioning would be similar to those identified in respect of cumulative impacts during construction, (and O&M, as applicable, where cables are left in situ) (as assessed for the Project in isolation).

284. The sensitivity of receptors, and magnitude of impact would be expected to be the same, if not less than identified in respect of these phases.

*Table 13.22 Assessment of cumulative impacts of decommissioning*

| Impact | As assessed for Project Phase | Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|---|---|
| Reduction in access to, or exclusion from established fishing grounds (CIA – D1) | O&M | Demersal Fisheries - Whitefish | Low | Low | Negligible adverse |
| | O&M | Demersal Fisheries – Nephrops and Squid | Low | Low | Negligible adverse |
| | Construction | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse |
| | Construction | Dredging – Scallop Fishery | Low | Low | Negligible adverse |
| | O&M | Pelagic Trawling - Herring Fishery | Low | Low | Negligible adverse |
| | Construction | Mackerel Jigging | Medium | Low | Minor adverse |
| Displacement leading to fishing gear conflict and increased fishing pressure on adjacent grounds (CIA – D2) | O&M | Demersal Fisheries - Whitefish | Low | Low | Negligible adverse |
| | O&M | Demersal Fisheries – Nephrops and Squid | Low | Low | Negligible adverse |
| | Construction | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse |
| | Construction | Dredging – Scallop Fishery | Low | Low | Negligible adverse |
| | O&M | Pelagic Trawling - Herring Fishery | Low | Low | Negligible adverse |
| | Construction | Mackerel Jigging | Medium | Low | Minor adverse |
| Physical presence of offshore wind farm infrastructure leading to fishing gear snagging (CIA - D3) | Construction | All fisheries | Medium | Low | Minor adverse |
| Displacement or disruption of commercially important fish and shellfish resources during decommissioning (CIA - D4) | Construction | See **Chapter 10: Fish and Shellfish Ecology** | | | Minor adverse |
| Decommissioning activities leading to additional steaming to | O&M | Demersal Fisheries - Whitefish | Low | Low | Negligible adverse |

| Impact | As assessed for Project Phase | Receptor | Sensitivity of Receptor | Magnitude of Impact | Effect Significance |
|---|---|---|---|---|---|
| alternative fishing grounds (CIA - D5) | O&M | Demersal Fisheries – Nephrops and Squid | Low | Low | Negligible adverse |
| | Construction | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse |
| | Construction | Dredging – Scallop Fishery | Low | Low | Negligible adverse |
| | O&M | Pelagic Trawling - Herring Fishery | Low | Low | Negligible adverse |
| | Construction | Mackerel Jigging | Medium | Low | Minor adverse |
| Increased vessel traffic within fishing grounds during decommissioning leading to interference with fishing activity (CIA - D6) | Construction | Creeling – Lobster and Cab Fishery | Medium | Low | Minor adverse |
| | Construction | Mobile Fisheries | Low | Low | Negligible adverse |

## 13.10 Transboundary Impacts

285. As noted in **Section 13.6.1**, activity by non-UK registers vessels in the Study Area is very limited and has therefore not been included for detailed impact assessment.

286. Transboundary impacts outside UK waters are limited to potential displacement of fishing effort from the Offshore Development Area into non-UK EEZs. Based on the lacked of established fishing grounds targeted by foreign fleets (**Figure 13.8)** it is not anticipated that displacement impacts into other EEZs would be significant.

## 13.11 Inter-relationships

287. The inter-relationships between topics covered in this chapter and others within this EIA are described in **Table 13.23.**

*Table 13.23 Inter-Relationships*

| Topic and description | Related Chapter | Where addressed in this Chapter |
|---|---|---|
| Displacement or disruption of commercially important fish and shellfish resources during construction | **Chapter 10: Fish and Shellfish Ecology** | **Section 13.8.3.3** |
| Displacement or disruption of commercially important fish and shellfish resources during O&M | **Chapter 10: Fish and Shellfish Ecology** | **Section 13.8.4.4** |
| Displacement or disruption of commercially important fish and shellfish resources during decommissioning | **Chapter 10: Fish and Shellfish Ecology** | **Section 13.8.5** |

## 13.12 Summary

288. This chapter has provided a characterisation of the existing environment for commercial fisheries, using a variety of data sources including fisheries landings statistics, VMS data, multiple studies from Marine Scotland, and was informed by consultation undertaken with the fishing industry.

289. The commercial fisheries baseline has been assessed for the UK only, as it is understood that activity by non-UK vessels in the Study Area is very limited.

290. The key commercial fishery receptors identified in areas of the Project include:

- Nephrops fishery, targeted by demersal trawlers active in Nephrops grounds bordering the southeastern corner of the Windfarm Site;
- Other demersal trawl fisheries, including squid trawlers, and whitefish fishery, undertaken by vessels using principally trawls, and to a lesser extent demersal seines, at low levels across the Study Area;
- Lobster and crab creel fishery active in inshore areas with the 6 nm limit;
- Scallop dredge fishery, active by larger vessels in the area between 6 and 12 nm;
- Pelagic herring trawl fishery active at low levels only in ICES rectangle 44E9; and
- Inshore mackerel fishery, with vessels using handlines/mackerel jigs, also active inshore.

291. The assessment has shown that no impacts identified were significant in EIA terms, with impacts of negligible adverse to minor adverse identified for commercial fisheries receptors only. Where appropriate, additional mitigation has been included for impacts on the creel fishery during construction.

**292.** **Table 13.24** provides a summary of potential impacts identified for commercial fisheries in the assessment, and details additional mitigation and residual effect. **Table 13.25** outlines potential cumulative impacts assessed.

*Table 13.24 Summary of potential impacts identified for commercial fisheries*

| Potential Impact | Receptor | Value/ Sensitivity | Magnitude of Impact | Significance of Effect | Mitigation | Residual Effect |
|---|---|---|---|---|---|---|
| **Construction** | | | | | | |
| Reduction in access to, or exclusion from established fishing grounds during construction (C1) | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Creeling – Lobster and Crab Fishery | Medium | Low | Minor Adverse | Should creeling vessels be required to be removed/relocate during the construction phase, vessels affected will be offered cooperation agreements in line with FLOWW best practice guidance. | Negligible Adverse - Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | Medium | Low | Minor Adverse | No additional mitigation required. | Minor Adverse - Not significant |
| Displacement, leading to fishing gear conflict and increased fishing pressure within adjacent grounds during construction (C2) | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Creeling – Lobster and Crab Fishery | Medium | Low | Minor Adverse | Should creeling vessels be required to be removed/relocate during the construction phase, vessels affected will be offered cooperation agreements in line with FLOWW best practice guidance | Negligible Adverse - Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | Medium | Low | Minor Adverse | No additional mitigation required. | Minor adverse - Not significant |

| Potential Impact | Receptor | Value/ Sensitivity | Magnitude of Impact | Significance of Effect | Mitigation | Residual Effect |
|---|---|---|---|---|---|---|
| Physical presence of offshore wind farm infrastructure leading to fishing gear snagging (C3) | All Fisheries | Medium | Low | Minor Adverse | No additional mitigation required | Minor adverse - Not significant |
| Displacement or disruption of commercially important fish and shellfish resources during construction (C4) | See **Chapter 10: Fish and Shellfish Ecology** | | | | | |
| Construction activities leading to additional steaming to alternative fishing grounds (C5) | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Creeling – Lobster and Crab Fishery | Medium | Low | Minor Adverse | Should creeling vessels be required to be removed/relocate during the construction phase, vessels affected will be offered cooperation agreements in line with FLOWW best practice guidance. | Negligible Adverse - Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | Medium | Low | Minor Adverse | No additional mitigation required | Minor adverse -Not significant |
| Increased vessel traffic within fishing grounds during construction leading to interference with fishing activity (C6) | Creeling – Lobster and Crab Fishery | Medium | Low | Minor Adverse | No additional mitigation required | Minor adverse -Not significant Not significant |
| | Mobile Fisheries | Low | Low | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant Not significant |
| **O&M** | | | | | | |
| Reduction in access to, or exclusion from established fishing grounds during O&M (O1) | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Medium | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| | Creeling – Lobster and Crab Fishery | Medium | Low | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |

| Potential Impact | Receptor | Value/ Sensitivity | Magnitude of Impact | Significance of Effect | Mitigation | Residual Effect |
|---|---|---|---|---|---|---|
| | Dredging – Scallop Fishery | Low | Negligible | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | Medium | Low | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| Displacement, leading to fishing gear conflict and increased fishing pressure within adjacent grounds during O&M (O2) | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Medium | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| | Creeling – Lobster and Crab Fishery | Medium | Low | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Negligible | Negligible Adverse | No additional mitigation required. | No Negligible Adverse - Not significant |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | Medium | Low | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| Physical presence of offshore wind farm infrastructure leading to fishing gear snagging (O3) | All Fisheries | Medium | Low | Minor Adverse | No additional mitigation required | Minor adverse -Not significant |
| Displacement or disruption of commercially important fish and shellfish resources during O&M (O4) | See **Chapter 10: Fish and Shellfish Ecology** | | | | | |
| O&M activities leading to additional steaming to alternative fishing grounds (O5) | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Medium | Minor Adverse | No additional mitigation required | Minor adverse -Not significant |
| | Creeling – Lobster and Crab Fishery | Medium | Low | Minor Adverse | No additional mitigation required | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Negligible | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | Medium | Low | Minor Adverse | No additional mitigation required | Minor adverse -Not significant |

| Potential Impact | Receptor | Value/ Sensitivity | Magnitude of Impact | Significance of Effect | Mitigation | Residual Effect |
|---|---|---|---|---|---|---|
| Increased vessel traffic within fishing grounds during O&M leading to interference with fishing activity (O6) | Creeling – Lobster and Crab Fishery | Medium | Negligible | Minor Adverse | No additional mitigation required | Minor adverse -Not significant |
| | Mobile Fisheries | Low | Negligible | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant |
| **Decommissioning** | | | | | | |
| Reduction in access to, or exclusion from established fishing grounds during decommissioning (D1) | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Creeling – Lobster and Crab Fishery | Medium | Low | Minor Adverse | Should creeling vessels be required to be removed/relocate during the decommissioning phase, vessels affected will be offered cooperation agreements in line with FLOWW best practice guidance. | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | Medium | Low | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| Displacement, leading to fishing gear conflict and increased fishing pressure within adjacent grounds during decommissioning (D2) | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Creeling – Lobster and Crab Fishery | Medium | Low | Minor Adverse | Should creeling vessels be required to be removed/relocate during the decommissioning phase, vessels affected will be offered cooperation agreements in line with FLOWW best practice guidance. | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |

| Potential Impact | Receptor | Value/ Sensitivity | Magnitude of Impact | Significance of Effect | Mitigation | Residual Effect |
|---|---|---|---|---|---|---|
| | Inshore Mackerel Fishery | Medium | Low | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| Physical presence of offshore wind farm infrastructure leading to fishing gear snagging (D3) | All Fisheries | Medium | Low | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| Displacement or disruption of commercially important fish and shellfish resources during decommissioning (D4) | See **Chapter 10: Fish and Shellfish Ecology** | | | | | |
| Decommissioning activities leading to additional steaming to alternative fishing grounds (D5) | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Creeling – Lobster and Crab Fisheries | Medium | Low | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | Medium | Low | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| Increased vessel traffic within fishing grounds during decommissioning leading to interference with fishing activity (D6) | Creeling – Lobster and Crab Fishery | Medium | Negligible | Minor Adverse | No additional mitigation required. | Minor adverse -Not significant |
| | Mobile Fisheries | Low | Negligible | Negligible Adverse | No additional mitigation required. | Negligible Adverse - Not significant |

*Table 13.25 Summary of potential cumulative impacts assessed for commercial fisheries*

| Potential Impact | Receptor | Value/ Sensitivity | Magnitude | Significance | Mitigation | Residual Impact |
|---|---|---|---|---|---|---|
| **Construction** | | | | | | |
| Reduction in access to, or exclusion from established fishing grounds during construction (CIA - C1) | Demersal Fisheries | Low | Low | Negligible adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |

| Potential Impact | Receptor | Value/ Sensitivity | Magnitude | Significance | Mitigation | Residual Impact |
|---|---|---|---|---|---|---|
| | Pelagic Trawling - Herring Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Mackerel Jigging | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| Displacement, leading to fishing gear conflict and increased fishing pressure within adjacent grounds during construction (CIA - C2) | Demersal Fisheries | Low | Low | Negligible adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Pelagic Trawling - Herring Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Mackerel Jigging | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| Physical presence of offshore wind farm infrastructure leading to fishing gear snagging (CIA - C3) | All Fisheries | Medium | Low | Minor Adverse | No additional mitigation required | Minor adverse -Not significant |
| Displacement or disruption of commercially important fish and shellfish resources during construction (CIA - C4) | See **Chapter 10: Fish and Shellfish Ecology** | | | | | |
| Construction activities leading to additional steaming to alternative fishing grounds (CIA - C5) | Demersal Fisheries – Nephrops, Squid and Whitefish | Low | Low | Negligible adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Creeling – Lobster and Crab Fisheries | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| Increased vessel traffic within fishing grounds during construction leading to interference with fishing activity (CIA - C6) | Creeling – Lobster and Cab Fishery | Medium | Low | Minor adverse | No additional mitigation required | Minor adverse -Not significant |
| | Mobile Fisheries | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |

| Potential Impact | Receptor | Value/ Sensitivity | Magnitude | Significance | Mitigation | Residual Impact |
|---|---|---|---|---|---|---|
| **O&M** | | | | | | |
| Reduction in access to, or exclusion from established fishing grounds during O&M (CIA - O1) | Demersal Fisheries - Whitefish | Low | Low | Negligible adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Demersal Fisheries – Nephrops, Squid | No cumulative impact anticipated | | | | |
| | Creeling – Lobster and Crab Fishery | No cumulative impact anticipated | | | | |
| | Dredging – Scallop Fishery | No cumulative impact anticipated | | | | |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | Medium<br>Low<br>Minor Adverse | | | | |
| Displacement, leading to fishing gear conflict and increased fishing pressure within adjacent grounds during O&M (CIA - O2) | Demersal Fisheries - Whitefish | Low | Low | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Demersal Fisheries – Nephrops, Squid | No cumulative impact anticipated | | | | |
| | Creeling – Lobster and Crab Fishery | No cumulative impact anticipated | | | | |
| | Dredging – Scallop Fishery | No cumulative impact anticipated | | | | |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | No cumulative impact anticipated | | | | |
| Physical presence of offshore wind farm infrastructure leading to fishing gear snagging (CIA - O3) | All Fisheries | No cumulative impact anticipated | | | | |
| Displacement or disruption of commercially important fish and shellfish resources during O&M (CIA - O4) | See **Chapter 10: Fish and Shellfish Ecology** | | | | | |
| | Demersal Fisheries - Whitefish | Low | Low | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant |

| Potential Impact | Receptor | Value/ Sensitivity | Magnitude | Significance | Mitigation | Residual Impact |
|---|---|---|---|---|---|---|
| O&M activities leading to additional steaming to alternative fishing grounds (CIA - O5) | Demersal Fisheries – Nephrops, Squid | No cumulative impact anticipated | | | | |
| | Creeling – Lobster and Crab Fishery | No cumulative impact anticipated | | | | |
| | Dredging – Scallop Fishery | No cumulative impact anticipated | | | | |
| | Pelagic Trawling – Herring Fishery | Low | Low | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Inshore Mackerel Fishery | No cumulative impact anticipated | | | | |
| Increased vessel traffic within fishing grounds during O&M leading to interference with fishing activity (CIA - O6) | Creeling – Lobster and Crab Fishery | No cumulative impact anticipated | | | | |
| | Mobile Fisheries | Low | Negligible | Negligible Adverse | No additional mitigation required | Negligible Adverse - Not significant |
| **Decommissioning** | | | | | | |
| Reduction in access to, or exclusion from established fishing grounds during decommissioning (CIA - D1) | Demersal Fisheries - Whitefish | Low | Low | Negligible adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Demersal Fisheries – Nephrops and Squid | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Pelagic Trawling - Herring Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Mackerel Jigging | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| Displacement, leading to fishing gear conflict and increased fishing pressure within adjacent grounds during decommissioning (CIA - D2) | Demersal Fisheries - Whitefish | Low | Low | Negligible adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Demersal Fisheries – Nephrops and Squid | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |

| Potential Impact | Receptor | Value/ Sensitivity | Magnitude | Significance | Mitigation | Residual Impact |
|---|---|---|---|---|---|---|
| | Pelagic Trawling - Herring Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Mackerel Jigging | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| Physical presence of offshore wind farm infrastructure leading to fishing gear snagging (CIA - D3) | All Fisheries | Medium | Low | Minor Adverse | No additional mitigation required | Minor adverse -Not significant |
| Displacement or disruption of commercially important fish and shellfish resources during decommissioning (CIA - D4) | See **Chapter 10: Fish and Shellfish Ecology** | | | | | |
| Decommissioning activities leading to additional steaming to alternative fishing grounds (CIA - D5) | Demersal Fisheries - Whitefish | Low | Low | Negligible adverse | No additional mitigation required | Negligible Adverse - Not significant |
| | Demersal Fisheries – Nephrops and Squid | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Creeling - Lobster and Crab Fishery | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| | Dredging – Scallop Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Pelagic Trawling - Herring Fishery | Low | Low | Negligible adverse | | Negligible Adverse - Not significant |
| | Mackerel Jigging | Medium | Low | Minor adverse | | Minor adverse -Not significant |
| Increased vessel traffic within fishing grounds during decommissioning leading to interference with fishing activity (CIA - D6) | Creeling – Lobster and Crab Fishery | Medium | Low | Minor Adverse | No additional mitigation required | Minor adverse -Not significant |
| | Mobile Fisheries | Low | Low | Negligible Adverse | | Negligible Adverse - Not significant |

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