THISTLE WIND PARTNERS

# Ayre Offshore Wind Farm Offshore EIA Report

## Volume 2, Chapter 16: Infrastructure and Other Users

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# Glossary

| Defined Term | Definition |
|---|---|
| **Additional Mitigation** | Also referred to as secondary mitigation which is defined by The Institute of Sustainability and Environmental Professionals (ISEP) (formerly Institute of Environmental Management and Assessment (IEMA) as: Actions that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent, or through inclusion in the EIA Report (sic). |
| **Applicant (the)** | Ayre Offshore Wind Farm Limited (AOWFL). |
| **Array Area** | The Array Area is the area in which the Offshore Generation Assets will be located. |
| **Ayre Offshore Wind Farm Limited (AOWFL)** | A Special Purpose Vehicle (SPV) (legal entity) for the purpose of developing the Project. AOWFL are the Applicant for the Offshore Application. |
| **Commercial fishing** | Any form of fishing activity legally undertaken where the catch is sold for taxable profit. |
| **The Convention on the International Regulations for Preventing Collisions at Sea (COLREGS)** | A composite of 'Collision Regulations', referring to The Convention on the International Regulations for Preventing Collisions at Sea. |
| **Crown Estate Scotland (CES)** | Public corporation accountable to Scottish Government, responsible for the management of land and property in Scotland owned by the monarch. |
| **Cumulative Effects** | The effects of the Proposed Development assessed together with effects from the Onshore Infrastructure forming the Project as well as one or more different projects on the same receptor/resource. |
| **Displacement** | An impact that occurs when a bird is forced away from an area of habitual usage. This can be temporary (i.e. a ship moving) or permanent (i.e. the placement of offshore infrastructure). |
| **Effect** | Term used to express the consequence of an impact i.e. the result of change or changes on specific environmental resources or receptors. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity of the receptor or resource in accordance with defined significance criteria. |
| **Embedded Mitigation** | Measures that are adopted as part of the Proposed Development and therefore assessed within the EIA. The proposed approach for the EIA for the Proposed Development is that Embedded Mitigation includes both primary mitigation and tertiary mitigation. These are defined by the ISEP as follows:<br>Primary: Modifications to the location or design of the development made during the pre-application phase that are an inherent part of the project, and do not require additional action to be taken.<br>Tertiary: Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects. |

| Defined Term | Definition |
|---|---|
| **Environmental Impact Assessment (EIA)** | Assessment of the potential likely significant effects of the Proposed Development on the physical, biological, and human environment during construction, Operations and Maintenance (O&M) and decommissioning. |
| **Environmental Impact Assessment Regulations (EIA Regulations)** | Terminology used in the Offshore EIA Report to refer to three sets of regulations:<br>• The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;<br>• The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017; and<br>• The Marine Works (Environmental Impact Assessment) Regulations 2007. |
| **Export Cable Corridor** | The area seaward of Mean High Water Springs (MHWS), which connects the Array Area with the Landfall area within which the Offshore Export Cables will be installed. |
| **High Voltage Alternating Current (HVAC)** | A system of power transmission and distribution that utilises alternating current at voltages typically exceeding 1000 volts, as defined by the International Electrotechnical Commission (2015). HVAC systems are designed to efficiently deliver electricity over long distances with minimal losses, leveraging transformers to modify voltage levels. |
| **Impact** | A change caused by an action that occurs during a project's lifetime. |
| **Inter-Array Cables (IAC)** | Cables which link the Wind Turbines to each other and with the Offshore Substation Platforms (OSPs). |
| **Inter-related effects** | The potential effects of multiple impacts from the construction, O&M and decommissioning of the Project, affecting one receptor. |
| **Interconnector Cables** | Cables which will connect individual OSPs to each other to provide redundancy against cable failure elsewhere. |
| **Landfall** | The area in which the Offshore Export Cables make landfall and is also the transitional area between the Offshore Transmission Assets and the Onshore Transmission Assets. Located in the intertidal area (see definition above) at Sinclair's Bay. |
| **Marine Directorate (MD)** | The Marine Directorate of the Scottish Government, formerly known as Marine Scotland. The planning and licensing authority for Scotland's seas and custodian of Scotland's National Marine Plan (NMP). The Marine Directorate - Licensing and Operations Team (MD-LOT) are specifically responsible for managing Section 36 Consent and Marine Licence Applications seaward of MHWS. |
| **Maximum Design Scenario (MDS)** | The scenario within the design envelope likely to result in the greatest impact on a particular topic receptor, and therefore the one that should be assessed for that topic receptor. |
| **Mitigation** | Measures to avoid, prevent, reduce or control effects on the environment. See also definitions for Embedded Mitigation and Additional Mitigation. |
| **Offshore Application** | Term used to refer to the applications associated with the Proposed Development. The Applicant will apply for:<br>• A Section 36 Consent under the Electricity Act 1989; and<br>• Marine Licence(s) under Marine Scotland Act 2010 and Marine and Coastal Access Act 2009. |

| Defined Term | Definition |
|---|---|
| **Offshore Environmental Impact Assessment (EIA) Report (hereafter, 'Offshore EIA Report')** | Document prepared to report the findings of the EIA for the Proposed Development and produced in accordance with the EIA Regulations. Submitted to support the Offshore Application for the Proposed Development. |
| **Offshore Export Cables** | Subsea cables used to transmit electricity generated offshore by the Wind Turbines from the OSPs to shore. The Transition Joint Bay (TJB) is the location where the Offshore Export Cables terminate, and the onshore cabling begins. |
| **Offshore Generation Assets** | The infrastructure of the Proposed Development required to generate electricity comprising of the Wind Turbines, Wind Turbine foundations and associated infrastructure e.g. IACs. |
| **Offshore Infrastructure** | All of the Offshore Infrastructure associated with the Proposed Development that is located seaward of MHWS, comprising the Offshore Generation Assets and the Offshore Transmission Assets. |
| **Offshore Scoping Report** | The Report that presents the findings of the EIA scoping process undertaken for the Proposed Development with the purpose of obtaining a Scoping Opinion. The Report defines what is intended to be assessed and reported as part of the EIA. |
| **Offshore Substation Platform(s) (OSPs)** | OSPs comprise the support structure, topside and electrical components used for collecting and/or converting electricity generated by the Wind Turbines for transmission by the Offshore Export Cables. |
| **Operation and Maintenance (O&M)** | The phase of the Proposed Development following completion of construction. This phase of development includes routine inspections, repairs and replacement of infrastructure and equipment (including interconnector and IACs), scour protection replenishment or replacement, major component replacement, painting and/or other coating works, removal of marine growth, and replacement of access ladders. |
| **Pathway** | Describes the means or route by which a receptor (such as the seabed) can be affected by an identified impact source (such as Wind Turbine foundations). |
| **Physical Processes** | The collective term for the following: hydrodynamics (water levels and currents); winds and waves; stratification and frontal systems; geology and seabed sediments (including sediment transport); seabed geomorphology; and coastal geomorphology. |
| **Pre-Application Consultation (PAC)** | Pre-application Consultation with communities and stakeholders with regard to the consent applications for the Project. Pre-application Consultation can be carried out either voluntarily (non-statutory) or required by legislation (statutory). |
| **Project (the)** | An overarching term for the Ayre Offshore Wind Farm comprising the offshore and onshore infrastructure required to generate and transmit electricity from the Array Area to the onshore Grid Connection Point. The Project includes the Offshore Generation Assets, the Offshore Transmission Assets and the Onshore Infrastructure. |
| **Project Design Envelope (PDE)** | A description of the range of possible elements that make up the design options for the Proposed Development under consideration when the exact engineering parameters are not yet known. |

| Defined Term | Definition |
|---|---|
| **Proposed Development** | Term used to define the Offshore Infrastructure associated with the Project seaward of MHWS for which consent is being sought. Further details of the parameters are included in Volume 1, Section 3: Project Description. |
| **Safety Zones** | An area extending 500 m from the central point of a subsea installation in which other vessels are prohibited from entering, except in circumstances outlined within Section 96 of the Energy Act 2004. |
| **Scoping Opinion** | A document produced by MD-LOT which is issued in response to submission and review of the scoping report. The scoping opinion is supported with feedback and advice from consultees, which details what is expected to be included in the Offshore EIA Report and what can be scoped out of the EIA process. |
| **Scottish Ministers (the)** | The decision makers with regard to Marine Licence(s) and Section 36 Consent applications in Scottish Offshore Waters and Scottish Marine Area. |
| **ScotWind Leasing Round** | A seabed leasing round run by CES to grant property rights for the seabed in Scottish waters for new commercial scale offshore wind project development. ScotWind Leasing must be sited within POA of the SMP. |
| **Scour protection** | Protective materials installed to avoid sediment being eroded away from the base of the foundations and/or buried subsea cable due to the flow of water. |
| **Section 36 Consent** | Scottish Ministers' consent under Section 36 of the Electricity Act 1989 required for the generating assets of the Proposed Development. |
| **Sectoral Marine Plan (SMP)** | A plan developed by the Scottish Government which provide the strategically planned spatial footprint for offshore wind development in Scotland. |
| **Significance** | Effect factor that is determined by the magnitude of impact along with the sensitivity of the receptor. |
| **Site Boundary** | The boundary within which all elements of the Proposed Development will be located. The Site Boundary comprises the Array Area and Export Cable Corridor which ends at MHWS. |
| **Spring Tidal Excursion** | The distance suspended sediment is transported prior to being carried back on the returning tide. |
| **Study area** | For each environmental topic, the baseline environment will be characterised, and the potential environmental impacts will be described within a topic-specific study area. Specific study areas are defined for each topic and are based on the maximum spatial extent across which potential impacts of the Project may be experienced by the relevant receptors (i.e. Zone of Influence). |
| **Wind Turbines** | Structures comprising of a tubular tower, rotor blades, and a nacelle which houses the Wind Turbine generator. |

# Acronyms

| Acronym | Definition |
|---|---|
| **AIS** | Automatic Identification System |
| **AOWFL** | Ayre Offshore Wind Farm Limited |
| **BAT** | Best Available Technique |
| **BEP** | Best Environmental Practice |
| **BT** | British Telecom |
| **CCS** | Carbon Capture and Storage |
| **CEA** | Cumulative Effects Assessment |
| **CEFAS** | Centre for Environment, Fisheries and Aquaculture Science |
| **CES** | Crown Estate Scotland |
| **COLREG** | The Convention on the International Regulations for Preventing Collisions at Sea |
| **$CO_2$** | Carbon Dioxide |
| **CSV** | Construction Support Vessel |
| **CTV** | Crew Transfer Vessel |
| **DP** | Dynamic Positioning |
| **DSV** | Diving Support Vessel |
| **EEA** | European Economic Area |
| **EIA** | Environmental Impact Assessment |
| **EMEC** | European Marine Energy Centre |
| **EMODNet** | European Marine Observation and Data Network |
| **ESCA** | European Subsea Cables Association |
| **FCA** | Flotta Catchment Area |
| **GVA** | Gross Value Added |
| **HM** | His Majesty's |
| **HSE** | Health and Safety Executive |
| **HVAC** | High Voltage Alternating Current |
| **HVDC** | High Voltage Direct Current |
| **IAC** | Inter-Array Cable |
| **ICPC** | International Cable Protection Committee |
| **INTOG** | Innovation and Targeted Oil and Gas |
| **JRC** | Joint Radio Company |
| **KIS-ORCA** | Kingfisher Information Service – Offshore Renewable and Cable Awareness |
| **MCA** | Maritime & Coastguard Agency |
| **MCAA** | Marine and Coastal Access Act 2009 |
| **MD** | Marine Directorate |
| **MDS** | Maximum Design Scenario |
| **MD-LOT** | Marine Directorate-Licensing Operations Team |

| Acronym | Definition |
|---|---|
| **MLWS** | Mean Low Water Springs |
| **MPS** | Marine Policy Statement |
| **NLB** | Northern Lighthouse Board |
| **NMP** | National Marine Plan |
| **NMPi** | National Marine Plan interactive |
| **NOTAM** | Notice To Aviation |
| **NRA** | Navigational Risk Assessment |
| **NSTA** | North Sea Transition Authority |
| **NtM** | Notice to Mariners |
| **NTS** | National Transmission System |
| **OGA** | Oil and Gas Authority |
| **OIC** | Orkney Islands Council |
| **OMFCL** | Offshore Microwave Fixed Communication Links |
| **OMP** | Operation and Maintenance Programme |
| **OSP** | Offshore Substation Platform |
| **OWF** | Offshore Wind Farm |
| **O&M** | Operation and Maintenance |
| **PADI** | Professional Association of Diving Instructors |
| **PDE** | Project Design Envelope |
| **REWS** | Radar Early Warning Systems |
| **RYA** | Royal Yachting Association |
| **SCUBA** | Self Contained Underwater Breathing Apparatus |
| **SHEFA** | Shetland Islands-Faeroe Islands Submarine Cable |
| **SMP** | Sectoral Marine Plan |
| **SOLAS** | International Convention for the Safety of Life at Sea |
| **SOV** | Service Operation Vessel |
| **SSC** | Suspended Sediment Concentration |
| **SSEN** | Scottish and Southern Electricity Networks |
| **UK** | United Kingdom |
| **UKCS** | United Kingdom Continental Shelf |
| **UKHO** | United Kingdom Hydrographic Office |
| **VTS** | Vessel Traffic Survey |

# Table of Units

| Units | Definition |
|---|---|
| % | Percent |
| £ | GBP |
| GW | GigaWatt |
| km | Kilometre |
| $km^2$ | Square kilometre |
| kV | Kilovolt |
| l | Litres |
| m | Metre |
| $m^2$ | Square metre |
| MW | MegaWatt |
| nm | Nautical Miles |
| sq | Square |

# 16 Infrastructure and Other Users

## 16.1 Introduction

16.1.1 This section of the Offshore Environmental Impact Assessment (EIA) Report presents the assessment of the likely significant environmental effects on Infrastructure and Other Users that may potentially occur as a result of the Proposed Development during the construction, Operations and Maintenance (O&M) and decommissioning phases.

16.1.2 The assessment presented is informed by the following technical chapters:

- Volume 2, Chapter 7: Physical Processes;
- Volume 2, Chapter 13: Commercial Fisheries; and
- Volume 2, Chapter 14: Shipping and Navigation.

16.1.3 Impacts relating to risk to all vessel types and safe navigation (including for port activities) will be considered within Volume 2, Chapter 14: Shipping and Navigation. The assessment presented within this chapter will only consider impacts which may affect marine activities or infrastructure within the Infrastructure and Other Users Study Area.

## 16.2 Infrastructure and Other Users Study Area

16.2.1 The study area(s) for Infrastructure and Other Users are shown in Figure 16.1 and are defined as follows:

- the Local Infrastructure and Other Users Study Area;
- the Regional Infrastructure and Other Users Study Area.

16.2.2 The Infrastructure and Other Users Study Area was presented to and accepted by the Marine Directorate within the Scoping Opinion (MD-LOT, 2024) of the Ayre Offshore Application and varies in scale depending on the receptor, as follows:

- The Local Infrastructure and Other Users Study Area: comprises the Site Boundary with an additional 1 km buffer. Oil and gas infrastructure, cables and pipelines and offshore renewables projects undergoing maintenance require 500 m Safety Zones. The Local Infrastructure and Other Users Study Area exceeds the extent of direct physical overlap, and any Safety Zones, between the Proposed Development and the following receptors:
  - recreational activities (including receptors carrying out sailing and motor cruising, recreational fishing, surfing, kayaking, coasteering and paddleboarding and beach users);
  - offshore energy projects (e.g. Offshore Wind Farms (OWFs), tidal and wave projects, oil and gas activities);
  - Carbon Capture and Storage (CCS), natural gas storage, coal deposits and underground gasification;
  - cables and pipelines;
  - offshore microwave fixed communication links; and

- Radar Early Warning Systems (REWS).

- The Regional Infrastructure and Other Users Study Area is based on one Spring Tidal Excursion from the Site Boundary. One Spring Tidal Excursion is considered to be the maximum area within which increases in Suspended Sediment Concentrations (SSCs) could arise from activities associated with the Proposed Development. The Spring Tidal Excursion varies, ranging from 2 km from the north-east boundary of the Array Area to 7.6 km to the north of the Array Area. The buffer from the Spring Tidal Excursion at mid-Export Cable Corridor is approximately 5.6 km before expanding to its greatest extent of 13.5 km parallel to its Landfall location at Sinclair's Bay. The following receptors are considered within this Regional Infrastructure and Other Users Study Area:
  - marine aggregate extraction and disposal sites; and
  - recreational Self Contained Underwater Breathing Apparatus (SCUBA) diving.

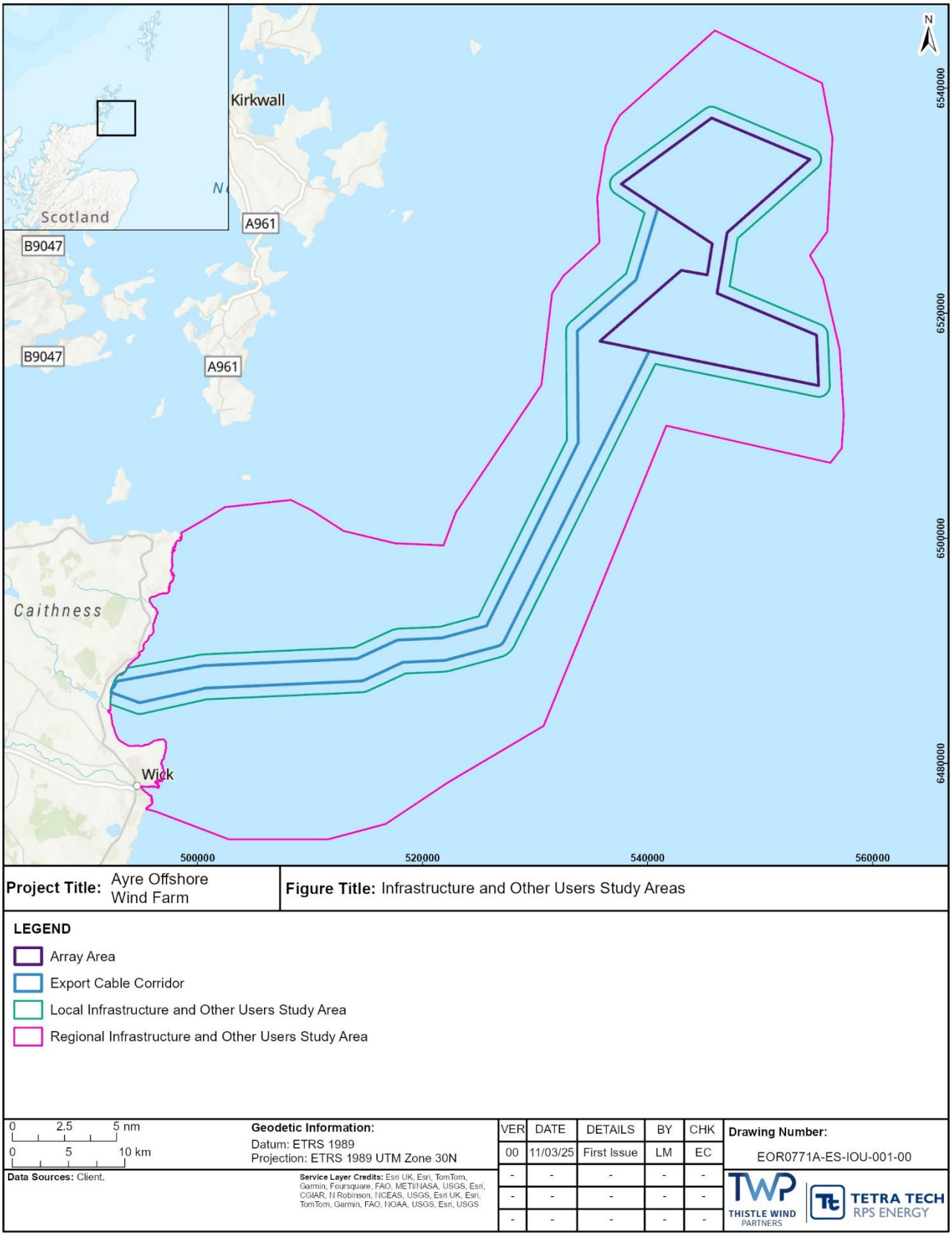


**Figure 16.1: Infrastructure and Other Users Study Areas**

## 16.3 Legislative and Policy Context

16.3.1 The overarching policy and legislation applicable to the Proposed Development is presented in Volume 1, Chapter 2: Policy and Legislation. Legislation specific to Infrastructure and Other Users is contained in the Marine and Coastal Access Act (MCAA) (United Kingdom (UK) Government, 2009) and Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (UK Government, 2017). Legislation relevant to Infrastructure and Other Users are provided in Table 16.1. Policy specific to Infrastructure and Other Users, is contained in the Sectoral Marine Plan (SMP) for Offshore Wind Energy (Scottish Government, 2020; Scottish Government, 2025 (update in draft)), the Scottish National Marine Plan (NMP) (Scottish Government, 2015a), the UK Marine Policy Statement (MPS) (His Majesty's (HM) Government, 2011) and the Initial Plan Framework SMP for Offshore Wind for Innovation and Targeted Oil and Gas Decarbonisation (INTOG) (Scottish Government, 2022). A summary of the policy provisions relevant to Infrastructure and Other Users are provided in Table 16.2 below, with other relevant policy provisions set out in Table 16.3, Table 16.4, Table 16.5 and Table 16.6.

**Table 16.1: Summary of Legislation Relevant to Infrastructure and Other Users**

| Legislation | How and Where Considered in the Offshore EIA Report |
|---|---|
| **MCAA 2009 (UK Government, 2009)** | Parts three and four of the MCAA 2009 introduced a new marine planning and licensing system for overseeing the marine environment and a requirement to obtain a Marine Licence for certain activities and works at sea (works between 12 nm and up to 200 nm offshore).<br><br>The Proposed Development located in Scottish waters requires an application for a Marine Licence under the MCAA 2009 to be made to the Marine Directorate-Licensing Operations Team (MD-LOT). This licence is granted by Scottish Ministers and will require a Marine Licence for the construction works and activities associated with the Array Area and Offshore Export Cable. |
| **Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (UK Government, 2017)** | The EIA regulations set out the statutory process and minimum requirements for an EIA to be acceptable by law, including the provision of adequate environmental information and the carrying out of consultation, publication and notification. |

**Table 16.2: Summary of SMP for Offshore Wind Energy (Scottish Government, 2020) relevant to Infrastructure and Other Users**

| Summary of Relevant Policy | How and Where Considered in the Offshore EIA Report |
|---|---|
| **General Policies (Scottish Government, 2020)** | |
| **Paragraph 2.1: Minimise the potential adverse effects on other marine users and economic sectors resulting from further commercial scale offshore wind development.** | The potential adverse effects on other marine users are discussed in Section 16.6 of this chapter. Economic sectors are discussed in Volume 2, Chapter 18: Socio-Economic, Tourism and Recreation and Volume 3, Technical Appendix 18.1: Socio-Economic, Tourism and Recreation Technical Report. |
| **Community and Stakeholder Engagement (Scottish Government, 2020)** | |
| **Paragraph 5.1.1: Developers will be expected to undertake further and ongoing engagement with the renewables, commercial fishing, shipping, defence and aviation stakeholders. Engagement should have a particular focus on cumulative assessment, socio-economic impacts and commercial fisheries.** | Other renewable projects are discussed in Volume 3, Technical Appendix 5.1: Consultation Logs. Commercial fisheries are discussed in Volume 2, Chapter 13: Commercial Fisheries and Volume 3, Technical Appendix 13.1: Commercial Fisheries Technical Report. Shipping is discussed in Volume 2, Chapter 14: Shipping and Navigation and Volume 3, Technical Appendix 14.1: Shipping and Navigation Risk Assessment. Defence and aviation are discussed in Volume 2, Chapter 15: Aviation and Radar and Volume 3, Technical Appendix 15.1: Aviation and Radar Technical Report. Cumulative effects are discussed in Section 16.12 of this chapter and discussed further in Volume 3, Technical Appendix 4.4: Cumulative Effects Assessmnet - Screening and 4.5: Transboundary Impacts Screening. |
| **Cumulative and In Combination Effects (Scottish Government, 2020)** | |
| **Paragraph 5.1.3: Further assessment work will be required to identify and address cumulative and in combination effects of offshore wind developments. Scheduling of work and the effects should be carefully monitored and addressed at a project level and taken into account in the iterative plan review process.** | Cumulative and in combination effects of offshore wind developments are discussed in Section 16.12 of this chapter with schedules and effects at a project level addressed in Table 16.19. Further details can be found in Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment - Screening and 4.5: Transboundary Impacts Screening. |
| **Mitigation Measures (Scottish Government, 2025)** | |
| **Page 53 of the Draft Updated SMP for Offshore Wind Energy: Proposed mitigation measures to be implemented at project level to minimise impacts to other marine sectors include: early engagement with other sectors, ensuring sufficient cable burial depths, and utilising smaller turbines in important tourism areas.** | Consultation undertaken with relevant stakeholders and marine sectors is discussed in Section 16.4. Mitigation measure proposed are described and summarised in Section 16.9. |

**Table 16.3: Summary of Scottish NMP (Scottish Government, 2015a) policies relevant to Infrastructure and Other Users**

| Summary of Relevant Policy | How and Where Considered in the Offshore EIA Report |
|---|---|
| **Oil and Gas** | |
| **Oil and Gas Policy Objectives-**<br>1) Maximise the recovery of reserves through a focus on industry-led innovation, enhancing the skills base and supply chain growth.<br>2) An industry which delivers high level risk management across all its operations and that is especially vigilant in more testing and current environments.<br>3) Continued technical development of enhanced oil recovery and exploration, and the associated seismic activity carried out according to the principles of the Best Available Technique (BAT) and Best Environmental Practice (BEP) approach.<br>4) Where possible to work with emerging sectors to transfer the experience, skills and knowledge built up in the oil and gas industry to allow other sectors to benefit and reduce their environmental impact. | Oil and gas interests have been identified through a desktop study and are discussed in this chapter (Paragraphs 16.6.30 through to 16.6.36). |
| **Offshore Wind, Wave and Tidal Projects** | |
| **Offshore Wind and Marine Renewable Energy Policy Objectives -**<br>1) Sustainable development of offshore wind, wave and tidal renewable energy in the most suitable locations.<br>2) Economic benefits from offshore wind, wave and tidal energy developments maximised by securing a competitive local supply chain in Scotland.<br>3) Alignment of marine and terrestrial planning and efficient consenting and licensing processes including but not limited to data sharing, engagement, and timings, where possible.<br>4) Aligned marine and terrestrial electricity transmission grid planning and development in Scottish waters.<br>5) Contribute to achieving the renewable targets to generate electricity equivalent to 100% of Scotland's gross annual electricity consumption from renewable sources by 2020.<br>6) Contribute to achieving the decarbonisation target of 50g CO 2/kWh by 2030 (to cut carbon emissions from electricity generation by more than four - fifths).<br>7) Sustainable development and expansion of test and demonstration | Offshore wind projects have been identified through a desktop study and are discussed in Paragraph 16.6.27, and tidal projects in Paragraph 16.6.29. |

| Summary of Relevant Policy | How and Where Considered in the Offshore EIA Report |
|---|---|
| facilities for offshore wind and marine renewable energy devices.<br>8) Coordinated government and industry wide monitoring. | |
| **Submarine Cables** | |
| Submarine Cable Policy Objectives -<br>1) Protect submarine cables whilst achieving successful seabed user co - existence.<br>2) Achieve the highest possible quality and safety standards and reduce risks to all seabed users and the marine environment.<br>3) Support the development of a Digital Fibre Network, connecting Scotland's rural and island communities and contributing to world -class connectivity across Scotland.<br>4) Safeguard and promote the global communications network.<br>5) Support the generation, distribution and optimisation of electricity from traditional and renewable sources to Scotland, UK and beyond. | Submarine cables have been identified through desktop study and are discussed in Paragraphs 16.6.44 through to 16.6.47. |

**Table 16.4: Summary of UK MPS (HM Government, 2011) relevant to Infrastructure and Other Users**

| Summary of Relevant Policy | How and Where Considered in the Offshore EIA Report |
|---|---|
| **General Policies** | |
| **2.3.2.1 When considering potential benefits and adverse effects, decision makers should take into account any multiple and cumulative impacts of proposals, in the light of other projects and activities.** | Cumulative effects are discussed in Section 16.12 of this chapter. |
| **Box 1: The high level marine objectives There is equitable access for those who want to use and enjoy the coast, seas and their wide range of resources and assets and recognition that for some island and peripheral communities the sea plays a significant role in their community.** | Other marine users are discussed in Section 16.6 of this chapter. |

**Table 16.5: Summary of Initial Plan Framework SMP for Offshore Wind Energy for INTOG (Scottish Government, 2022) relevant to Infrastructure and Other Users**

| Summary of Relevant Policy | How and Where Considered in the Offshore EIA Report |
|---|---|
| **General Policies** | |
| **3.2 Minimise the potential adverse effects on other marine users, economic sectors and the environment resulting from further offshore wind development.** | The potential adverse effects on other marine users are discussed in Section 16.6 of this chapter. Economic sectors are discussed in Volume 2, Chapter 20: Socio-Economic, Tourism and Recreation and Volume 3, Technical Appendix 18.1: Socio-Economic, Tourism and Recreation Technical Report. The potential adverse effects on the environment are discussed in several disciplines of the EIA including Volume 2, Chapter 22: Climatic Change. |

**Table 16.6: Summary of the draft Orkney Islands Council Regional Marine Plan (Orkney Islands Council, 2024) relevant to Infrastructure and Other Users**

| Summary of Relevant Policy | How and Where Considered in the Offshore EIA Report |
|---|---|
| **General Policies** | |
| **Sector Policy 4b: Safeguarding existing pipeline, electricity and telecommunications cable infrastructure**<br>**i.Proposals for development and/or activities should avoid, minimise and/or appropriately mitigate adverse impacts on pipeline, electricity and telecommunications infrastructure.** | The potential adverse effects on other marine users, including pipeline and cable operators are discussed in Section 16.6 of this chapter. |
| **Sector Policy 7b: Safeguarding tourism, recreation, leisure and sport uses**<br>**i.Proposals for development and/or activities should avoid, minimise or appropriately mitigate significant adverse impacts on tourism, recreation, leisure and sport uses.**<br>**ii.Proposals for development and/or activities should demonstrate engagement and/or consultation with relevant tourism, recreation, leisure and sport bodies and/or users to ensure that the measures proposed to avoid, minimise and/or mitigate adverse impacts on tourism, recreation, sport and leisure uses are appropriate.** | The potential adverse effects on other marine users, including tourism, recreation, leisure and sport users are discussed in Section 16.6 of this chapter. Stakeholder consultation with relevant tourism, recreation, leisure and sport bodies are detailed in Section 16.4 of this chapter. |

## 16.4 Consultation

16.4.1 The approach to consultation for the Proposed Development is set out in Volume 1, Chapter 5: Consultation and Engagement. A summary of the issues raised during consultation activities undertaken to date and specific to Infrastructure and Other Users is presented in Table 16.7, together with how these issues have been considered in the production of this assessment. Further detail is presented within Volume 1, Chapter 5: Consultation and Engagement, Volume 3, Technical Appendix 5.1: Consultation Logs and Volume 3, Technical Appendix 5.2: Pre-Application Consultation Report.

**Table 16.7: Summary of Key Consultation Issues Raised During Consultation Activities Undertaken for the Proposed Development Relevant to Infrastructure and Other Users**

| Date | Consultee and Type of Consultation | Summary of Issue(s) Raised | Response to Issue Raised and/or Where Considered in this Chapter |
|---|---|---|---|
| **11 October 2024** | Marine Directorate - Licensing Operations Team (MD-LOT)<br><br>Scoping Opinion | The Scottish Ministers stated that they are, "*content with the study areas…consider the baseline data gathered for the assessment appropriate*." Additionally, the Scottish Minsters are content with those impacts scoped in and out of the assessment, the approach to the cumulative assessment and provided no further comment. | The Applicant acknowledges this response and notes that the study areas and the impacts scoped in and out of the assessment remain unchanged, with the exception of interference with offshore microwave links. This impact has now been scoped out following consultation with the Joint Radio Company (JRC), as detailed in Table 16.7. Furthermore, the assessment of effects, including cumulative effects, has been carried out in accordance with the methodology outlined in Volume 1, Chapter 4: EIA Methodology. |
| | JRC<br><br>Scoping Opinion | The JRC stated that *"In the case of this proposed wind energy development, JRC does not foresee any potential problems based on known interference scenarios and the data you have provided. However, if any details of the wind farm change, particularly the disposition or scale of any turbine(s), it will be necessary to re-evaluate the proposal. Please note that due to the large number of adjacent radio links in this vicinity, which have been taken into account, clearance is given specifically for a location within the declared grid reference (quoted above). This proposal is *cleared* - with respect to radio link infrastructure operated by the local energy networks. It should be noted that this clearance pertains only to the date of its issue. As the use of the spectrum is dynamic, the use of the band is changing on an ongoing basis. This will negate the possibility of an objection being raised at that time as a consequence of any links assigned between your enquiry and the finalisation of your project. You are therefore* | The Applicant notes JRC's comments raised from the Scoping Opinion and will continue engagement in addition to providing an indicative Wind Turbine layout. |

| Date | Consultee and Type of Consultation | Summary of Issue(s) Raised | Response to Issue Raised and/or Where Considered in this Chapter |
|---|---|---|---|
| | | *advised to seek re-coordination prior to submitting a planning application (giving precise turbine location data)".* | |
| | British Telecom (BT)<br><br>Scoping Opinion | BT stated that *"We have studied this Thistle Wind Partners Limited Ayre Offshore Wind Farm scoping proposal with respect to EMC and related problems to BT point-to-point microwave radio links. The conclusion is that, the project indicated should not cause interference to BT's current and presently planned radio network. BT requires 100 m minimum clearance from any structure to the radio link path. If the proposed locations change, please let us know and we can reassess this for you."* | The Applicant notes this response. |
| | Royal Yachting Association (RYA) Scotland<br><br>Scoping Opinion | RYA Scotland stated that *"I have read the relevant parts of the scoping report on behalf of RYA Scotland. I agree that Shipping and Navigation should be scoped in and would wish to be involved with the Navigational Risk Assessment. I will work on this with my colleague in the Cruising Association."*<br><br>Additionally, RYA Scotland stated their approval of the "*baseline (including data sources), methodology proposed, Embedded Mitigation, and potential impacts (scoped in and out), potential inter-related effects, potential cumulative effects, and potential transboundary impacts*." | The Applicant notes this response. |
| **05 June 2025** | JRC<br><br>Email correspondence | JRC stated that "*We can confirm that no fixed / microwave links protected by JRC will be affected by the offshore turbine maximum blade heights supplied. We cannot comment or provide advice / clearance on any microwave links nearby that are not protected by JRC. We can confirm that no specific turbine layout (within these parameters) will affect nearby microwave links protected by JRC. The entirety of the design envelope (provided to us previously) is cleared; therefore any layout design within the confines of this envelope will be cleared by default."* | The Applicant notes JRC's response and welcomes the scoping out of offshore microwave links. |

## 16.5 Data Sources

16.5.1 Key literature sources have been reviewed and analysed to inform this Infrastructure and Other Users baseline. In addition, consultation with stakeholders has been undertaken to aid the collection of baseline information.

### Desktop Study

16.5.2 Information on Infrastructure and Other Users within the Infrastructure and Other Users Study Area was collected through a detailed desktop review of existing studies and datasets which are summarised in Table 16.8.

**Table 16.8: Summary of Key Data Sources**

| Title | Source | Extent | Year | Author |
|---|---|---|---|---|
| **Offshore renewable and cable access** | Kingfisher Information Service – Offshore Renewable & Cable Awareness project (KIS-ORCA) | 2025 | 2025 | KIS-ORCA |
| **Diving Sites** | Professional Association of Diving Instructors (PADI) | 2025 | 2025 | PADI |
| **Webmap Service – Offshore oil and gas activity** | North Sea Transition Authority (NSTA) | 2025 | 2025 | NSTA |
| **Communication Links** | via email correspondence with JRC (see Table 16.7) | 2024/2025 | 2024/2025 | JRC |
| **Webmap service – Offshore Wind Farm** | 4C Offshore | 2024 | 2024 | 4C Offshore |
| **Webmap Service – Various layers** | National Marine Plan interactive (NMPi) | 2024 | 2024 | NMPi |
| **Webmap service – disposal sites** | European Marine Observation and Data Network (EMODnet) | 2023 | 2023 | EMODnet |
| **UK Coastal Atlas of Recreational Boating** | RYA | 2019 | 2019a | RYA |
| **Scottish Marine Recreation and Tourism Survey** | Scottish Government | 2015 | 2015 | Marine Directorate |
| **Scotland's National Marine Plan** | Scottish Government | 2015 | 2015 | Marine Directorate |
| **Identifying Recreational Cruising Routes, Sailing** | RYA | 2005 | 2005 | RYA |

| Title | Source | Extent | Year | Author |
|---|---|---|---|---|
| **and Racing Areas** | | | | |
| **Scotland NMPi** | Marine Directorate | Compiles a series of data | 2024 | Marine Directorate |

### Site-Specific Surveys

16.5.3 Receptor information and data related to this topic has primarily been obtained through desktop study and data provided through stakeholder consultation. In addition to this, information from two seasonally representative 14-day Vessel Traffic Surveys (VTS) conducted at the Ayre Array in July and December 2023 and one top-up survey in July 2025, to inform Volume 2, Chapter 14: Shipping and Navigation of the Environmental Statement, has been incorporated where relevant.

16.5.4 Additional data and modelling studies are not considered to be required to characterise the Infrastructure and Other Users baseline.

## 16.6 Baseline Environment

### Overview of Baseline Environment

16.6.1 The following sections provide an overview of the baseline recreational boating (including sailing and motor cruising), recreational fishing, other recreational activities, offshore energy projects, offshore cables and pipelines, carbon capture, natural gas storage and underground gasification, oil and gas, coal deposits, and marine aggregate extraction and disposal sites, within the Infrastructure and Other Users Study Areas.

#### *Ports, Harbours and Marinas*

16.6.2 The largest harbours in proximity to the Proposed Development are Kirkwall, Hatston and Wick, whilst the major port in proximity to the Proposed Development is the Flotta Oil Terminal in Scapa Flow. The major harbours of Kirkwall and Hatston handle cruise and cargo vessels, in addition to ferry services. Northlink Ferries operate on a daily basis from Hatston to Aberdeen and Lerwick, and a container service operates twice weekly from Lerwick and Aberdeen to Kirkwall (Orkney Islands Council (OIC) Harbour Authority, 2025). Wick Harbour has been a popular fishing port for over 20 years and now supports the offshore renewable industry as demonstrated by being chosen as the O&M base supporting Beatrice OWF (Wick Harbour, 2025). Hatston is the longest deepwater commercial berth in Scotland at 385 m and 10.5 m draft and plays an important role in the marine energy industry, serving as a base for tidal power opportunities (Cruise Orkney, 2025). Orkney is a popular cruise ship destination with a total of 232 cruise ships docked in 2024, with the piers at Kirkwall and Hatston receiving 80% of the total cruise ships (UK Government, 2025). Scapa Flow is Europe's largest natural harbour and anchorages at 125 sq miles with the Oil Port of the Flotta Oil Terminal, located within Scapa Flow. The Flotta Oil Terminal is the hub of oil and gas operations in Orkney and facilitates ship-to-ship transfers of crude oil products (OIC Harbour Authority, 2025).

16.6.3 Wick harbour is the only harbour located within the Regional Infrastructure and Other Users Study Area (Figure 16.2) and is located 14 km south of the Local Infrastructure and Other Users Study Area. The harbours of Kirkwall and Hatston are located west of the Proposed Development (Figure 16.2) at 36 km and 37 km, respectively from the Local Infrastructure and Other Users Study Area (NMPi, 2024). The Flotta Oil Terminal within Scapa Flow is located west of the Proposed Development (Figure 16.2) at 41 km from the Local Infrastructure and Other Users Study Area, and outside the Regional Infrastructure and Other Users Study Area (NMPi, 2024).

16.6.4 Additional information relating to harbours in the vicinity of the Proposed Development is presented in Volume 2, Chapter 14: Shipping and Navigation.

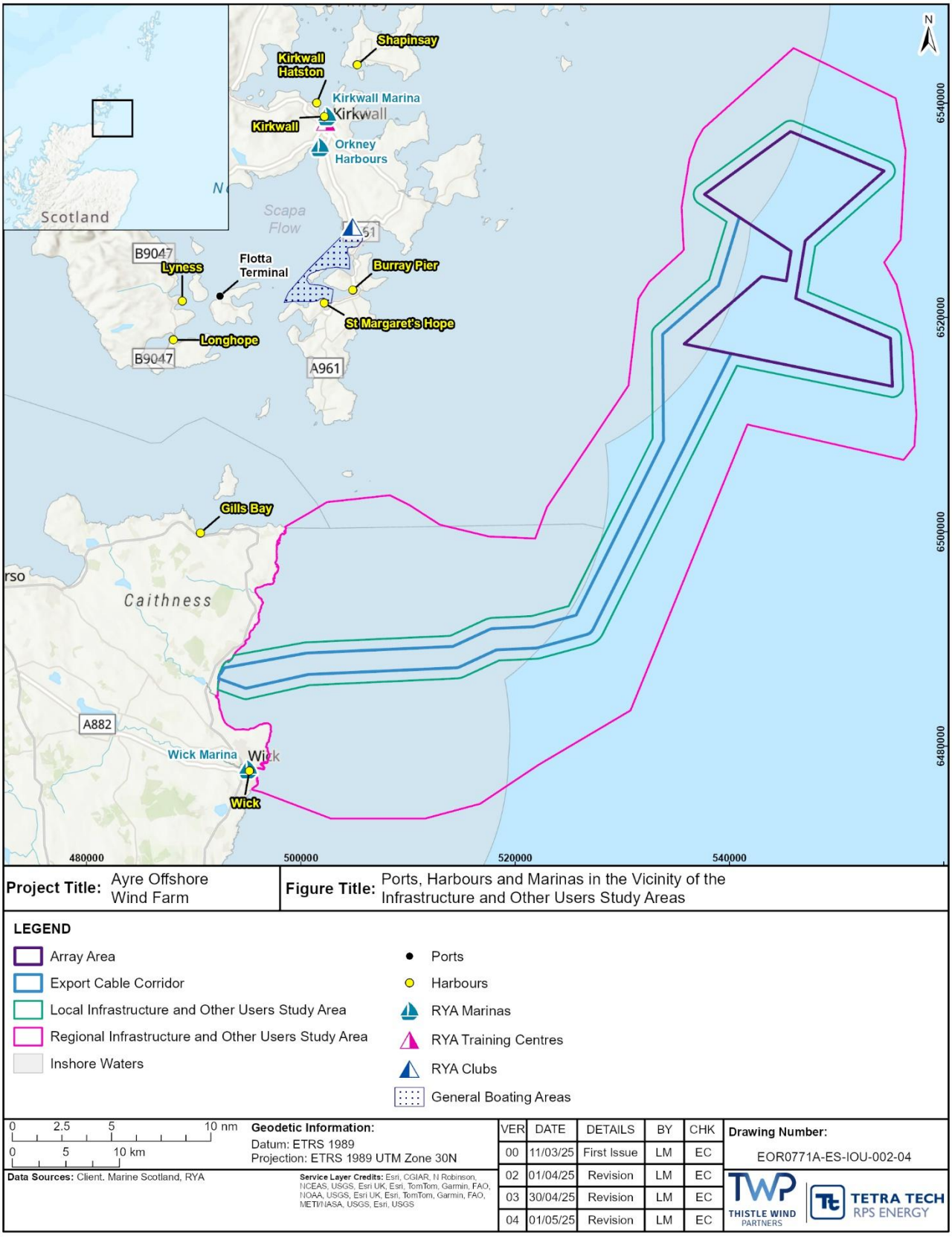


**Figure 16.2: Ports, Harbours and Marinas in the Vicinity of the Infrastructure and Other Users Study Area**

### *Recreational Sailing, Boating and Motor Cruising*

16.6.5 This section provides an overview of the recreational sailing, boating and motor cruising within the vicinity of the Proposed Development (Figure 16.2 and Figure 16.3). It should be noted that recreational sailing and motor cruising are considered in Volume 3, Technical Appendix 14.1: Shipping and Navigation Risk Assessment ,as a specific vessel size category, and the Infrastructure and Other Users chapter considers receptors undertaking recreational sailing, boating and motor cruising as an activity only.

16.6.6 There exists a high degree of engagement between Scottish residents and the marine environment, with 89% of the Scottish public surveyed stating they have visited the Scottish coast in the past year (Marine Directorate, 2020). Marine tourism is a key sector for Scotland, generating £594 million Gross Value Added (GVA) and 28,300 jobs in 2017 (Marine Scotland, 2020a). In a 2015 survey of 279 businesses involved in marine recreation and tourism, general recreation, sailing and other forms of boating was reported as the second largest category that the businesses serve (Marine Directorate, 2015).

16.6.7 General boating areas are utilised by various recreational receptors, including sailboards, dinghies, watercraft and small cruisers. These areas encompass general sailing areas, sailing schools, sailing clubs and racing areas, and are derived from Automatic Identification System (AIS) tracks and club locations to map areas of higher recreational use (Figure 16.2). General boating areas are located south of Kirkwall. The closest general boating area is located at Holm, Orkney, approximately 32.4 km west of the Array Area (Figure 16.2). Motor cruising activity is unlikely to extend into the Array Area due to the distance from shore and the limited number AIS tracks observed within the Array Area. The few tracks present are likely associated with larger cruising vessels or yachts. This aligns with RYA guidance, which generally considers motor cruising to be a nearshore activity, with offshore passages typically undertaken by more experienced skippers and larger vessels (RYA, n.d.) Recreational activity can be haphazard, with activities subject to weather conditions and generally does not involve point-to-point passage as seen with larger commercial vessels (RYA, 2005). Cruising activities may involve day excursions launching from local ports and often includes a return journey to the home port on the same day. In general, recreational boating is highly seasonal, with a greater density of vessels found throughout the summer months, as well as highly diurnal, with boating activities usually occurring during the daytime (RYA, 2005).

16.6.8 Sailing tourism in Scotland is worth £130 million and supports 2,700 jobs across Scotland's four main sailing areas, the Clyde, west, north and east coasts (EKOS Limited, 2016). RYA Scotland is a membership organisation that provide facilities to members of the public, clubs and teams to learn to sail, gain experience and obtain sailing qualifications across their 180 recognised training centres in Scotland (RYA, 2021). Inshore sailing is predominantly undertaken by small recreational vessels including dinghies for either racing or cruising at leisure. Offshore sailing is usually in the form of organised offshore racing or cruising at leisure and is undertaken by yachts. RYA offers various types of sailing experiences in Scotland, including racing, sail cruising and powerboating (RYA,

2023). The sailing season typically occurs between May and August, reaching its highest level of activity in July. During summer months, Orkney Sailing Club in Kirkwall holds point races on Thursday evenings and Holm Sailing Club runs point racing on Tuesday evenings (Orkney Sailing Club, 2016; Holm Sailing Club, 2025). The majority of sailing activity from these clubs is held in coastal regions outside of the Local and Regional Infrastructure and Other Users Study Areas, approximately 36 km and 32 km west of the Array Area, respectively.

16.6.9 Racing areas are generally used at weekends and during holiday periods by sailing, boating and motor cruising users. These areas are under the control of nearby sailing clubs and often contain temporary or permanent marker buoys. Racing routes are frequently established on the day of the event and must adhere to customised racing guidelines, while still complying with conventional collision regulations when competing vessels are involved (RYA, 2005). Further details about these collision regulations can be found in Volume 2, Chapter 14: Shipping and Navigation including Convention on the International Regulations for Preventing Collisions at Sea (COLREG) and International Convention for the Safety of Life at Sea (SOLAS). Racing areas are only located in coastal regions and due to the distance of the Array Area from the shoreline, it can be deduced that there are no known racing areas in the Local Infrastructure and Other Users Study Area (NMPi, 2024). However, racing areas are subject to change and it should be noted that the coastal areas around the Proposed Development are extensively utilised by several recreational sailing, boating and motor cruising activities (Figure 16.2).

16.6.10 AIS data for recreational craft identifies vessels transiting predominantly in a parallel direction to the Scottish coastline (Figure 16.3). Not all small recreational craft vessels will have AIS fitted onboard as it is not a requirement but do so voluntarily for safety purposes. Based on the AIS data available, the majority of vessel tracks to the west of the Array Area depart or arrive into the major harbours of Kirkwall, Hatston, and Wick. Vessel tracks are found to intersect the Regional Infrastructure and Other Users Study Area closer to the shoreline. Despite this, vessel tracks are seen to reach the vicinity of the Regional Infrastructure and Other Users Study Area from several origins, including south of Peterhead (MarineTraffic, 2025).

16.6.11 Three 14-day AIS, Radar and visual observation VTS were undertaken to inform the NRA for the Proposed Development in compliance with Marine Guidance Note (MGN) 654 (Maritime and Coastguard Agency (MCA), 2021). The dataset from each VTS was supplemented with AIS collected from alternate AIS receivers to ensure optimal coverage. Data has been extracted from the VTS reports to inform the recreational vessel activity within a 10 nm buffer survey area around the Array Area. Across the survey periods, recreational vessels were generally recorded in west transit within the 10 nm buffer survey area. There were minimal levels of recreational vessels recorded, with a total of 17 recreational transits in 2023 within the 10 nm survey area, and 31 in 2025. All recreational vessels were recorded only during the summer survey period.

16.6.12 Additional information related to recreational sailing, boating and motor cruising is presented in Volume 2, Chapter 14: Shipping and Navigation.

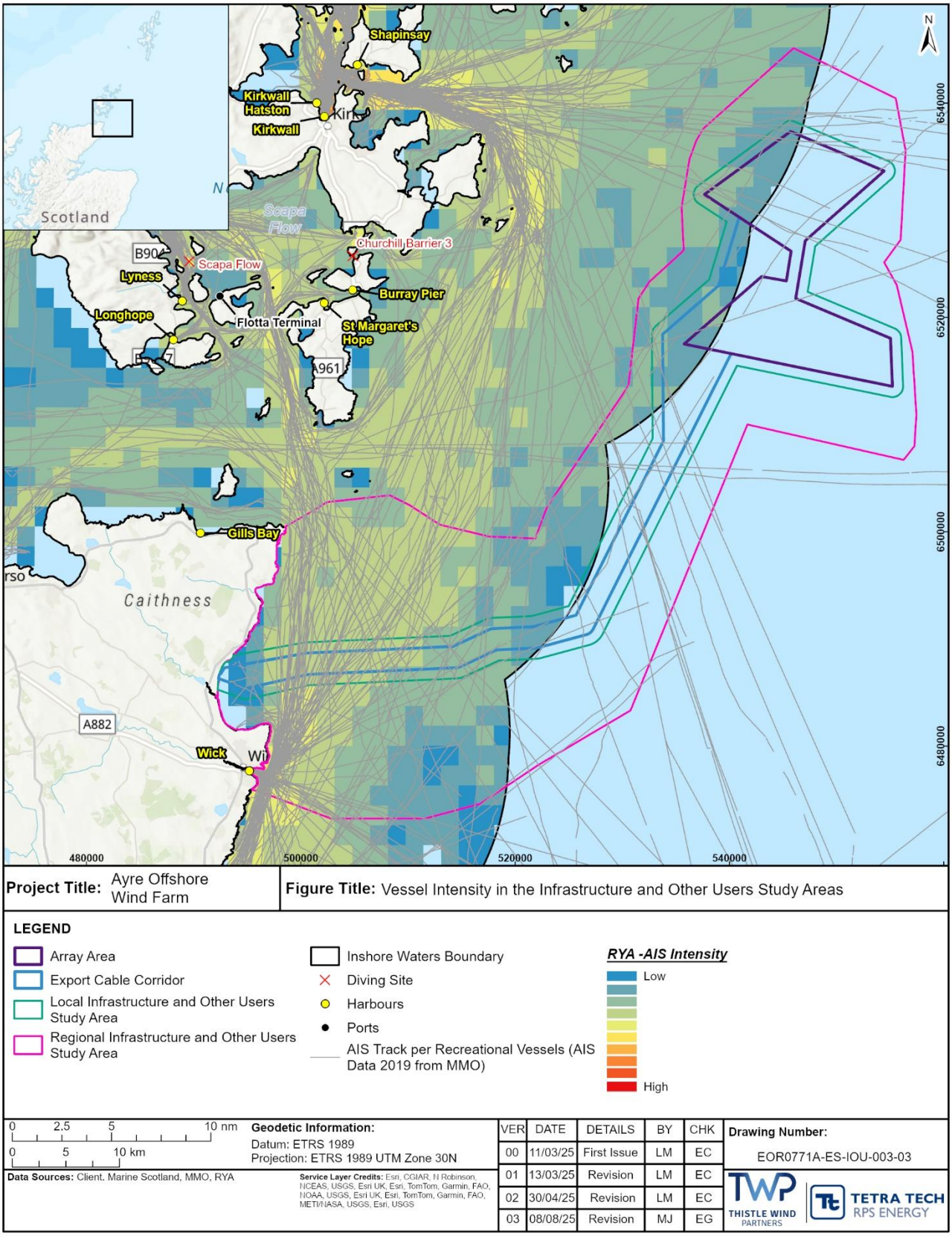


**Figure 16.3: Vessel Intensity in the Infrastructure and Other Users Study Areas**

### *Recreational Fishing*

16.6.13 This section provides an overview of recreational fishing activity within the vicinity of the Proposed Development (i.e. fishing for pleasure rather than commercial reasons). It should be noted that recreational fishing vessels are considered in Volume 3, Technical Appendix 14.1: Shipping and Navigation Risk Assessment) as a specific vessel size category, and this Infrastructure and Other Users chapter considers receptors undertaking recreational fishing as an activity only.

16.6.14 Recreational sea angling occurs along most regions of the Scottish coastline and generates an estimated £140.9 million for the Scottish economy whilst supporting over 3,000 full time equivalent jobs (Scottish Government, 2015b). A wide range of species are targeted during recreational sea angling and can include cod *Gadus morhua*, tope *Galeothinus galeus*, bass *Dicentrarchus labrax*, pollock *Pollachius pollachius*, rays *Raja sp.*, mackerel *Scomber scombrus*, spurdog S*qualus acanthias*, Atlantic salmon *Salmo salar* and sea trout *Salmo trutta* (NMPi, 2024).

16.6.15 The north-east of Scotland exhibits ideal grounds for recreational sea angling along the shoreline. Longberry Rock Marks and Keiss beach in Wick offer good general sea angling for pollock, wrasse *Labrus bergylta*, and saithe *Pollachius virens*, and especially cod in the winter months (British Sea Fishing, 2024). Dunnet Beach in Thurso offers good fishing opportunities for bass and flatfish species, such as plaice *Pleuronectes platessa* and flounder *Platichthys flesus*, while Kirkwall Harbour fishes well at all stages of the tide for cod, dab *Pleuronectidae sp.,* and whiting *Merlangius merlangus* (British Sea Fishing, 2024). Dunnet Beach and Kirkwall Harbour are approximately 60 km and 36 km west of the Array Area, and 16 km and 40 km from the Export Cable Corridor. Longberry Rock Marks is located approximately 57 km south-west of the Array Area and 9km south-west of the Export Cable Corridor. Keiss beach in Wick is located approximately 54 km south-west of the Array Area, and within the Export Cable Corridor at the Landfall site (up to Mean Low Water Springs (MLWS)).

16.6.16 The north-east of Scotland is far more popular with sea angling from the shore than sea angling from a private or chartered boat due to the lack of quality sheltered areas to conduct sea angling from boats (Scottish Government, 2009). Recreational sea angling activity from along the shore is highest in Thurso whereas recreational sea angling using a boat is consistently low across the region (Figure 16.4). Thurso and Wick were recorded as favoured launch sites by anglers and in Orkney, boat angling is largely undertaken by local anglers, though fish abundance and variety is sufficient to attract visiting charter anglers (Scottish Government, 2009). Cod is the most popular targeted species for boat fishing in north-east Scotland, followed by pollock and mackerel (Scottish Government, 2009).

16.6.17 Recreational fishing effort is highly seasonal and dependent on specific weather conditions. Additional information pertaining to recreational fishing is presented in Volume 2, Chapter 13: Commercial Fisheries.

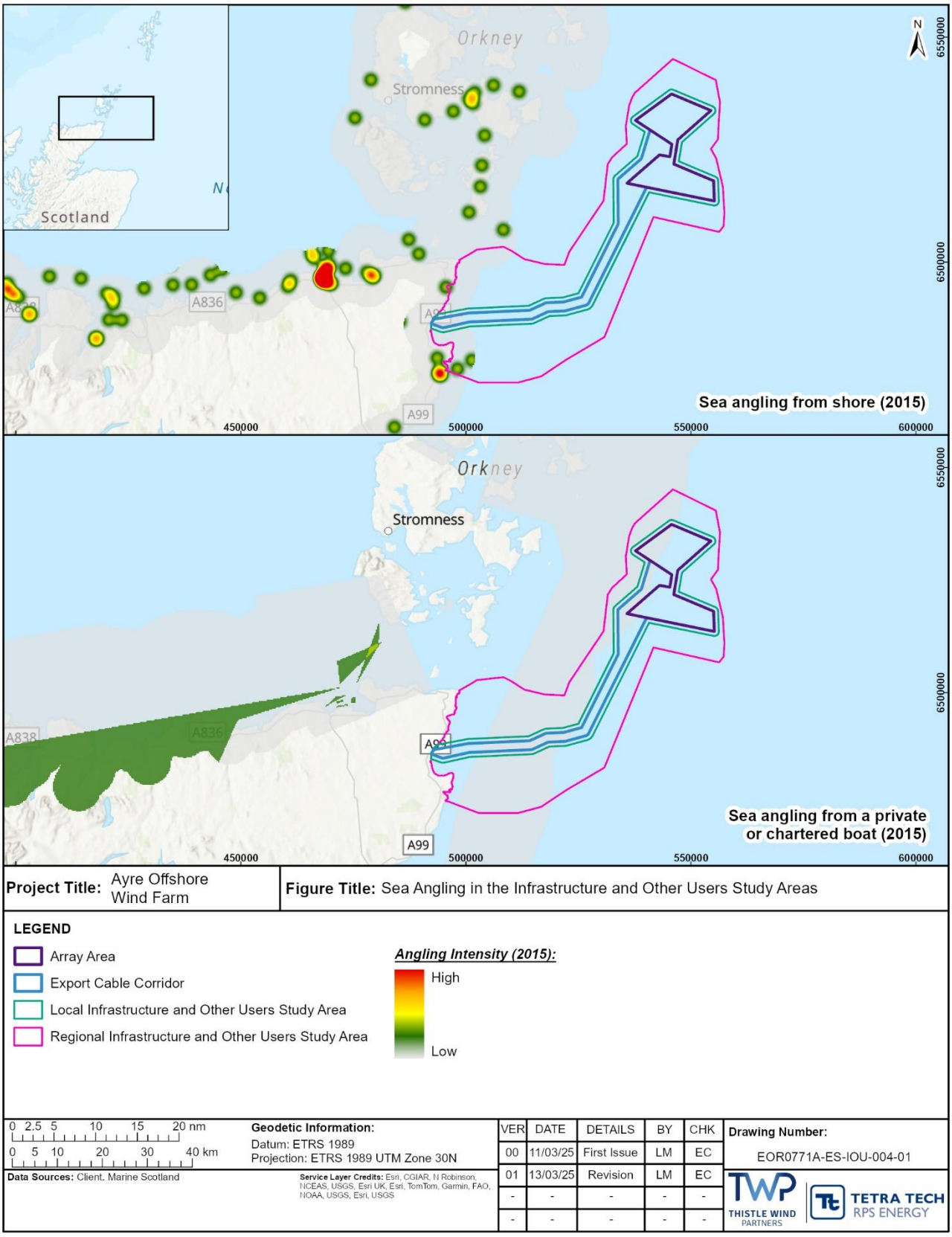


**Figure 16.4: Sea Angling in the Infrastructure and Other Users Study Areas**

### *Other Recreational Activities*

16.6.18 According to the British Marine Federation, the marine leisure industry, including waterborne recreational pursuits, supports nearly 1,800 full time equivalent jobs in Scotland (Scottish Government, 2015b). It is noted that the marine leisure industry is supported by a solid local market with contribution to the rural economy, specifically along the west coast of Scotland (Scottish Government, 2015b).

*Beach Users and Bathing Waters*

16.6.19 The nearshore part of the Export Cable Corridor is located within the Sinclair's Bay area, which includes Reiss and Keiss Beach. The Export Cable Corridor is also in the vicinity of the Bay of Sannick Beach to the north sitting between John O' Groats and Duncansby Head Lighthouse. Keiss and Reiss Beach is located within the Local Infrastructure and Other Users Study Area.

16.6.20 Reiss Beach in Sinclair's Bay is described as a large sandy, dune backed beach and at the northern end of Sinclair's Bay is the coastal village of Keiss, whose beach is more rugged and desolate with rocky outcrops (The Beach Guide, 2018). Sinclair's Bay is a route along the John O' Groats Trail and so is popular for recreational hiking and walking (Walk Highlands, 2025). Sannick Beach is very nearly the most northern point in mainland Britain and is described as a crescent of white sand backed by low, grassy dunes overlooking the Pentland Firth (The Beach Guide, 2018).

16.6.21 There are 87 designated and former bathing waters located in waters surrounding Scotland according to 2024 Scottish Government findings (Scottish Government, 2024). Scottish ministers determine the length of the bathing season and designate bathing waters where they expect large numbers of people to bathe. These areas are given special protection to ensure they are safe for people to swim in during the bathing season, which typically runs from 01 June to 15 September (Scottish Government, 2024). The closest designated bathing waters to the Proposed Development are located at Dunnet Bay, approximately 60 km south-west of the Array Area (NMPi, 2024). As the Array Area is located 22 km, at its closest point from land, impacts to designated bathing waters have been scoped out and are not considered further in this chapter.

*Water Sports and Diving*

16.6.22 There are a number of tour operators that offer water sports such as canoeing, sea kayaking, surfing and paddleboarding based in Thurso and Wick, located 16 km and 8 km from the Export Cable Corridor respectively.

16.6.23 No canoeing, kayaking, surfing or paddleboarding locations were identified within the Array Area, however there are surfing, kayaking and paddleboarding locations in close proximity to and within the Export Cable Corridor (Figure 16.5; Figure 16.6). There are a number of popular surfing areas within the study area including: Sinclair's Bay which is located within the Export Cable Corridor at the Landfall site (up to MLWS) and Dunnet Bay, Thurso East, Brimms Head Reef and Sandside Bay which are located approximately 18 km, 24 km, 33 km and 39 km respectively from the Export Cable Corridor (NMPi, 2024).

16.6.24 Coasteering is a popular emerging recreational activity. In 2015, 101,000 people participated in coasteering activities across the UK (Natural England, 2017). The north-east of Scotland is a popular scene to try out coasteering activities (Figure 16.5). There are only 14 coasteering companies listed on the National Coasteering Charter in Scotland, with more than half based in the north-east of Scotland (National Coasteering Charter, 2022).

16.6.25 The closest official PADI SCUBA diving sites are the Churchill Barrier 3 wreck diving site, and Scapa Flow. Both are located outside of the Regional Infrastructure and Other Users Study Area and illustrated in Figure 16.3. Additional diving data displayed in Figure 16.5 originated from the Scottish Marine Recreation and Tourism Web-based Survey (Marine Scotland, 2016), which ran from August to October in 2015 and gathered spatial information on the activities people had undertaken during the previous 12 months. It is noted that there is a small hotspot of diving activity at the northern tip of the Array Area where the water depth is -85 m (EMODnet, 2022). The maximum depth for recreational scuba divers is -40 m. There are no known dive sites within this area and the location does not correspond to any known wrecks (see Volume 2, Chapter 15: Marine Archaeology). Therefore, diving has not been considered further in this chapter due to the limited likelihood of any substantial activity occurring within the Regional Infrastructure and Other Users Study Area and thus limited scope for potential impact pathways. Details of wrecks, including non-charted wrecks are provided in Volume 2, Chapter 15: Marine Archaeology.

16.6.26 In general, recreational density is low across the Regional Infrastructure and Other Users Study Area (Figure 16.6). No recreational activity relating to water-skiing, wakeboarding, windsurfing or kite surfing were recorded within the Local Infrastructure and Other Users Study Area (NMPi, 2024). SCUBA diving activities are primarily undertaken within inshore waters with a high concentration of activity in Orkney (Figure 16.5)

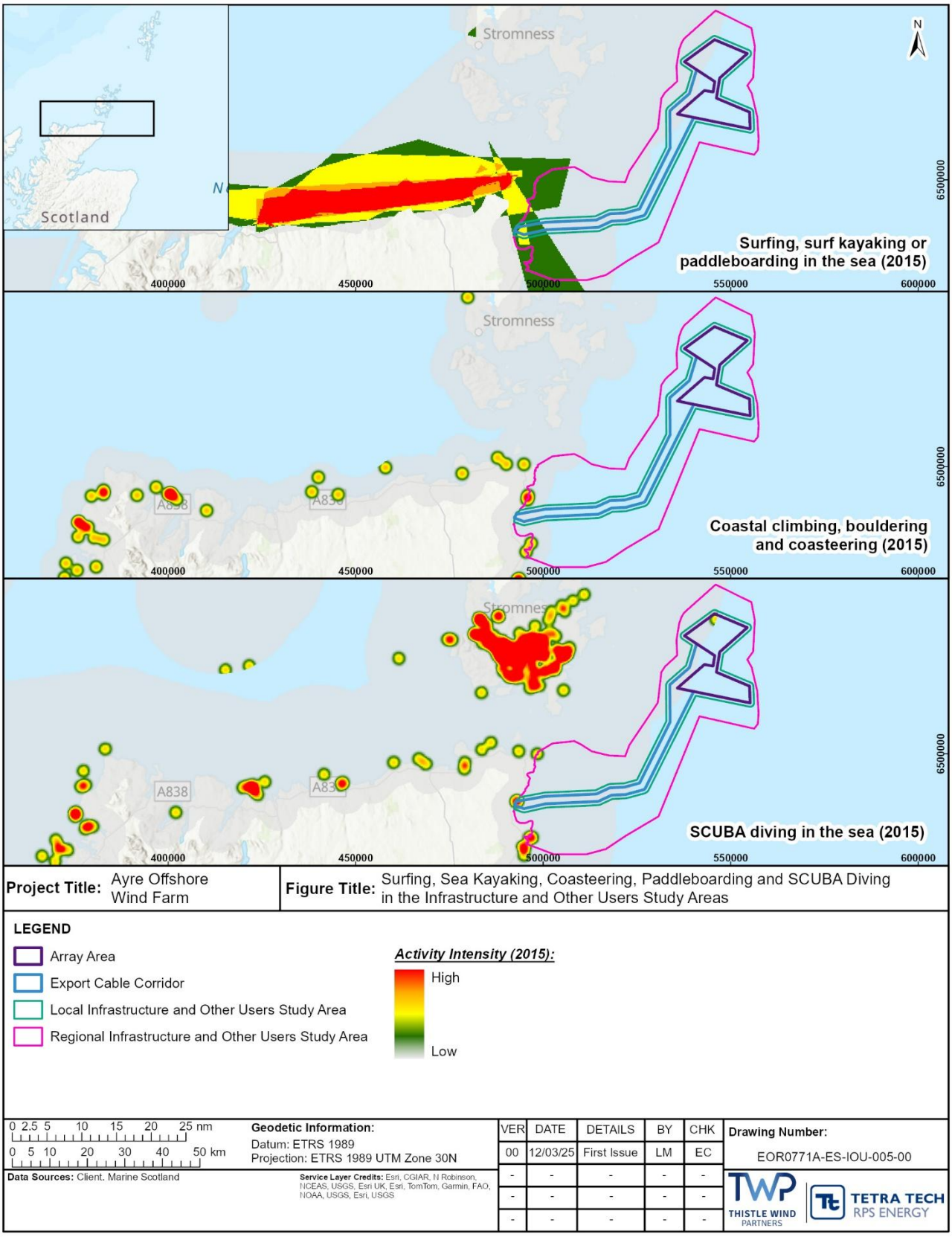


**Figure 16.5: Surfing, Sea Kayaking, Coasteering, Paddleboarding and SCUBA Diving in the Infrastructure and Other Users Study Areas**

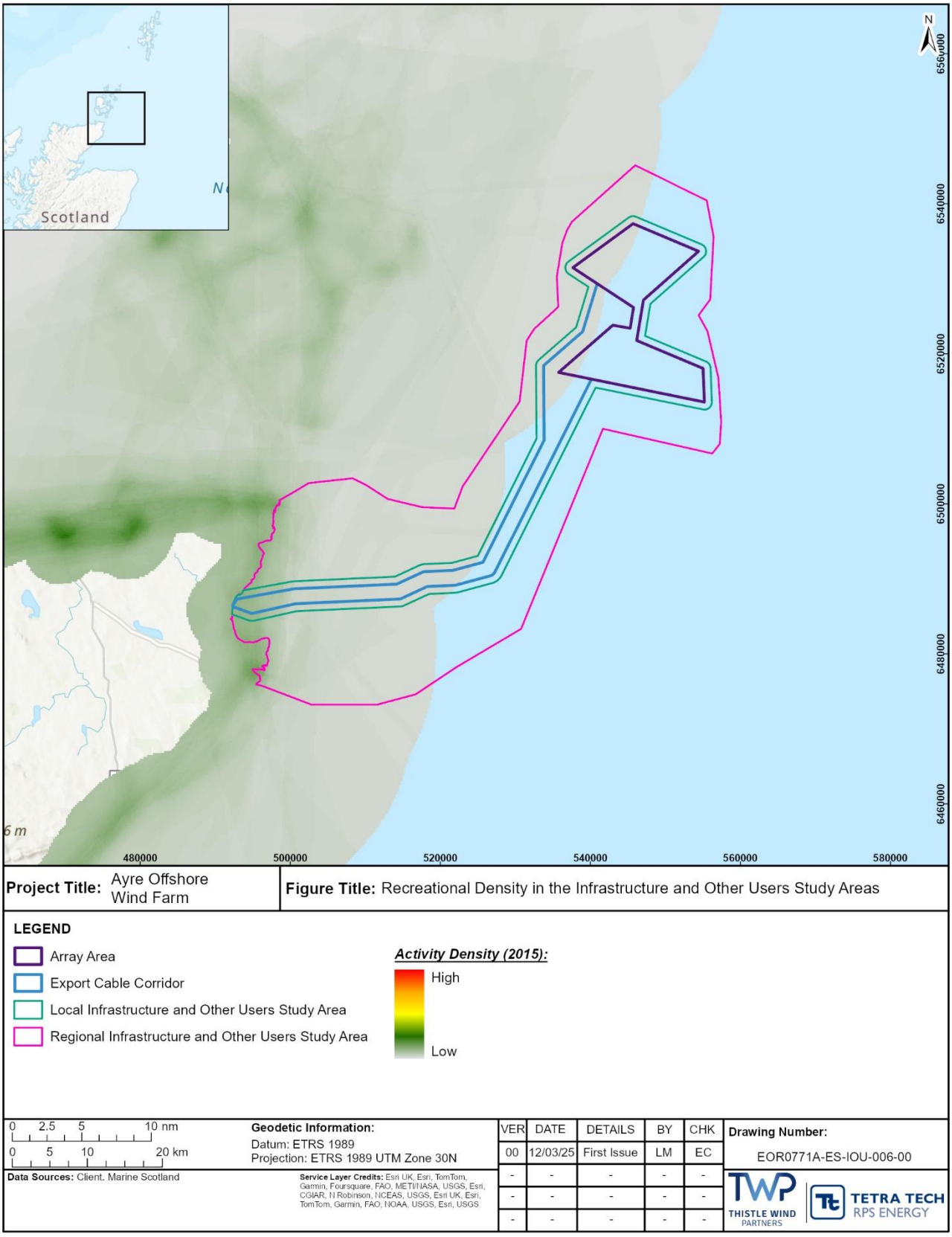


**Figure 16.6: Recreational Density in the Infrastructure and Other Users Study Areas**

### *Offshore Energy Projects*

*Offshore Wind*

16.6.27 There are a number of OWF projects in close proximity to the Local Infrastructure and Other Users Study Area (Figure 16.7). Table 16.9 and Figure 16.7 detail the OWF projects located within the broader marine environment around the Local Infrastructure and Other Users Study Area. The nearest operational OWFs are Beatrice OWF and Moray East OWF, located 58.57 km and 67.72 km to the south-south-west of the Array Area respectively (4C Offshore, 2024). Figure 16.7 also shows additional OWF projects located further than 100 km but are still in vicinity to the Array Area and should be considered as part of the baseline environment. Green Volt OWF, Salamander OWF and Aspen OWF have been included with their distances as 117.84 km, 133.52 km and 145.50 km, respectively (4C Offshore, 2024).

16.6.28 The nearest OWF in pre-planning stage is Stromar OWF, located 14 km south of the Array Area and outside of both the Local and Regional Infrastructure and Other Users Study Areas. The nearest OWF in planning is Caledonia OWF, located 48 km from the Array Area, also outside of the Local and Regional Infrastructure and Other Users Study Areas (4C Offshore, 2024).

**Table 16.9: Offshore Wind Energy Projects within 100 km in the Order of Their Distance From the Array Area**

| Project Name | Distance from Array Area to the Array Area of each OWF (km) | Project Details | Reference |
|---|---|---|---|
| **Operational** | | | |
| **Beatrice Offshore Wind Farm** | 58.57 | 84 Wind Turbines at a capacity of 588 MW. | Beatrice OWF Ltd, 2025 |
| **Moray East Offshore Wind Farm** | 67.72 | 100 Wind Turbines at a capacity of 950 MW. | Moray OWF (East) Ltd, 2025 |
| **Moray West Offshore Wind Farm** | 82.82 | 60 Wind Turbines at a capacity of 882 MW. | Moray OWF (West) Ltd, 2025 |
| **Consented** | | | |
| **Pentland Floating Offshore Wind** | 84.29 | 6 Wind Turbines at a capacity of 100 MW. | Pentland Floating OWF, 2024 |
| **West of Orkney Wind Farm** | 88.69 | 125 Wind Turbines at a capacity of 2,000 MW. | West of Orkney Wind Farm, 2025 |
| **Planning** | | | |
| **Caledonia Offshore Wind Farm** | 48.30 | 140 Wind Turbines at a capacity of 2,000 MW. | Caledonia OWF, 2025 |

| Project Name | Distance from Array Area to the Array Area of each OWF (km) | Project Details | Reference |
|---|---|---|---|
| **Buchan Offshore Wind Farm** | 53.11 | 60 Wind Turbines at a capacity of 1,000 MW. | Buchan Offshore Wind, 2023 |
| **Pre-Planning (Scoping)** | | | |
| **Stromar Offshore Wind Farm** | 14.01 | 71 Wind Turbines at a capacity of 1,000 MW. | Stromar Wind, 2025 |
| **Broadshore Hub Offshore Wind Farm** | 58.93 | 72 Wind Turbines at a capacity of 900 MW. | Broadshore Offshore Wind, 2024 |
| **Marram Wind** | 92.06 | 150 Wind Turbines at a capacity of 3,000 MW. | Marram Wind, 2025 |

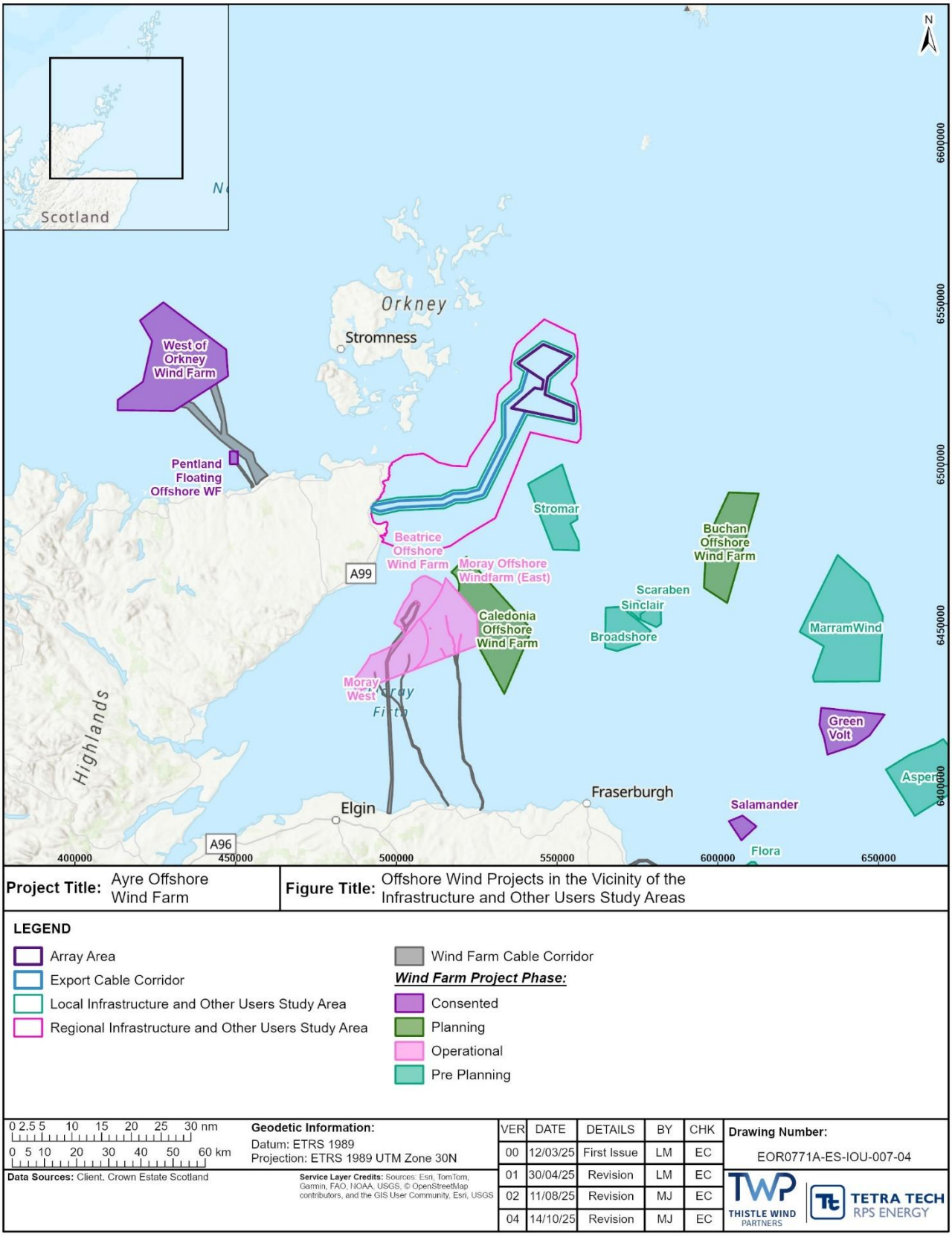


**Figure 16.7: Offshore Wind Projects in the Vicinity of the Infrastructure and Other Users Study Areas**

*Wave and Tidal*

16.6.29 There are no tidal or wave energy projects within the Local Infrastructure and Other Users Study Area. The closest operating wave farm is European Marine Energy Centre (EMEC) Scapa Flow test site. This is located approximately 33.87 km and 31.69 km from the Array Area and Export Cable Corridor respectively (Table 16.10; Figure 16.8). The closest operating tidal farm to the Array Area is EMEC Shapinsay Sound test site, located at a distance of 31.09 km (Figure 16.8). However, decommissioning of this tidal farm is due to commence in 2027. The closest tidal farm to the Export Cable Corridor is the Ness of Duncansby, which is currently in the planning phase located at a distance of 12.53 km. Deer Sound is located 26.98 km and 28.64 km from the Array Area and Export Cable Corridor respectively (Table 16.10; Figure 16.8). Deer Sound is a mooring station for maintenance tasks and no generation activity will take place at any point while the Orbital 02 tidal turbine is moored at Deer Sound (Orbital Marine Power, 2019). The long-term deployment of the Orbital 02 tidal turbine is at the EMEC Fall of Warness test site in Orkney, located 34.29 km and 38.13 km from the Array Area and Export Cable Corridor respectively. The long-term deployment of the Orbital 02 tidal turbine is for a period of up to 17 years (Orbital Marine Power, 2019).

**Table 16.10: Offshore Tidal and Wave Energy Projects in the Order of Their Distance from the Array Area**

| Project Name | Distance from Array Area (km) | Project Details | Reference |
|---|---|---|---|
| **Tidal Farms** | | | |
| **Operational** | | | |
| **Deer Sound, Orkney (Orbital Marine Power)** | 26.98 | Mooring station installed in 2020 for maintenance purposes of the Orbital 02 tidal turbine. No generation activity as rotors will be permanently retracted and stationary | Orbital Marine Power, 2019 |
| **EMEC Shapinsay Sound** | 31.09 | Established in 2011, a small-scale (0.9 km x 0.4 km) test site situated east of Kirkwall, Orkney for non-grid-connected tidal energy tests | EMEC, 2011 |
| **EMEC Fall of Warness** | 34.29 | Established in 2006, a full-scale 8 $km^2$ grid-connected tidal energy test site | EMEC, 2009 |
| **Inner Sound (MyGen Tidal Energy Project)** | 43.65 | Constructed in 2016, 4 tidal turbines at a capacity of 398 MW in the Pentland Firth | NS Energy, 2019 |
| **Planning** | | | |
| **Westray South** | 38.97 | Westray South Tidal Array consists of up to 200 tidal turbines at a capacity of 200 MW | Tethys, 2023 |

| Project Name | Distance from Array Area (km) | Project Details | Reference |
|---|---|---|---|
| **Ness of Duncansby** | 40.28 | Ness of Duncansby consists of up to 95 tidal turbines at a capacity of 95 MW in the Pentland Firth | Scottish Power Renewables, 2012 |
| **Wave Farms** | | | |
| **Operational** | | | |
| **EMEC Scapa Flow** | 33.87 | Constructed in 2011, wave energy test site offshore from Howequoy Head near St Mary's in Scapa Flow | EMEC, 2010 |
| **EMEC Billia Croo** | 58.23 | Constructed in 2003, wave energy test site on the western edge of the Orkney mainland, Billia Croo, Stromness | EMEC, 2005 |

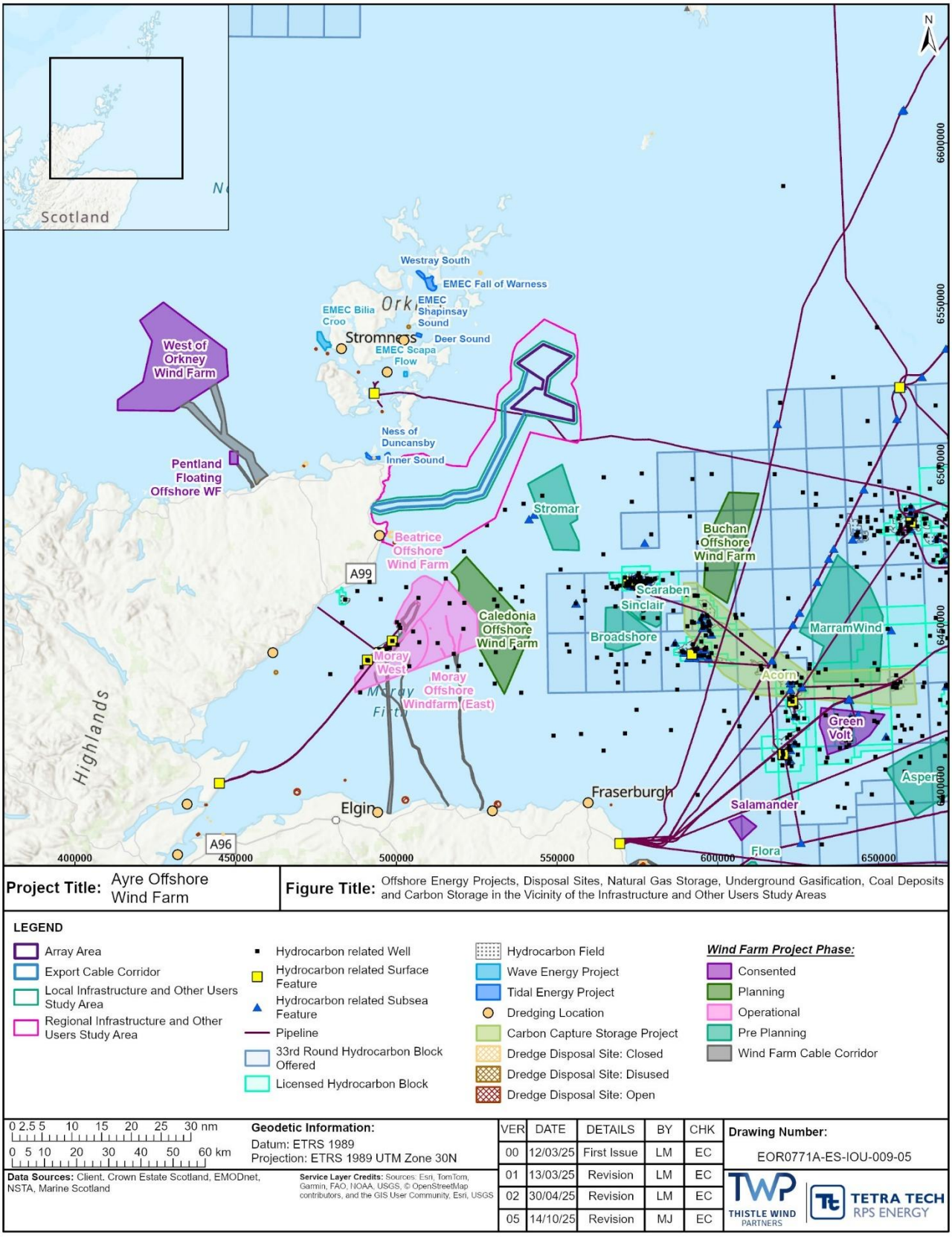


**Figure 16.8: Offshore Energy Projects, Disposal Sites, Natural Gas Storage, Underground Gasification, Coal Deposits and Carbon Storage in the Vicinity of the Infrastructure and Other Users Study Areas**

*Oil and Gas*

16.6.30 Licences for the exploration and extraction of oil and gas on the United Kingdom Continental Shelf (UKCS) have been offered since 1964 and are granted by the NSTA (formally the Oil and Gas Authority (OGA)). These licences are granted for identified geographical United Kingdom Hydrographic Office (UKHO) areas (blocks and part-blocks) in consecutive rounds.

16.6.31 The Moray Firth and Orkney supports oil and gas activities such as those associated with the Port of Nigg and the Nigg Oil Terminal on the Cromarty Firth, Flotta Oil Terminal, Scapa Pier and the deepwater moorings in Scapa Flow. There is currently no active licence blocks located within the Local Infrastructure and Other Users Study Area.

16.6.32 The Local Infrastructure and Other Users Study Area overlaps with several non-active hydrocarbon licence blocks, including Blocks 12/12 and 12/13. The closest active licensed hydrocarbon blocks are Block 13/22b and 13/21b (Figure 16.9) operated by Ithaca Oil and Gas Limited (Licence Number: P2513), both approximately 50.7 km south-east of the Array Area (NSTA, 2025). Previously Block 13/18 was the closest active hydrocarbon block, however that block has now been surrendered and is not a current active licensed block.

16.6.33 In October 2022, the NSTA launched the 33rd UK Offshore Licensing Round with 931 blocks or part-blocks on offer across the main producing areas of UKCS. The closest block on offer in the 33rd UK Offshore Licensing Round to the Proposed Development is Block 13/13 located approximately 28.15 km south-east of Array Area (Figure 16.8).

16.6.34 There is potential for further exploration or development in this area of the North Sea due to future UK Offshore Licensing Rounds.

16.6.35 At present no recent exploration, appraisal or production wells have been drilled within the Local Infrastructure and Other Users Study Area (NSTA, 2025). There are currently two hydrocarbon related wells (Well Registration Number 12/16-1 and 12/16-2) operated by Total Energies Offshore UK Limited within the Regional Infrastructure and Other Users Study Area, located in UKCS Block 12/16 (Figure 16.8). However, both wells are no longer active with Well 12/16-1 decommissioned in 1992 and Well 12/16-2 decommissioned in 1997 (NSTA, 2025).

16.6.36 The following services are associated with the oil and gas industry:

- helicopters: the oil and gas industry rely on helicopters for personnel transfer and emergency evacuation. Helicopter and associated aviation considerations are addressed separately in Volume 2, Chapter 15: Aviation and Radar; and
- vessels: the oil and gas industry require supply or support vessels for its operations. Vessels and associated navigational considerations are addressed separately in Volume 2, Chapter 14: Shipping and Navigation.

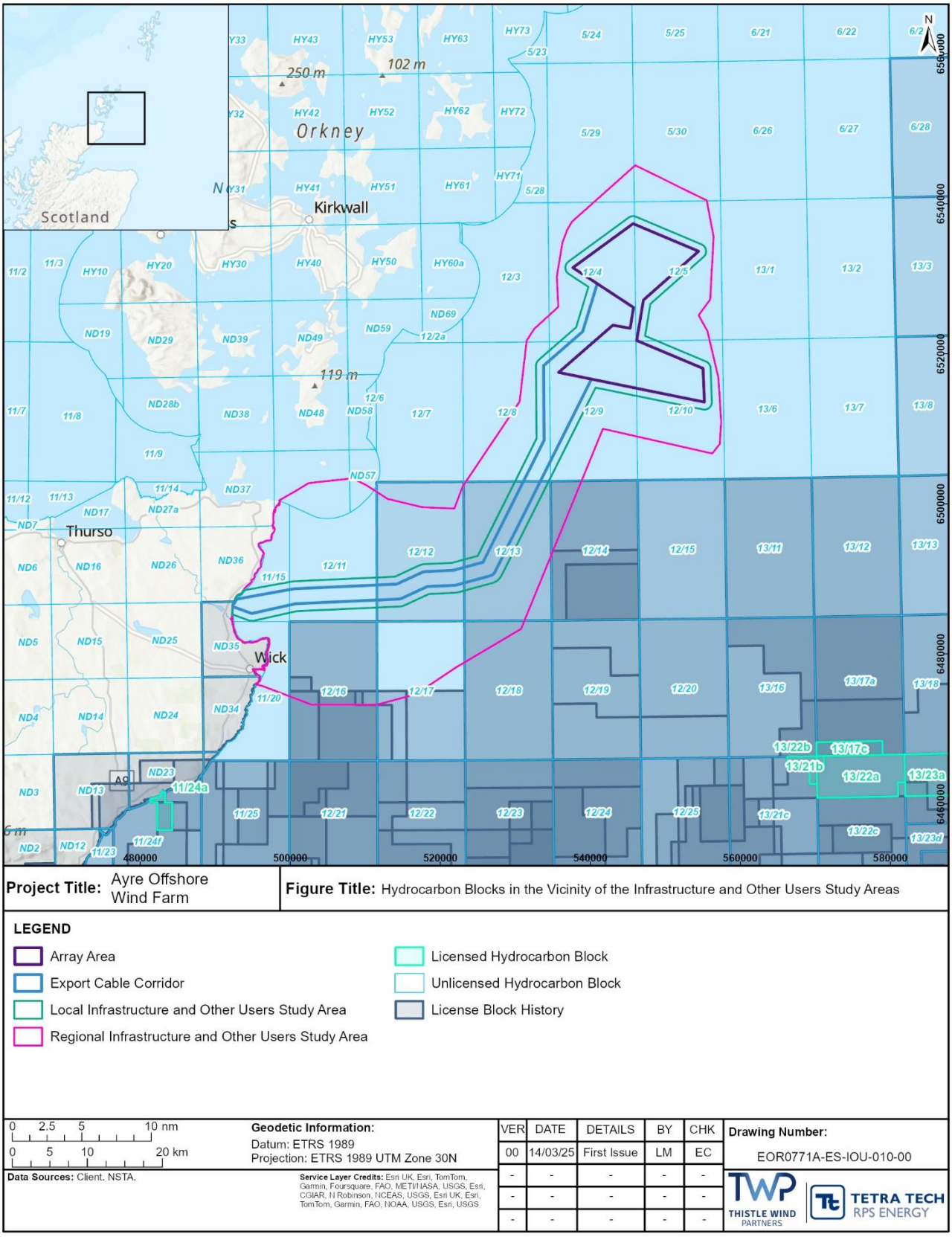


**Figure 16.9: Hydrocarbon Blocks in the Vicinity of the Infrastructure and Other Users Study Areas**

### *Natural Gas Storage, Underground Gasification and Coal Deposits*

16.6.37 There are no natural gas storage sites, underground gasification sites or coal deposits located within the Regional Infrastructure and Other Users Study Area (Figure 16.8). Natural gas storage, underground gasification and coal deposits have therefore not been considered further.

### *Marine Aggregate Extraction and Disposal Sites*

16.6.38 There is a substantial marine sand and gravel resource in Scotland, but historically the marine aggregate industry has been underdeveloped due to extensive land supplies and more readily accessible marine resources elsewhere in UK waters. Marine aggregate licences in Scotland have been issued to two sites: one in the Firth of Forth and the second in the Firth of Tay (Scottish Government, 2015a). These sites do not overlap with the Regional Infrastructure and Other Users Study Area (Figure 16.8). Therefore, Marine Aggregate Extraction sites have not been considered further.

16.6.39 Within the Regional Infrastructure and Other Users Study Area, there exists one open dredge spoil disposal site, South Head (Site ID CR009), located approximately 7.7 km from the Export Cable Corridor (Figure 16.8). Furthermore, there is one closed disposal site off the coast of Wick (Site ID CR010) within the Regional Infrastructure and Other Users Study Area, located approximately 3.5 km from the Local Infrastructure and Other Users Study Area and 4.5 km from the Export Cable Corridor (EMODnet, 2023).

### *Carbon Capture Storage*

16.6.40 CCS is regarded as a potential abatement technology for limiting the impact of climate change. There are no active CCS sites located within the Local Infrastructure and Other Users Study Area (Figure 16.8). The closest CCS licensed area is in St Fergus approximately 153.86 km east of the Array Area. As a National Transmission System (NTS) entry point, St Fergus has been identified as an ideal location for developing low carbon hydrogen due to its delivery point, approved $CO_2$ licence and proximity to UK $CO_2$ storage reservoirs (Pale Blue Dot, 2019). In 2019, a feasibility study took place for the Acorn Hydrogen Project, to be developed in this licensed area in St Fergus. The project will deliver an energy and cost-efficient process for hydrogen production from North Sea Gas, whilst capturing and sequestering $CO_2$ emissions to help prevent climate change. The project would be potentially the first operational low carbon hydrogen plant in Europe, with plans to be operational by 2030 (Pale Blue Dot, 2019).

16.6.41 The Scottish Ministers regulate the licensing authority of offshore carbon storage within the territorial sea adjacent to Scotland. The NSTA is responsible for regulating offshore carbon storage in all other UK territorial waters and they are the licensing authority that approve, and issue storage permits. It should be noted that, to support the drive to net zero carbon by 2050, they are committed to working with the government, industry and other relevant stakeholders to promote future opportunities for offshore carbon dioxide storage. Therefore, although the current Carbon Dioxide Appraisal and Storage Licensing Round closed on the 05 June 2024, the NSTA held a nomination window to collect industry proposals for the next round from 14th May to the

31st July 2025, and thus there is potential for NSTA to run future licensing rounds in the near future (NSTA, 2023a).

### *Offshore Cables, Pipelines and Subsea Communications Infrastructure*

*Power Cables*

16.6.42 More than 95% of international telecommunications is through subsea cabling networks, of which approximately 40% of the UK's active international telecommunication cables are located along the Scottish seabed (Scottish Government, 2015a).

16.6.43 The Scottish and Southern Electricity Networks Transmission (SSEN-T) Caithness to Moray HVDC link and the SSEN-T Shetland HVDC link both overlap with the Regional Infrastructure and Other Users Study Area (Figure 16.10). The Shetland HVDC link crosses through the Array Area and it is intended that commercial 'crossing agreements' on standard industry terms will be entered into with the asset owner, prior to construction. This is a formal arrangement that establishes the responsibilities and obligations of both parties and allows construction and operations to be managed safely.

16.6.44 The SSEN-T Caithness to Moray link, constructed in 2019 uses High Voltage Direct Current (HVDC) technology to transmit power through a 113 km subsea cable route in the Moray Firth between converter stations at Spittal in Caithness and Blackhillock in Moray (SSEN, 2019). The link has the capacity to carry up to 1,200 MW of electricity, the equivalent to the electricity needs of two million Scottish households (Hitachi, 2019). The Shetland HVDC link was completed in 2024 and connects to the existing Caithness-Moray link to form a three-terminal HVDC network. The link consists of a cable route of 260 km, all but 10 km of which will be in the North Sea with a converter station at Upper Kergord, Shetland (SSEN, 2024). The SSEN-T Shetland HVDC link has the capacity to carry up to 600 MW of electricity and will also integrate the new 443 MW Viking Energy Wind Farm in Shetland to the electrical grid (Hitachi, 2024). Both links have strengthened Scotland's power network, to accommodate the rapid growth in generation of electricity from renewable sources and play a significant role by enabling efficient transmission and integration of more renewable power into the Scottish grid as the UK strives to meet net zero and energy security targets (Nordiske Kabel og Traadfabriker (NKT), 2021).

16.6.45 Early development cables refer to the cables that are not yet operational. There are currently two subsea links in early development within the vicinity of the Proposed Development. The Orkney to Caithness 220 kV High Voltage Alternating Current (HVAC) transmission system between Finstown in Orkney and Dounreay in Caithness is currently undergoing construction and will be 53 km in length and does not overlap with the Regional Infrastructure and Other Users Study Area (SSEN, 2025a). The Spittal to Peterhead transmission system is 220 km of subsea cable route currently in planning phase with a Landfall point at Sinclair's Bay and will connect Banniskirk Hub in Caithness to Rattray Head and Netherton Hub in Aberdeenshire. The Spittal to Peterhead HVDC link would overlap the Regional Infrastructure and Other Users Study Area (SSEN, 2025b).

*Telecommunication Cables*

16.6.46 The Shetland Islands-Faroe Islands submarine cable (SHEFA)-2, SEG 08 and 09 fibre optic submarine cables were constructed in 2007 and link the Faroe Islands, Shetland and Orkney to Scotland (Shefa, 2022). The SHEFA-2 succeeds an earlier cable called SHEFA-1 on the same route, and in its entirety the SHEFA-2 subsea cables runs 1,000 km from Torshavn in the Faroe Islands to Maywick in Shetland, from Sandwick in Shetland and onwards to Ayre of Caira in Orkney and from Manse Bay in Orkney to Banff in Scotland (Shefa, 2022).

16.6.47 Both SHEFA-2, Seg 08 and 09 overlaps the Regional Infrastructure and Other Users Study Area, and the SHEFA-2 Seg 09 intersects the Export Cable Corridor (Figure 16.10). It is intended that commercial 'crossing agreements' on standard industry terms will be entered into with the asset owner, prior to construction. This is a formal arrangement that establishes the responsibilities and obligations of both parties and allows construction and operations to be managed safely. SHEFA-2 SEG 08 is located approximately 0.7 nm from the Site Boundary. In accordance with the guidance outlined in the European Subsea Cables Association (ESCA, 2023). The Project will look to establish a proximity agreement to minimise any potential impacts. This approach aligns with recognised industry best practice and will facilitate effective communication and coordinated planning between the cable operator and the Project.

*Pipelines*

16.6.48 The Flotta 30'' subsea pipeline operated by Repsol Resources UK crosses the Local Infrastructure and Other Users Study Area (Figure 16.10). This subsea pipeline is the main Flotta Catchment Area (FCA) pipeline and is fed from the following Repsol Sinopec Operated fields; Claymore, Scapa, Piper 'B', Tweedsmuir, Tartan, Highlander, Duart, Petronella, Galley and Nexen's operated Golden Eagle field (Repsol Resources UK, 2017). The Flotta Pipeline runs 230 km from these offshore production platforms and imports crude oil to the Flotta Oil Terminal located in Scapa Flow, Orkney. The Flotta Oil Terminal was constructed in 1973, is an oil processing and storage facility occupying a 395-acre site in the north of the island of Flotta in Orkney. The facility processes an average of 100,000 barrels (15,898,700 l) of crude oil each day, where it is then loaded onto tankers to export via the Scapa Flow (The Editors of The Gazetteer for Scotland, 2022).

16.6.49 The Flotta Pipeline intersects the Export Cable Corridor (Figure 16.10). It is intended that commercial 'crossing agreements' on standard industry terms will be entered into with the asset owner, prior to construction. This is a formal arrangement that establishes the responsibilities and obligations of both parties and allows construction and operations to be managed safely.

*Subsea Cables*

16.6.50 A review of additional active and disused subsea cables and pipelines has identified no other active cables or pipelines in the Local Infrastructure and Other Users Study Area (KIS-ORCA, 2025).

16.6.51 There are currently no subsea cables associated with OWFs located in the Local Infrastructure and Other Users Study Area. The closest Offshore Export Cable is the Beatrice OWF cable route, is located approximately 37 km south from the Local Infrastructure and Other Users Study Area (Figure 16.7).

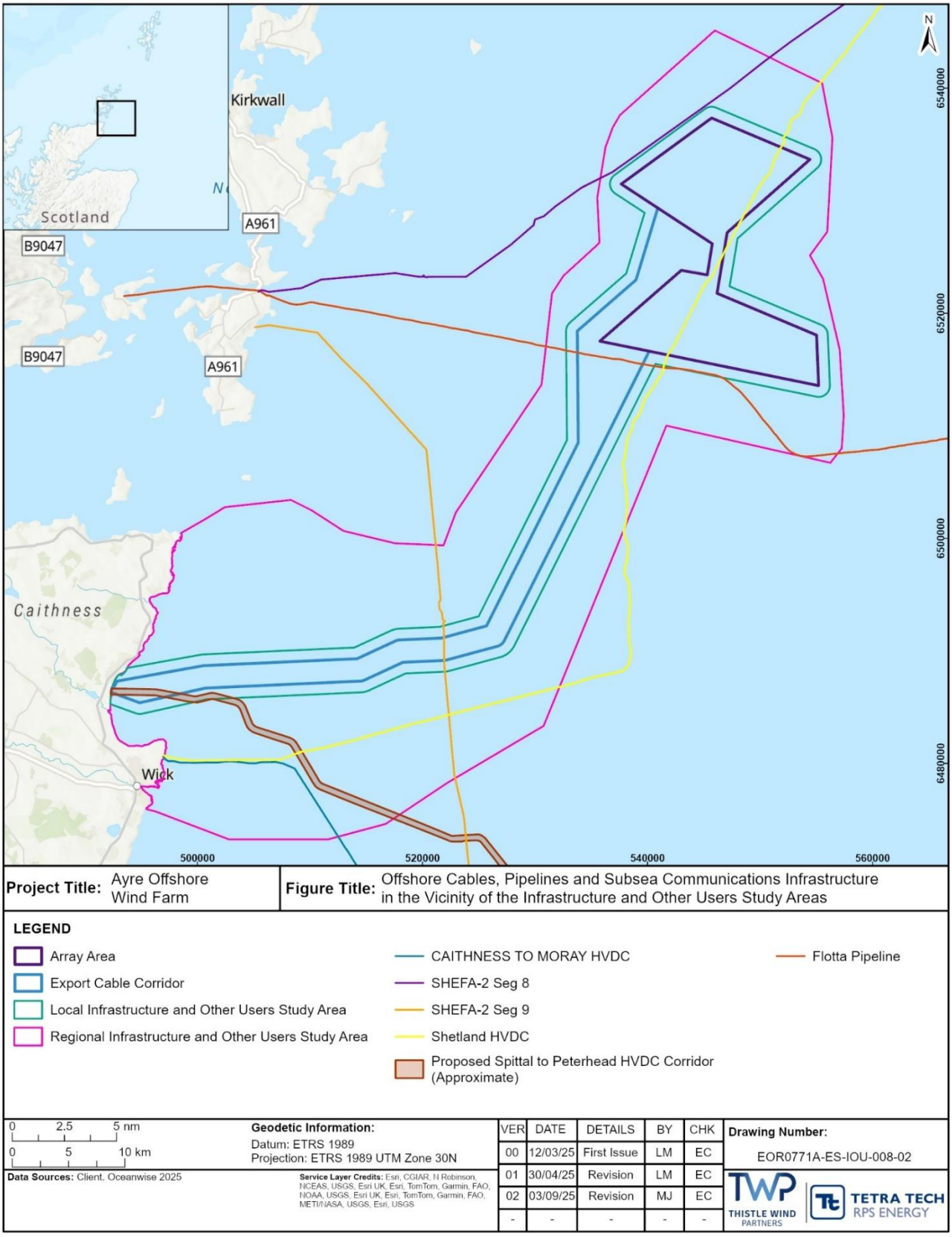


**Figure 16.10: Offshore Cables, Pipelines and Subsea Communications Infrastructure in the Vicinity of the Infrastructure and Other Users Study Areas**

### *Radar Early Warning Systems*

16.6.52 REWS can be impacted by OWF development due to the physical presence of the Wind Turbines. Wind Turbines can interfere with REWS by creating high

radar returns, shadowing (producing an area behind a Wind Turbine which the radar beam is unable to fully illuminate), and increased number of detections and false alarm/track generation. Oil and gas operators sometimes use REWS as part of offshore platform anti-collision safety systems.

16.6.53 The nearest manned offshore platform is Captain Well Protection Platform A, 52.9 km south-east of the Local Infrastructure and Other Users Study Area. At this distance, the potential that REWS could be impacted by the Proposed Development is extremely low. REWS have, therefore, not been considered further and are scoped out of the EIA.

#### *Offshore Microwave Fixed Communication Links*

16.6.54 Offshore microwave fixed communication links (OMFCL) are used in the oil and gas industry to facilitate communication between offshore oil and gas platforms. It should be noted that marine navigation, communications and position-fixing equipment is presented in Volume 2, Chapter 14: Shipping and Navigation.

16.6.55 Due to the location of the Array Area (Figure 16.1), it is unlikely that microwave fixed telecommunications links between offshore oil and gas platforms cross the Local Infrastructure and Other Users Study Area. This can also be applied to radio networks in the vicinity of the Proposed Development, as no impacts have been identified during consultation with key stakeholders.

16.6.56 At Scoping it was considered that microwave communication links between the Flotta Oil Terminal and the offshore platforms it receives crude oil from could not be ruled out, however, in their response to Scoping the JRC confirmed that the Proposed Development, based on the indicative Wind Turbine layout data provided, would not interfere with any OMFCL (Table 16.7). Furthermore, through ongoing engagement, the JRC verified that the maximum blade tip heights of the Wind Turbines, as submitted, would not impact any OMFCL. They have confirmed that no specific Wind Turbine layout within the defined parameters would affect nearby OMFCL, and that the design envelope has been reviewed with respect to potential interference with OMFCL. OMFCL have, therefore, not been considered further and are scoped out of the EIA.

### Future Baseline Scenario

16.6.57 The EIA Regulations require that ‘a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort, on the basis of the availability of environmental information and scientific knowledge’ is included within the Offshore EIA Report.

16.6.58 If the Proposed Development does not come forward, an assessment of the ‘without development’ future baseline conditions has also been carried out and is described within this section.

16.6.59 The future baseline scenario for recreational activities is considered unlikely to change substantially from that presented in Paragraph 16.6.5 above, in the absence of the Proposed Development. The future baseline scenario for

recreational sailing and motor cruising, recreational fishing and other recreational activities is likely to gradually increase in line with population growth in Scotland, however this is unlikely to represent a substantial change in the short-term.

16.6.60 There is potential for significant growth in offshore wind energy within Scotland, with the Scottish Government setting out plans to increase offshore wind capacity to 11 GW of energy installed by 2030. In June 2020, Crown Estate Scotland (CES) launched the first ScotWind Leasing Round for commercial scale offshore wind energy projects within Scottish waters (Scottish Government, 2020a). Further details and an overview of the ScotWind Leasing Round can be found in Volume 1, Chapter 6: Site Selection and Consideration of Reasonable Alternatives. As part of the ScotWind Leasing Round, 20 potential development sites, including the Proposed Development, were awarded Agreements for Lease, with a total generating capacity of just under 27.6 GW. Other renewable sources, such as wave and tidal energy devices, are in their early research and development stage. The Scottish Government's aims for the North of Scotland to become a global leader in wave and tidal energy with the Scottish draft Energy Strategy and Just Transition Plan (Scottish Government, 2023)) setting out the Government's commitment to development of the sector in Scotland as part of its 2045 vision.

16.6.61 Oil and gas are vital to Scotland and were responsible for nearly 90% of the country's primary energy in 2015 (Scottish Government, 2021). Although the sector is seen as a critical and integral component to the economy, support for oil and gas programs moving forward will be conditional on the sector's actions to facilitate sustainable energy transitions for the future (Scottish Government 2021). The draft Energy Strategy and Just Transition Plan (2023) sets out a route map of actions the Scottish Government will take onboard to deliver a robust net zero energy system for Scotland to become a "*renewable powerhouse*" (Scottish Government, 2023). The draft plan states that Scotland must limit its dependence on oil and gas and that "*Scotland is well positioned to do so in a way that ensures we have sufficient, secure and affordable energy to meet our needs, to support economic growth and to capture sustainable export opportunities"* (Scottish Government, 2023). The draft Energy Strategy and Just Transition Plan consultation was closed on 09 May 2023 with 1,598 responses received. The Plan is due to be formally published later this year.

16.6.62 Furthermore, the Innovation and Targeted Oil and Gas Decarbonisation (INTOG) round allowed developers to apply for seabed rights to develop offshore wind projects that either reduce emissions from the North Sea oil and gas sector (by supplying renewable electricity directly to oil and gas infrastructure (TOG)) or consists of small-scale innovative projects (IN) of 100 MW or less. This distinctive offshore wind leasing is unlike any other previously carried out in the UK or in the world (CES), 2023). Further details can be found in Volume 1, Chapter 2: Policy and Legislation. Therefore, as there is a shift towards more utilisation of renewable sources of energy, the baseline environment for oil and gas activity in the vicinity of the Proposed Development is unlikely to increase as reliance on oil and gas operations is expected to decrease as the production of renewable energy increases.

16.6.63 There is currently potential for marine aggregate extraction to increase in line with the increased demand for aggregate utilisation in gravity bases for marine renewable energy infrastructure and in coastal defence construction (Scottish Government, 2015a). However, marine aggregate extraction from the seabed last occurred from two historical areas in the Firth of Forth and Firth of Tay Scottish Marine Region before 2005. There are currently no areas currently licensed for marine aggregate extraction and therefore the baseline environment for marine aggregates mining activity in proximity to the Proposed Development is unlikely to change.

16.6.64 There were no identified or awarded CCS areas in the vicinity of the Proposed Development in the first licensing round by NSTA. In 2023, the NSTA offered for award 21 carbon storage licences at offshore sites in the North Sea, which combined could store up to 30 million tonnes of $CO_2$ per year by 2030 (NSTA, 2023b). The volume of applications received for the first round demonstrated the industry's desire for future CCS developments (NSTA, 2023b). Therefore, the future baseline environment for CCS is subject to gradual change as potential future licensing opportunities arise.

16.6.65 The future baseline scenario for offshore cables, natural gas storage and underground coal gasification is subject to gradual change as new projects and/or sites are further identified.

### Data Limitations and Assumptions

16.6.66 The data sources used in this chapter are detailed in Table 16.8. The data used are the most up to date publicly available information which can be obtained from the applicable data sources as cited. The data are therefore limited by what is available and by what has been made available, at the time of writing this Offshore EIA Report. It is considered that the data employed in the assessment are robust and sufficient for the purposes of the assessment of effects presented.

## 16.7 Key Parameters for Assessment

### Maximum Design Scenario

16.7.1 The Maximum Design Scenario (MDS) identified in Table 16.11 are those parameters expected to have the potential to result in the greatest effect on an identified receptor or receptor group. Any other development scenario within the Project Design Envelope (PDE), will result in the same, or less, level of environmental effect. The MDS has been selected from the details provided in Volume 1, Chapter 3: Project Description.

**Table 16.11: MDS Considered for Each Potential Impact on Infrastructure and Other Users**

| Potential Impact | Phase* | | | Maximum Design Scenario | Justification |
|---|---|---|---|---|---|
| | C | O&M | D | | |
| **Displacement of recreational activities (including recreational sailing, cruising and recreational fishing)** | ✓ | ✓ | ✓ | **Site Preparation and Construction Phases**<br><br>The displacement of recreational activities during a maximum construction phase of 7 years (including pre-construction surveys), can be attributed to:<br><br><u>Reduction of access around infrastructure during construction:</u><br>• MDS is Wind Turbine Option 1: 67 x 15 MW Wind Turbines;<br>• Offshore Substation Platforms (OSPs): up to 2;<br>• Inter-Array Cables (IAC): up to 185 km, with up to 8 cable crossings;<br>• Interconnector Cables: up to 60 km, with up to 3 cable crossings;<br>• Offshore Export Cable: up to 4 cables, of up to 90 km each, with up to 16 cable crossings;<br>• construction Safety Zones: 500 m Safety Zones around Wind Turbines and OSPs during their construction;<br>• construction vessels (Array Area): up to a total of 30 construction vessels on site at any one time;<br>• construction vessels (Offshore Export Cable): up to a total of 16 construction vessels on site at any one time;<br>• up to 2,181 vessel movements (return trips) during construction (Array) and 642 vessel | The MDS for this impact considers the maximum area ($m^2$) of displacement of recreational activities during the construction, O&M and decommissioning phases of the Proposed Development.<br><br><u>Reduction of access around infrastructure during construction, O&M and decommissioning phases:</u><br>The MDS is defined by the presence of infrastructure and associated spacing (specifically the greatest extent of Safety Zones) which restricts recreational vessels and activities from the largest area of space over all phases of the project. The combination of these factors represents the greatest potential for displacement of recreational activities.<br><br>The construction of infrastructure and implementation of Safety Zones around construction activities and vessels may displace recreational vessels and activities, for example limiting or prohibiting recreational fishing or cruising within the 500m Safety Zones. Likewise, O&M and decommissioning activities may also displace recreational vessels due to presence of infrastructure and implementation of Safety Zones around infrastructure and vessels. |

| Potential Impact | Phase* | | | Maximum Design Scenario | Justification |
|---|---|---|---|---|---|
| | C | O&M | D | | |
| | | | | movements (return trips) during construction (Export Cable Corridor); and<br>• during the construction phase the displacement of recreational activities will be gradual as the presence of infrastructure increases, reaching the MDS outlined below in the O&M phase. The MDS in terms of the presence of infrastructure would be on the completion of construction, during the O&M phase.<br><br>**O&M Phase**<br><br>The displacement of recreational activities during an O&M phase of 30 years, can be attributed to:<br><br><u>Reduction of access around infrastructure during O&M:</u><br>• Safety Zones: 500 m around infrastructure such as a Wind Turbines during periods of major maintenance;<br>• a total of 10 vessels at any one time in the Array will be involved over the duration of O&M phase (30 years) at any one time making a total of up to 643 return trips per year;<br>• a total of 2 vessels at any one time in the Offshore Export Cable will be involved over the duration of O&M phase (30 years) making a total of up to 19 return trips;<br>• vessels will be associated with a range O&M activities, including routine inspections, repairs and replacements, removal of marine growth, painting, and removal of fishing debris; and | |

| Potential Impact | Phase* | | | Maximum Design Scenario | Justification |
|---|---|---|---|---|---|
| | C | O&M | D | | |
| | | | | • reduction of access due to the presence of infrastructure, such as Wind Turbines, as per the construction phase above and cable repair/reburial activities:<br>– IAC: repair of up to 1 cable annually. Reburial of up to 1,170m of cables annually. Up to 1,170m of remedial cable protection annually; and<br>– interconnector cables: up to 1 repair event every year. Reburial of up to 1,170m of cables annually. Up to 1,170 m of remedial cable protection annually.<br>– Export cable: up to 1 repair event annually. Reburial of up to 1,170m of cables annually. Up to 1,170m of remedial cable protection annually<br><br>**Decommissioning Phase**<br>During the decommissioning phase any displacement of recreational activities would gradually decrease from the operational MDS as structures are removed or cut at seabed level and left *in situ*. | |
| **Impacts to development cables or pipelines or restrictions on access to cables or pipelines** | ✓ | ✓ | ✓ | MDS as for 'Displacement of recreational sailing and motor cruising, recreational fishing and other recreational activities' – see above. | The construction of infrastructure and implementation of Safety Zones around construction activities and vessels may displace other operators from carrying out activities within areas overlapping the Array and Export Cable Corridor. Likewise, O&M, and decommissioning activities may also displace other operators due to presence of infrastructure and implementation of Safety Zones around infrastructure and vessels. |

| Potential Impact | Phase* | | | Maximum Design Scenario | Justification |
|---|---|---|---|---|---|
| | C | O&M | D | | |
| | | | | | The MDS is defined by the presence of infrastructure and associated spacing (specifically the greatest extent of Safety Zones) which restricts cable operators from the largest area of space. The combination of these factors represents the greatest potential for impacts to cables or pipelines. |

### Impacts Scoped Out of the Assessment

16.7.2 On the basis of the baseline environment and the Project Description outlined in Volume 1, Chapter 3: Project Description, a number of impacts are scoped out of the assessment for Infrastructure and Other Users. These impacts were proposed to be scoped out in the Ayre Offshore Scoping Report (Ayre Offshore Wind Farm Limited (AOWFL), 2024) and no concerns were raised by key consultees within the Scoping Opinion.

16.7.3 These impacts are outlined, together with a justification for scoping it out, in Table 16.12.

**Table 16.12: Impact Scoped Out of the Assessment for Infrastructure and Other Users (Tick Confirms the Impact is Scoped Out)**

| Potential Impact | Phase* | | | Justification |
|---|---|---|---|---|
| | C | O | D | |
| **Increased SSC and associated deposition affecting recreational diving sites** | ✓ | ✓ | ✓ | There are no recreational diving sites within the Regional Infrastructure and Other Users Study Area, as described in Paragraph 16.6.25. As such, there is no potential impact pathway, and, therefore, it is proposed that this impact is scoped out of the EIA. |
| **Increased SSC and associated deposition affecting aggregate extraction areas** | ✓ | ✓ | ✓ | There are no aggregate extraction areas within the Regional Infrastructure and Other Users Study Area, as described in Paragraph 16.6.38. As such, there is no potential impact pathway, and, therefore, it is proposed that this impact is scoped out of the EIA. |
| **Alterations to sediment transport pathways affecting aggregate extraction areas** | ✓ | ✓ | ✓ | There are no aggregate extraction areas within the Regional Infrastructure and Other Users Study Area, as described in Paragraph 16.6.38. As such, there is no potential impact pathway, and, therefore, it is proposed that this impact is scoped out of the EIA. |
| **Increased SSC and associated deposition affecting marine disposal sites** | ✓ | ✓ | ✓ | Although the South Head marine disposal site (Site ID: CR009) is situated within the Regional Infrastructure and Other Users Study Area, as outlined in Paragraph 16.6.39, and remains designated as an active site under Marine Scotland's licensing framework, it has not been referenced in recent Centre for Environment, Fisheries and Aquaculture Science (Cefas) datasets (Cefas, 2024) nor identified in Scotland's Marine Assessment 2020 (Marine Scotland, 2020b) as having recorded disposal activity. As such, there is limited potential pathway, and, therefore, it is proposed that this impact is scoped out of the EIA. |
| **Reduction or restriction of oil and gas exploration activities (including surveys, drilling and the placement of infrastructure)** | ✓ | ✓ | ✓ | There are no active oil and gas exploration blocks within the Local Infrastructure and Other Users Study Area, as described in Paragraph 16.6.32. As such, there is no potential impact pathway, and, therefore, it is proposed that this impact is scoped out of the EIA. |

| Potential Impact | Phase* | | | Justification |
|---|---|---|---|---|
| | C | O | D | |
| **Impacts on CCS** | ✓ | ✓ | ✓ | There are no CCS projects within the Local Infrastructure and Other Users Study Area, as described in Paragraph 16.6.40. As such, there is no potential impact pathway, and, therefore, it is proposed that this impact is scoped out of the EIA. |
| **Interference with the performance of REWS located on oil and gas platforms** | ✓ | ✓ | ✓ | There are no REWS within the Local Infrastructure and Other Users Study Area, as described in Paragraph 16.6.52. As such, there is no potential impact pathway, and, therefore, it is proposed that this impact is scoped out of the EIA. |
| **Interference with OMFCL** | ✓ | ✓ | ✓ | There is no potential for the Proposed Development to impact OMFCL as outlined through stakeholder consultation with JRC in Table 16.7 and Paragraph 16.6.54. As such, there is no potential impact pathway, and, therefore, it is proposed that this impact is scoped out of the EIA. |

* Proposed Development Phase refers to construction (C), O&M (O) and decommissioning (D).

## 16.8 Methodology for Assessment of Effects

### Overview

16.8.1 The Infrastructure and Other Users assessment of effects has followed the methodology set out in Volume 1, Chapter 4: EIA Methodology. Specific to the Infrastructure and Other Users assessment, the following guidance documents have also been considered:

- The RYA Scotland's Position on Offshore Renewable Energy Developments: Paper 1 (of 4) – Wind Energy, June 2019 (RYA, 2019);
- International Cable Protection Committee (ICPC) Recommendations:
  - Recommendation No.2-11B: Cable Routing and Reporting Criteria (ICPC, 2015);
  - Recommendation No.3-10C: Telecommunications Cable and Oil Pipeline/Power Cables Crossing Criteria (ICPC, 2014); and
  - Recommendation No.13-2C: The Proximity of Offshore Renewable Wind Energy Installations and Submarine Cable Infrastructure in National Waters (ICPC, 2013).
- European Subsea Cables Association Guideline No. 6, The Proximity of Offshore Renewable Energy Installations and Submarine Cable Infrastructure in UK Waters (ESCA, 2023).

### Criteria for Assessment

16.8.2 When determining the significance of effects, a process is used which involves defining the magnitude of the potential impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity are based on those which are described in further detail in Volume 1, Chapter 4: EIA Methodology.

16.8.3 The criteria for defining magnitude in this chapter are outlined in Table 16.13. Each assessment considered the spatial extent, duration, frequency and reversibility of impact when determining magnitude which are outlined within the magnitude section of each impact assessment (e.g. a duration of hours or days would be considered for most receptors to be of short-term duration, which is likely to result in a low magnitude of impact).

**Table 16.13: Definition of Terms Relating to Magnitude of Impact**

| Magnitude of Impact | Definition |
|---|---|
| **High** | Total loss of ability to carry on activities and/or impact is of extended physical extent and/or long-term duration (i.e. total lifetime of project) and/or frequency of repetition is continuous and/or effect is not reversible for the project (Adverse). |
| **Medium** | Loss or alteration to significant portions of key components of current activity and/or physical extent of impact to moderate and/or medium-term duration (i.e. operational period) and/or frequency of repetition is medium to continuous and/or effect is not reversible for project phase (Adverse). |
| **Low** | Minor shift away from baseline, leading to a reduction in level of activity that may be undertaken and/or physical extent of impact is low and/or short to medium-term duration (i.e. construction period) and/or frequency of repetition is low to continuous and/or effect is not reversible for project phase (Adverse). |
| **Negligible** | Very slight change from baseline condition and/or physical extent of impact is negligible and/or short-term duration (i.e. less than two years) and/or frequency of repetition is negligible to continuous and/or effect is reversible (Adverse) |

16.8.4 The criteria for defining sensitivity in this chapter are outlined in Table 16.14.

**Table 16.14: Definition of Terms Relating to the Sensitivity of the Receptor**

| Sensitivity of the Receptor | Definition |
|---|---|
| **Very High** | Receptor or the activities of the receptor is of very high value to the local, regional or national economy and/or the receptor or the activities of the receptor is moderately vulnerable to impacts that may arise from the project and/or recoverability is very slow and/or very costly. |
| **High** | Receptor or the activities of the receptor is of high value to the local, regional or national economy and/or the receptor or the activities of the receptor is generally vulnerable to impacts that may arise from the project and/or recoverability is slow and/or costly. |

| Sensitivity of the Receptor | Definition |
|---|---|
| **Medium** | Receptor or the activities of the receptor is of moderate value to the local, regional or national economy and/or the receptor or the activities of the receptor is somewhat vulnerable to impacts that may arise from the project and/or has moderate to high levels of recoverability. |
| **Low** | Receptor or the activities of the receptor is of low value to the local, regional or national economy and/or the receptor or the activities of the receptor is not generally vulnerable to impacts that may arise from the project and/or has high recoverability. |
| **Negligible** | Receptor or the activities of the receptor is of negligible value to the local, regional or national economy and/or the receptor or the activities of the receptor is not vulnerable to impacts that may arise from the project and/or has recoverability. |

16.8.5 The magnitude of the impact and the sensitivity of the receptor are combined when determining the significance of the effect upon the receptor. The particular method employed for this assessment is presented in Table 16.15 and Table 16.16.

16.8.6 Where a range is suggested for the significance of effect, for example, Minor to Moderate, it is possible that this may span the significance threshold. The technical specialist's professional judgement will be applied to determine which outcome defines the most likely effect, which takes in to account the sensitivity of the receptor and the magnitude of impact. Where professional judgement is applied to quantify final significance from a range, the assessment will set out the factors that result in the final assessment of significance. These factors may include the likelihood that an effect will occur, data certainty and relevant information about the wider environmental context.

16.8.7 The EIA Regulations require the identification and reporting of significant environmental effects. For the purposes of this assessment:

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

**Table 16.15: Matrix Used for the Assessment of the Significance of the Effect**

| Sensitivity of Receptor | Magnitude of Impact | | | |
|---|---|---|---|---|
| | **Negligible** | **Low** | **Medium** | **High** |
| **Negligible** | Negligible | Negligible of Minor | Negligible of Minor | Minor |
| **Low** | Negligible of Minor | Negligible of Minor | Minor | Minor or Moderate |
| **Medium** | Negligible of Minor | Minor | Moderate | Moderate or Major |
| **High** | Minor | Minor or Moderate | Moderate or Major | Major |

| Sensitivity of Receptor | Magnitude of Impact | | | |
|---|---|---|---|---|
| | Negligible | Low | Medium | High |
| Very High | Minor | Moderate or Major | Major | Major |

**Table 16.16: Definition of Significance**

| Impact | Justification |
|---|---|
| **Negligible** | No effects or those that are beneath levels of perception, within normal bounds of variation, or within the margin of forecasting error. |
| **Minor** | These beneficial or adverse effects are generally, but not exclusively, raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the Proposed Development. |
| **Moderate** | These beneficial or adverse effects have the potential to be important and may influence the decision-making process. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse or beneficial effect on a particular resource or receptor. |
| **Major** | These beneficial or adverse effects are very important and are likely to be material in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national, or regional importance. However, a major change in a site or feature of local importance may also enter this category. |

## 16.9 Embedded Mitigation

16.9.1 As part of the Proposed Development design process, a number of Embedded Mitigation have been proposed to reduce the potential for impacts on Infrastructure and Other Users (see Table 16.17). They are considered at every stage of the Proposed Development through design and best practice and, as there is a commitment to implementing these measures, these have been considered in the assessment presented in Section 16.10 (i.e. the determination of magnitude and therefore significance assumes implementation of these measures). These Embedded Mitigation are considered standard industry practice for this type of development, please refer to Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments for more details.

**Table 16.17: Embedded Mitigation Adopted as Part of the Proposed Development**

| ID* | Embedded Mitigation Adopted as Part of the Proposed Development | Justification |
|---|---|---|
| **8** | All relevant Health and Safety Executive (HSE) procedures will be followed. | Measures will be adopted to ensure that all activities undertaken in the construction, O&M and decommissioning phases are compliant with the relevant HSE guidance. |
| **12** | Advance warning and accurate location details of operations, associated Safety Zones and advisory passing distances will be given via Notices to Mariners (NtMs) and Kingfisher Bulletins. | To maximise awareness of the Proposed Development, allowing other vessels, sea users and marine infrastructure receptors to plan activities in advance. |

| ID* | Embedded Mitigation Adopted as Part of the Proposed Development | Justification |
|---|---|---|
| 16 | Application for, and use of, Safety Zones of up to 500 m during construction, major maintenance, and decommissioning phases. Advisory safe passing distances of up to 500 m will also be applied for mobile installation vessels. | In the interests of safety to Infrastructure and Other Users receptors. |
| 19 | Details of any temporary obstacles associated with the Proposed Development which are of more than 91.4 m in height are to be alerted to aircrews by means of the Notice to Aviation (NOTAM) system. | In the interests of safety to Infrastructure and Other Users receptors. |
| 24 | Development of, and adherence to, a Development Specification and Layout Plan (DSLP). The development of the DSLP includes consultation with the relevant authorities for approval, including the MCA and Northern Lighthouse Board (NLB). | In the interests of safety to Infrastructure and Other Users receptors. |
| 44 | The Proposed Development will be marked on admiralty charts including an appropriate chart note. | To maximise awareness of the Proposed Development, allowing other vessels, sea users and marine infrastructure receptors to plan activities in advance. |
| 47 | Where the Proposed Development cables will be required to cross an active cable or pipeline, it is intended that a commercial 'crossing agreement' will be entered into with the asset owner. This is a formal arrangement that establishes the responsibilities and obligations of both parties and allows construction and operations to be managed safely. | To reduce potential conflict at cable or pipeline crossing locations. |
| 48 | Proximity agreements will be established with relevant cable and pipeline operators, to minimise the potential for any impact in accordance with recognised industry good practice. | This will ensure close communication and planning between both parties to ensure disruption is minimised. |

*see Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments

## 16.10 Assessment of Significance

16.10.1 Table 16.11 summarises the potential effects arising from the construction, O&M and decommissioning phases of the Proposed Development, as well as the MDS against which each impact has been assessed. An assessment of the likely significance of the effects of the Proposed Development on the Infrastructure and Other Users receptors caused by each identified impact is given below.

### IMPACT 1 - Displacement of Recreational Activities (Including Recreational Sailing, Cruising and Recreational Fishing)

16.10.2 Construction, O&M, and decommissioning activities may lead to displacement of recreational sailing and motor cruising and recreational fishing due to the presence of the infrastructure Safety Zones and advisory safe passing distances in relation to the Array Area and may result in a loss of recreational resource.

### *Construction Phase*

*Magnitude of Impact*

16.10.3 The installation of Offshore Infrastructure as part of the Proposed Development may displace recreational activities from the footprint of the Proposed Development and from any areas subject to temporary Safety Zones and/or advisory safe passing distances, resulting in a loss of recreational resource.

16.10.4 The MDS is represented by the installation of up to 67 floating Wind Turbines, up to two OSPs, up to eight cable crossings of 185 km IACs and up to 60 km of Interconnector Cables and up to 360 km of Offshore Export Cables with associated Safety Zones and/or advisory safe passing distances. Construction activities may take place over a period of up to five years (Table 16.11). There may be up to 30 vessels on site within the Array Area during the construction phase and up to 16 vessels on site for the Offshore Export Cable installation activities at any given time (including activities at the Landfall), comprised of jack-up barge/ Dynamic Positioning (DP) vessels, tug/anchor handlers, cable installation vessels, guard vessels, survey vessels, crew transfer vessels, and scour/cable protection vessels. It is likely that construction activity will be concentrated in certain locations at certain periods of time during the construction phase. Therefore, it should be noted that while up to 30 vessels may be on site at one time, the impact and Safety Zones in place will not be reflected and constant across the Proposed Development.

16.10.5 As described in Section 16.6, there are a number of recreational activities occurring in the vicinity of the Proposed Development, although with most activities occurring closer to shore and overlapping with the nearshore sections of the Export Cable Corridor rather than within the Array Area. General sailing areas associated with Orkney Sailing Club in Kirkwall and Holm Sailing Club are located 36 km and 32 km to the west of the Local Infrastructure and Other Users Study Area. The closest general boating area is located at Holm, Orkney, approximately 32.4 km west of the Array Area.

16.10.6 The spatial extent of the impact on boating activities will be relatively small in the context of the available sailing and sea angling areas in the vicinity of the Proposed Development. There will be potential for localised displacement of recreational marine craft from the individual 500 m Safety Zones around the structures being actively installed within the Array Area. Additionally, there will be advisory safe passing distances around installation vessels operating within the Proposed Development. The impact of Safety Zones in place during the construction phase is mostly reversible as once each structure has been installed and commissioned these will be removed. Advisory safe passing distances around cable installation vessels operating within the Offshore Export Cable Corridor will be transient as the vessel progressively installs the cables along the route from the Array Area to the Landfall. The spatial extent of potential displacement will be greater along the Export Cable Corridor compared with the Array Area, due to most recreational activity taking place along the coastline, although a small number of recreational vessels may be displaced from the Array Area and the immediate vicinity temporarily during the construction phase.

16.10.7 As described in Table 16.17, NtMs will be issued regularly during the construction phase, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly. The Applicant will also distribute Kingfisher Bulletins and other navigational warnings of the position and nature of works associated with the Proposed Development.

16.10.8 The impact is predicted to be of local spatial extent, short to medium-term duration, continuous and low reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

*Sensitivity of the Receptor*

16.10.9 It is anticipated that recreational activities (including recreational sailing, cruising and recreational fishing) will be able to alter their route or transit past installation activities and associated Safety Zones and advisory safe passing distances, given the adequate sea room and coastal area around the Proposed Development. There are other locations available for sailing and sea angling such that alternatives are available if required during installation works.

16.10.10 The receptor is deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be medium.

*Significance of the Effect*

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

*Additional Mitigation and Residual Effect*

16.10.12 No Additional Mitigation is considered necessary because the likely effect in the absence of mitigation is not significant in EIA terms.

***O&M Phase***

*Magnitude of Impact*

16.10.13 The presence of Offshore Infrastructure and/or O&M activities within the Proposed Development may displace recreational activities from the footprint of the Proposed Development and from areas subject to temporary Safety Zones and/or advisory safe passing distances, resulting in a loss of recreational resource.

16.10.14 The MDS is represented by the installation of up to 67 floating Wind Turbines, up to two OSPs, up to eight cable crossings of 185 km IACs and up to 60 km of Interconnector Cables and up to 360 km of Offshore Export Cables with associated Safety Zones and/or advisory safe passing distances, during periods of major maintenance, over a period of up to 30 years. There may be up to ten vessels on site within the Array Area at any one time during the O&M phase, comprised of workboats/Crew Transfer Vessels (CTVs)/Service Operation Vessels (SOVs), tug/anchor handlers, jack-up vessels, cable repair vessels, Construction Support Vessels (CSVs) and Diving Support Vessels (DSVs). It is anticipated that vessel activities related to the O&M phase will be concentrated in certain locations at certain periods of time during the O&M phase. Therefore,

it should be noted that while up to ten vessels may be on site at one time, the impact and Safety Zones in place will not be reflected and constant across the Proposed Development.

16.10.15 As described in Section 16.6, there are a number of recreational activities occurring in the vicinity of the Proposed Development, although with most activities occurring closer to shore and overlapping with the nearshore sections of the Export Cable Corridor rather than within the Array Area.

16.10.16 The spatial extent of the impact on marine recreational activities will be relatively small in the context of the available sea angling and sailing, areas in the vicinity of the Proposed Development, with the potential for localised displacement of recreational craft around installed structures or around the individual 500 m Safety Zones and/or advisory safe passing distances temporarily and infrequently established around major maintenance activities. Recreational activity overlapping with the Offshore Export Cable routes will be able to resume during the O&M phase, and there will be no long-term exclusion of navigation within the Array Area during the lifetime of the Proposed Development (assessment of impacts on navigation is presented in Volume 2, Chapter 14: Shipping and Navigation).

16.10.17 As described in Table 16.17, NtMs will be issued regularly during the O&M phase, advising of the location, nature and timing of any maintenance activities and associated Safety Zones and/or advisory safe passing distances, ensuring that recreational activities can be planned accordingly. The Applicant will also distribute Kingfisher Bulletins and other navigational warnings of the position and nature of works associated with the Proposed Development.

16.10.18 The impact is predicted to be of local spatial extent, long-term duration, continuous (Array Area)/intermittent (Export Cable Corridor) and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

*Sensitivity of the Receptor*

16.10.19 It is anticipated that recreational activities (including recreational sailing, cruising and recreational fishing) will be able to alter their route or transit past O&M activities and associated advisory Safety Zones and/or advisory safe passing distances, given the adequate sea room and coastal area around the Proposed Development. There are other locations available for sailing and sea angling such that alternatives are available if required during maintenance works.

16.10.20 The receptor is deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be medium.

*Significance of the Effect*

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

*Additional Mitigation and Residual Effect*

16.10.22 No Additional Mitigation is considered necessary because the likely effect in the absence of mitigation is not significant in EIA terms.

***Decommissioning Phase***

*Magnitude of Impact*

16.10.23 The effects of decommissioning activities within the Array Area are expected to be the same or lesser than the effects from construction, as structures will be removed or cut at seabed level and left *in situ*.

16.10.24 The impact is predicted to be of local spatial extent, short to medium duration, continuous (Array Area)/intermittent (Export Cable Corridor) and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

*Sensitivity of the Receptor*

16.10.25 It is anticipated that recreational activities (including recreational sailing, cruising and recreational fishing) will be able to alter their route or transit past decommissioning activities and associated advisory Safety Zones and advisory safe passing distances, given the adequate sea room and coastal area around the Proposed Development. There are other locations available for sailing and sea angling such that alternatives are available if required during decommissioning works.

16.10.26 The receptor is deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be medium.

*Significance of the Effect*

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

*Additional Mitigation and Residual Effect*

16.10.28 No Additional Mitigation is considered necessary because the likely effect in the absence of mitigation is not significant in EIA terms.

**IMPACT 2 - Impacts to Early Development Cables or Pipelines or Restrictions on Access to Cables or Pipelines**

16.10.29 Construction, O&M, and decommissioning activities may impact upon early development cables or restrict access to existing cables and pipelines due to increased presence of vessels and temporary advisory Safety Zones and advisory safe passing distances, resulting in a loss of access to these resources.

***Construction Phase***

*Magnitude of Impact*

16.10.30 The installation of Offshore Infrastructure within the Array Area and along the Export Cable Corridor may impact upon early development cables or restrict access to existing cables and pipelines due to increased presence of vessels

and temporary advisory Safety Zones and advisory safe passing distances, resulting in a loss of access to these assets.

16.10.31 The MDS is represented by the installation of up to 67 floating Wind Turbines, up to two OSPs, up to eight cable crossings of 185 km of IACs and up to 60 km of Interconnector Cables and up to 360 km of Offshore Export Cables with associated Safety Zones and/or advisory safe passing distances. Construction activities may take place over a period of up to five years (Table 16.11). There may be up to 30 vessels on site within the Array Area during the construction phase and up to 16 vessels on site for the Offshore Export Cable installation activities at any given time (including activities at the Landfall), comprised of jack-up barge/DP vessels, tug/anchor handlers, cable installation vessels, guard vessels, survey vessels, CTVs, and scour/cable protection vessels. It is likely that construction activity will be concentrated in certain locations at certain periods of time during the construction phase. Therefore, it should be noted that while up to 30 vessels may be on site at one time, the impact and Safety Zones in place will not be reflected and constant across the Proposed Development.

16.10.32 As described in Section 16.6, there are two active cables (power cables SSEN Caithness to Moray HVDC Link and SSEN Shetland HVDC Link), two active subsea telecommunication cables (SHEFA 2 SEG-08 and SEG-09), and one active pipeline (Flotta 30" subsea pipeline) that overlap the Regional Infrastructure and Other Users Study Area, of which three cross over the Local Infrastructure and Other Users Study Area.

16.10.33 The spatial extent of the impact on cables and pipelines will be relatively small in the context of the construction phase of the Proposed Development. There will be potential for localised displacement and exclusion of third-party vessels from the individual 500 m Safety Zones around the structures being actively installed within the Array Area. Additionally, there will be advisory safe passing distances around installation vessels operating within the Array Area and along the Export Cable Corridor. The impact of Safety Zones in place during the construction phase is mostly reversible as once each structure has been installed and commissioned these will be removed. Advisory safe passing distances around cable installation vessels operating within the Offshore Export Cable Corridor will be transient as the vessel progressively installs the cable along the route from the Array Area to the Landfall.

16.10.34 Cable crossing and proximity commercial agreements will be established with the relevant cable and pipeline operators to minimise the potential for any impact in accordance with recognised industry good practice. These agreements will ensure close communication and planning between both parties to ensure disruption of activities is minimised and allows construction to be managed safely. Additionally, NtMs and Kingfisher Bulletins will be issued regularly during the construction phase, advising of the location, nature and timing of activities, and associated Safety Zones/advisory safe passing distances, ensuring that maintenance works on existing cables and pipelines can be planned accordingly.

16.10.35 The impact is predicted to be of local spatial extent, short duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

*Sensitivity of the Receptor*

16.10.36 It is anticipated that third-party vessels operating on cables and pipelines in the vicinity of the Proposed Development will be aware of the project construction activities and they will be able to plan and re-route with minimal interference to access.

16.10.37 Restriction of access to an active cable or pipeline for inspection and maintenance activities could be critical to the operator of that asset. However, any potential of impacts to cables and pipelines will be mitigated through crossing and proximity agreements, and the Applicant will account for oil and gas infrastructure, and cable infrastructure within the Array Area at detailed design with regard to the positioning of the Wind Turbines.

16.10.38 The receptor is deemed to be of medium vulnerability, medium recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.

*Significance of the Effect*

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

*Additional Mitigation and Residual Effect*

16.10.40 No Additional Mitigation is considered necessary because the likely effect in the absence of mitigation is not significant in EIA terms.

***O&M Phase***

*Magnitude of Impact*

16.10.41 The presence of Offshore Infrastructure and/or O&M activities within the Array Area and along the Export Cable Corridor may impact upon early development cables or restrict access to existing cables and pipelines due to increased presence of vessels and temporary a Safety Zones and/or advisory safe passing distances, resulting in a loss of access to these assets.

16.10.42 The MDS is represented by the installation of up to 67 floating Wind Turbines, up to two OSPs, up to eight cable crossings of 185 km of IACs and up to 60 km of Interconnector Cables and up to 360 km of Offshore Export Cables with associated Safety Zones and/or advisory safe passing distances, during periods of major maintenance, over a period of up to 30 years. There may be up to ten vessels on site within the Array Area at any one time during the O&M phase, comprised of workboats/CTVs/SOVs, tug/anchor handlers, jack-up vessels, cable repair vessels, CSVs and DSVs. It is anticipated that vessel activities related to the O&M phase will be concentrated in certain locations at certain periods of time during the O&M phase. Therefore, it should be noted that while up to ten vessels may be on site at one time, the impact and Safety Zones in place will not be reflected and constant across the Proposed Development.

16.10.43 As described in Section 16.6, there are two active cables (power cables SSEN Caithness to Moray HVDC Link and SSEN Shetland HVDC Link), two active subsea telecommunication cables (SHEFA 2 SEG-08 and SEG-09) , and one active pipeline (Flotta 30" subsea pipeline) that overlap the Regional Infrastructure and Other Users Study Area, of which three cross over the Local Infrastructure and Other Users Study Area.

16.10.44 The spatial extent of the impact on cables and pipelines will be relatively small in the context of the O&M phase of the Proposed Development. The potential loss of access to cables and pipelines associated with temporary 500 m Safety Zones and/or advisory safe passing distances during the O&M phase is considered to be limited in extent and infrequent. Additionally, the potential loss of access to cables and pipelines associated with the presence of structures would be considered in the crossing and proximity commercial agreements with operators to the extent that such a scenario would not be an impediment to operations. NtMs will be issued regularly during the O&M phase, advising of the location, nature and timing of any maintenance activities and associated Safety Zones and/or advisory safe passing distances, ensuring that maintenance works on existing cables and pipelines can be planned accordingly. The Applicant will also distribute Kingfisher Bulletins and other navigational warnings of the position and nature of works associated with the Proposed Development.

16.10.45 The impact is predicted to be of local spatial extent, short duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

*Sensitivity of the Receptor*

16.10.46 It is anticipated that third-party vessels operating on cables and pipelines in the vicinity of the Proposed Development will be aware of the project O&M activities and they will be able to plan and re-route with minimal interference to access.

16.10.47 Restriction of access to an active cable or pipeline for inspection and maintenance activities could be critical to the operator of that asset. However, any potential of impacts to cables and pipelines will be mitigated through crossing and proximity agreements to ensure communication between both parties and that loss of access is minimised.

16.10.48 The receptor is deemed to be of medium vulnerability, medium recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.

*Significance of the Effect*

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

*Additional Mitigation and Residual Effect*

16.10.50 No Additional Mitigation is considered necessary because the likely effect in the absence of mitigation is not significant in EIA terms.

### *Decommissioning Phase*

*Magnitude of Impact*

16.10.51 The effects of decommissioning activities within the Array Area are expected to be the same or lesser than the effects from construction, as structures will be removed or cut at seabed level and left *in situ*.

16.10.52 The impact is predicted to be of local spatial extent, short duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

*Sensitivity of the Receptor*

16.10.53 It is anticipated that third-party vessels operating on cables and pipelines in the vicinity of the Proposed Development will be aware of the project decommissioning activities and they will be able to plan and re-route with minimal interference to access.

16.10.54 Restriction of access to an active cable or pipeline for inspection and maintenance activities could be critical to the operator of that asset. However, any potential of impacts to cables and pipelines will be mitigated through crossing and proximity agreements to ensure communication between both parties and that loss of access is minimised.

16.10.55 The receptor is deemed to be of medium vulnerability, medium recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.

*Significance of the Effect*

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

*Additional Mitigation and Residual Effect*

16.10.57 No Additional Mitigation is considered necessary because the likely effect in the absence of mitigation is not significant in EIA terms.

## 16.11 Inter-Related Effects

16.11.1 A description of the likely inter-related effects arising from the Proposed Development on Infrastructure and Other Users is provided in Volume 2, Chapter 23: Inter-Related Effects.

16.11.2 Inter-relationships are considered to be the impacts and associated effects of different aspects of Ayre OWF on the same receptor. Inter-related effects are considered to be either:

- Lifetime effects: Assessment of the scope for effects that occur throughout more than one phase of Ayre OWF (construction, O&M and decommissioning), to interact to potentially create a more significant effect on a receptor than if just assessed in isolation in these three project stages (e.g. underwater sound effects from piling, operational Wind Turbines, vessels and decommissioning);

- Receptor-led effects: Assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor. As an example, all effects on Infrastructure and Other Users, such as displacement of recreational activities and impacts to cables or pipelines or restrictions on access to these assets, may interact to produce a different, or greater effect on this receptor than when the effects are considered in isolation. Receptor-led effects may be short-term, temporary or transient effects, or incorporate longer-term effects.

16.11.3 For Infrastructure and Other Users, the following potential impacts have been considered within the inter-related assessment:

- Physical restriction on space for recreational craft and recreational fishing vessels; and
- Physical restriction on space for recreational activities/recreational fishing; and
- Physical impact or loss of access to early development cables and existing cables and pipelines.

16.11.4 Table 16.18 lists the inter-related effects (Project lifetime effects) that are predicted to arise during the construction, O&M and decommissioning phases of the Proposed Development and also the inter-related effects (receptor-led effects) that are predicted to arise for Infrastructure and Other Users receptors.

16.11.5 As noted above, receptor-led effects have the potential to result in secondary effects upon other Infrastructure and Other Users receptors and these effects are fully considered within this chapter. These receptors and effects are:

- Displacement of recreational activities (including recreational sailing, cruising and recreational fishing);
  - Physical restriction on space for recreational craft and recreational fishing vessels;
  - Displacement of recreational sailing and motor cruising, recreational fishing (boat angling);
  - Physical restriction on space for recreational activities/recreational fishing; and
  - Displacement of recreational fishing (shore angling) and other recreational activities (kayaking, coasteering, surfing and paddleboarding).
- Impacts to early development cables or pipelines or restrictions on access to cables or pipelines:
  - Physical impact to development cables and pipelines or loss of access to existing cables and pipelines.

**Table 16.18: Summary of Likely Significant Inter-Related Effects for Infrastructure and Other Users from Individual Effects Occurring Across the Construction, O&M and Decommissioning Phase of the Proposed Development (Project Lifetime Effects) and from Multiple Effects Interacting Across all Phases (Receptor-led Effects)**

| Description of Impact | Phase | | | Likely Significant Inter-Related Effects |
|---|---|---|---|---|
| | C | O | D | |
| **Project Lifetime Effects** | | | | |
| **Physical restriction on space for recreational activities (including recreational sailing, cruising and recreational fishing)** | ✓ | ✓ | ✓ | The presence of Offshore Infrastructure, Safety Zones and/or advisory safety distances during the construction phase may result in the displacement of recreational craft and recreational fishing vessels from the Array Area and along the Export Cable Corridor. During the O&M and decommissioning phase, the presence of Offshore Infrastructure, operational Safety Zones and temporary Safety Zones and/or advisory safety distances around maintenance activities may result in the displacement of recreational craft and recreational fishing vessels from the Array Area and along the Export Cable Corridor. The level of recreational activity within the Array Area is low. There is low recreational vessel activity in nearshore areas of the Export Cable Corridor, with boating and angling also taking place closer to shore, however any displacement along the Export Cable Corridor will be temporary. Therefore, across the project lifetime, the effects on recreational craft users and recreational fishing vessels are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase. |
| **Physical impact to early development cables or pipelines or restriction on access to existing cables and pipelines** | ✓ | ✓ | ✓ | Existing cables and pipelines may be affected where they are crossed by Offshore Infrastructure. In addition, the presence of Offshore Infrastructure, Safety Zones and/or advisory safety distances may restrict access to existing cables and pipelines during construction, O&M and decommissioning activities. Cable and pipeline crossings and proximity agreements will be developed and implemented with each relevant cable and pipeline operator to minimise the potential for any impact. Crossing agreements will include the ability of a cable/pipeline operator to access their infrastructure as far as practical during the Proposed Development construction, O&M and decommissioning phases and the crossing agreements will ensure close communication and planning between the affected parties to ensure disruption of activities is minimised. Therefore, across the project lifetime, the effects on Infrastructure and Other Users |

| Description of Impact | Phase | | | Likely Significant Inter-Related Effects |
|---|---|---|---|---|
| | C | O | D | |
| | | | | are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase. |
| **Receptor-Led Effects** | | | | |
| Potential exists for spatial and temporal interactions between direct and indirect impacts to Infrastructure and Other Users receptors. Based on current understanding and expert knowledge, there is scope for potential inter-related impacts to arise from the physical restriction on space for recreational craft and recreational fishing vessels interacting with the displacement of recreational sailing and motor cruising, recreational fishing (boat angling) and other recreational activities. Where both impacts overlap spatially and temporally, there is potential for inter-related effects as the restriction/displacement on movements of recreational activity may cover a larger area. However, as a vast extent of alternative resource for recreational activities will remain available, and the impacts initially identified were of Minor adverse significance, these impacts are not likely to interact in way that results in a significant inter-related effect. | | | | |

* Proposed Development Phase refers to construction (C), O&M (O) and decommissioning (D).

## 16.12 Cumulative Effects Assessment

### Methodology

16.12.1 The Cumulative Effects Assessment (CEA) assesses the impact associated with the Proposed Development together with other relevant projects and activities. Cumulative effects are defined as the effect of the Proposed Development in combination with the effects from a number of different projects, on the same receptor or resource. Further details on CEA methodology are provided in Volume 1, Chapter 4: EIA Methodology.

16.12.2 The projects selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise (see Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment - Screening). Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment - Screening provides further information in relation to other projects and how this information is obtained and applied to the assessment. Each project has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

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

- Tier 1 – The onshore elements of the Project;
- Tier 2 – Projects that have an application submitted, are consented, under construction or operational to the extent not already captured with the baseline;
- Tier 3 – Projects which have submitted a scoping report and/or have received a scoping opinion; and
- Tier 4 – Reasonably foreseeable projects including those with CES option or lease agreements.

16.12.4 The specific projects scoped into the CEA for Infrastructure and Other Users, are outlined in Table 16.19.

16.12.5 The potential cumulative impacts that are scoped into the CEA for Infrastructure and Other Users are outlined in Table 16.20 below.

16.12.6 Similarly, some of the potential impacts considered within the Proposed Development alone assessment are specific to a particular phase of development (e.g. construction, O&M or decommissioning). Where the potential for cumulative effects with other projects only have potential to

occur where there is spatial or temporal overlap with the Proposed Development during certain phases of development, impacts associated with a certain phase may be omitted from further consideration where no projects have been identified that have the potential for cumulative effects during this period.

**Table 16.19: List of Other Projects Considered within the CEA for Infrastructure and Other Users**

| Project | Status | Distance from Array Area (km) | Distance from Offshore Export Cable Route (km) | Description of Project | Dates of Construction (If Applicable) | Dates of Operation (If Applicable) | Overlap with the Proposed Development |
|---|---|---|---|---|---|---|---|
| **Tier 1** | | | | | | | |
| **Ayre Onshore Transmission** | Planning | 52.5 | 0.00 | The Onshore Infrastructure associated with the Project. | 2030-2034 | 2035-onwards | Screened in due to potential for construction, O&M and decommissioning phases to coincide with the construction, O&M, and decommissioning phases of the offshore elements of the Proposed Development. |
| **Tier 2** | | | | | | | |
| **Offshore Wind Projects and Associated Cables** | | | | | | | |
| **Beatrice OWF** | Operational | 58.57 | 21.70 | Beatrice OWF consists of 84 Wind Turbines at a capacity of 588 MW. | Opertaional | 2019-2044 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Beatrice Offshore Export Cable Route** | Operational | 67.01 | 29.49 | Beatrice OWF export cable consists of up to 2 cables at a capacity of 220 kV. | Operational | 2019-2044 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Caledonia OWF (North and South)** | Planning | 48.30 | 17.55 | Caledonia OWF is proposed for up to 150 Wind Turbines at a capacity of 2,000 MW. | 2028-2031 | 2032-2068 | Screened in due to potential for survey and site investigation works and construction activities to coincide with the construction phase of the Proposed Development. |
| **Buchan OWF** | Planning | 53.11 | 66.39 | Buchan OWF is proposed for up to 60 turbines at a capacity of 960 MW. | 2028-2030 | 2031-2068 | Screened in due to potential for survey and site investigation activities works and construction to coincide with the construction phase of the Proposed Development. |
| **Moray OWF (East)** | Operational | 67.72 | 34.41 | Moray East OWF consists of up to 100 Wind Turbines at a capacity of 950 MW. | Operational | 2022-2047 | Screened in due to potential for O&M to coincide with the construction, O&M phase of the Proposed Development. |
| **Moray OWF (West)** | Operational | 82.82 | 45.19 | Moray West OWF is consented for up to 60 Wind Turbines with no maximum generating capacity. | Operational | 2025-2068 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Pentland Floating Offshore Wind** | Consented | 84.29 | 43.42 | Pentland floating OWF is consented for up to 10 Wind Turbines with no maximum generating capacity. | 2025-2026 | 2027-2055 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **West of Orkney Wind Farm** | Consented | 88.69 | 60.50 | West of Orkney Wind Farm is proposed for up to 125 Wind Turbines at a capacity of 2,250 MW. | 2028-2031 | 2032-2062 | Screened in due to potential for survey and site investigation works and construction activities to coincide with the construction phase of the Proposed Development. |
| **Tidal Farms** | | | | | | | |
| **Deer Sound, Orkney (Orbital Marine Power)** | Operational | 26.98 | 28.64 | Deer Sound consists of a 16-turbine tidal farm at a capacity of 4 MW. | Operational | 2024-2039 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **EMEC Fall of Warness** | Operational | 34.29 | 38.13 | Established in 2006, a full-scale 8 $km^2$ grid-connected tidal energy test site. | Operational | 2024-2045 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Inner Sound MeyGen PLC (Phase 1)** | Operational | 43.65 | 13.79 | Constructed in 2016, 398 tidal turbines at a capacity of 398 MW in the Pentland Firth. | Operational | 2016-2041 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |

| Project | Status | Distance from Array Area (km) | Distance from Offshore Export Cable Route (km) | Description of Project | Dates of Construction (If Applicable) | Dates of Operation (If Applicable) | Overlap with the Proposed Development |
|---|---|---|---|---|---|---|---|
| **Ness of Duncansby** | Operational | 40.28 | 12.53 | Ness of Duncansby consists of up to 95 tidal turbines at a capacity of 95 MW. | - | - | Screened in as construction dates are currently unknown and there is potential for a temporal overlap with the Proposed Development. |
| **Wave Farms** | | | | | | | |
| **EMEC Billia Croo** | Operational | 58.23 | 50.31 | Constructed in 2003, wave energy test site Billia Croo consists of a capacity of 7 MW. | Operational | Present day - unknown | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **EMEC Scapa Flow** | Operational | 33.87 | 31.69 | Constructed in 2011, wave energy test site offshore from Howequoy Head near St Mary's in Scapa Flow. | Operational | Present day - unknown | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Marine Aggregate and Disposal** | | | | | | | |
| **South Head - CR009** | Operational | 55 | 10.02 | - | Not Applicable (ongoing dredging activities) | Present day - unknown | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Oil and Gas Activities** | | | | | | | |
| **P1270 (Lybster)** | Operational | 76.70 | 26.22 | Lybster oil field operated by Star Energy Group Plc is at a depth of 39 m with suspended production. Possible reserves remain with decommissioning activities to commence in 2032. | Operational | 2012 - 2031 | Screened in due to potential for O&M and decommissioning activities to coincide with the construction phase of the Proposed Development. |
| **P2513** | Operational | 47.73 | 48.49 | Activities in Block 13/17c operated by Ithaca Oil and Gas Limited. | Operational | 2021 - 2044 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **P2513** | Operational | 48.54 | 46.10 | Activities in Block 13/21b operated by Ithaca Oil and Gas Limited. | Operational | 2021 - 2044 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **P2513** | Operational | 49.51 | 49.42 | Activities in Block 13/22b operated by Ithaca Oil and Gas Limited. | Operational | 2021 - 2044 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **P324** | Operational | 49.79 | 50.26 | Captain oil field operated by Ithaca Oil and Gas Limited and i3 Energy North Sea Limited is at a depth of 107 m and is currently still in production. | Operational | 1977-2050 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **P2577** | Operational | 54.01 | 59.71 | Activities in Block 13/23a operated by Ithaca Oil and Gas Limited. | Operational | 2023-2045 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **P2358** | Operational | 58.97 | 62.35 | Activities in Block 13/23c operated by Gran Tierra North Sea Limited. | Operational | 2018-2042 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **P810** | Operational | 66.46 | 73.55 | Activities in Block 13/24b operated by Repsol Resources UK Limited. | Operational | 1993-2029 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **P973** | Operational | 79.99 | 78.98 | Activities in Block 13/28c operated by Repsol Resources UK Limited | Operational | 1997-2027 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |

| Project | Status | Distance from Array Area (km) | Distance from Offshore Export Cable Route (km) | Description of Project | Dates of Construction (If Applicable) | Dates of Operation (If Applicable) | Overlap with the Proposed Development |
|---|---|---|---|---|---|---|---|
| **P729** | Operational | 75.93 | 79.19 | Activities in Block 13/29b operated by Repsol Resources UK Limited | Operational | 1991-2027 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Pipelines** | | | | | | | |
| **Piper B 30" Oil Export Pipeline (the Flottta subsea pipeline)** | Operational | 0.92 | 0 | The Piper B 30" Oil Export Pipeline is 33.8 km and transports crude oil to the Flotta Terminal. | Operational | 1992-2050 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Subsea Cables** | | | | | | | |
| **SHEFA-2 Seg 8** | Operational | 1.20 | 4.94 | The SHEFA-2 is a submarine fibre optic cable that links the Faroe Islands, Shetland and Orkney to Scotland. | Operational | 2009-2050 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **SHEFA-2 Seg 9** | Operational | 18.19 | 0 | The SHEFA-2 is a submarine fibre optic cable that links the Faroe Islands, Shetland and Orkney to Scotland. | Operational | 2009-2050 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Shetland HVDC** | Operational | 0 | 0.39 | The Shetland HVDC link is approximately 160 km of cabling operated by SSEN that was approved in 2020 and completed construction in 2024. | Operational | 2024-2050 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **R100 projects** | Half are Active/In Operation whilst the rest are under construction | Various | | Installation of 7 fibre optic cables by British Telecom (BT) across the Orkney region to facilitate the roll out of broadband internet to the whole of Scotland. | Various | Various | Screened in due to potential for survey works, construction, O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Caithness – Moray HVDC** | Operational | 46.67 | 5.15 | The Caithness – Moray HVDC link is 113 km subsea cable operated by SSEN that was approved in 2014 and constructed in 2018. | Operational | 2019-2050 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Orkney – Caithness HVAC** | Construction | 58.76 | 19.60 | The Orkney – Caithness HVAC will be approximately 53 km of subsea cable operated by SSEN between Finstown in Orkney and Dounreay in Caithness, capable of transmitting no less than 220 MW of power. | 2024-2028 | 2028 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Spittal - Peterhead HVDC** | Planning | 22 | 0 | The Spittal - Peterhead HVDC link will be approximately 220 km of subsea cable operated by SSEN. | 2025-2029 | 2030 | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Wick Fabrication Site** | Operational | 24 | 5 | Fabrication facility owned by Subsea 7. | Operational | Present day - unknown | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Military Activities** | | | | | | | |

| Project | Status | Distance from Array Area (km) | Distance from Offshore Export Cable Route (km) | Description of Project | Dates of Construction (If Applicable) | Dates of Operation (If Applicable) | Overlap with the Proposed Development |
|---|---|---|---|---|---|---|---|
| **D809(N): Moray Firth (North)** | Operational | 0 | 0 | Military practice area - surface danger area, firing danger area | Operational | Present day - unknown | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **D809(S): Moray Firth (South)** | Operational | 36.16 | 11.08 | Military practice area - surface danger area, firing danger area | Operational | Present day - unknown | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **D809(C): Moray Firth (Central)** | Operational | 0 | 0 | Military practice area - surface danger area, firing danger area | Operational | Present day - unknown | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Planning Applications** | | | | | | | |
| **24/109/WL - The String (Head of Work and Twi Ness, Shapinsay) Orkney** | Consented | 34 | 37 | Installation of a replacement power distribution cable and associated cable stabilisation and protection measures by Scottish Hydro Electric Power Distribution Plc. The application was approved by Orkney County Council July 2024. | 2024-2025 | - | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **21/186/MLSCO - Scapa Deep Water Quay** | Planning | 35 | 33 | Construction of new works at Scapa Deep Water Quay. | 2028 | 2029 onwards | Screened in due to potential for O&M to coincide with the construction and O&M phase of the Proposed Development. |
| **Tier 3** | | | | | | | |
| **Offshore Wind Projects and Associated Cables** | | | | | | | |
| **Broadshore Hub Offshore Wind Farms** | Scoping | 58.93 | 51.81 | The Broadshore Hub OWFs (comprising Broadshore OWF, Sinclair OWF and Scaraben OWF) is proposed for up to 72 turbines at a capacity of 1,100 MW across the three projects. | 2028-2029 | 2030-2068 | Screened in due to potential for O&M to coincide with the survey and site investigation works and construction of the Proposed Development. |
| **Marram Offshore Wind Farm** | Scoping | 92.06 | 105.42 | Marram OWF is proposed for up to 150 turbines at a capacity of 3000 MW. | 2026-2029 | 2030-2054 | Screened in due to potential for O&M to coincide with the construction phase of the Proposed Development. |
| **Stromar Offshore Wind Farm** | Scoping | 14.01 | 10.84 | Stromar is proposed for up to 71 turbines at a capacity of 1,000 MW. | 2026-2032 | 2033-2058 | Screened in due to potential for survey and site investigation works and construction activities to coincide with the construction phase of the Proposed Development. |
| **Caledonia Offshore Wind Farm Limited - offshore cable corridor** | Planning | 48.30 | 17.55 | Application submitted but not yet determined. | 2028-2031 | 2032-2068 | Screened in due to potential for survey and site investigation works, and construction and O&M activities to coincide with the construction and O&M phases of the Proposed Development. |

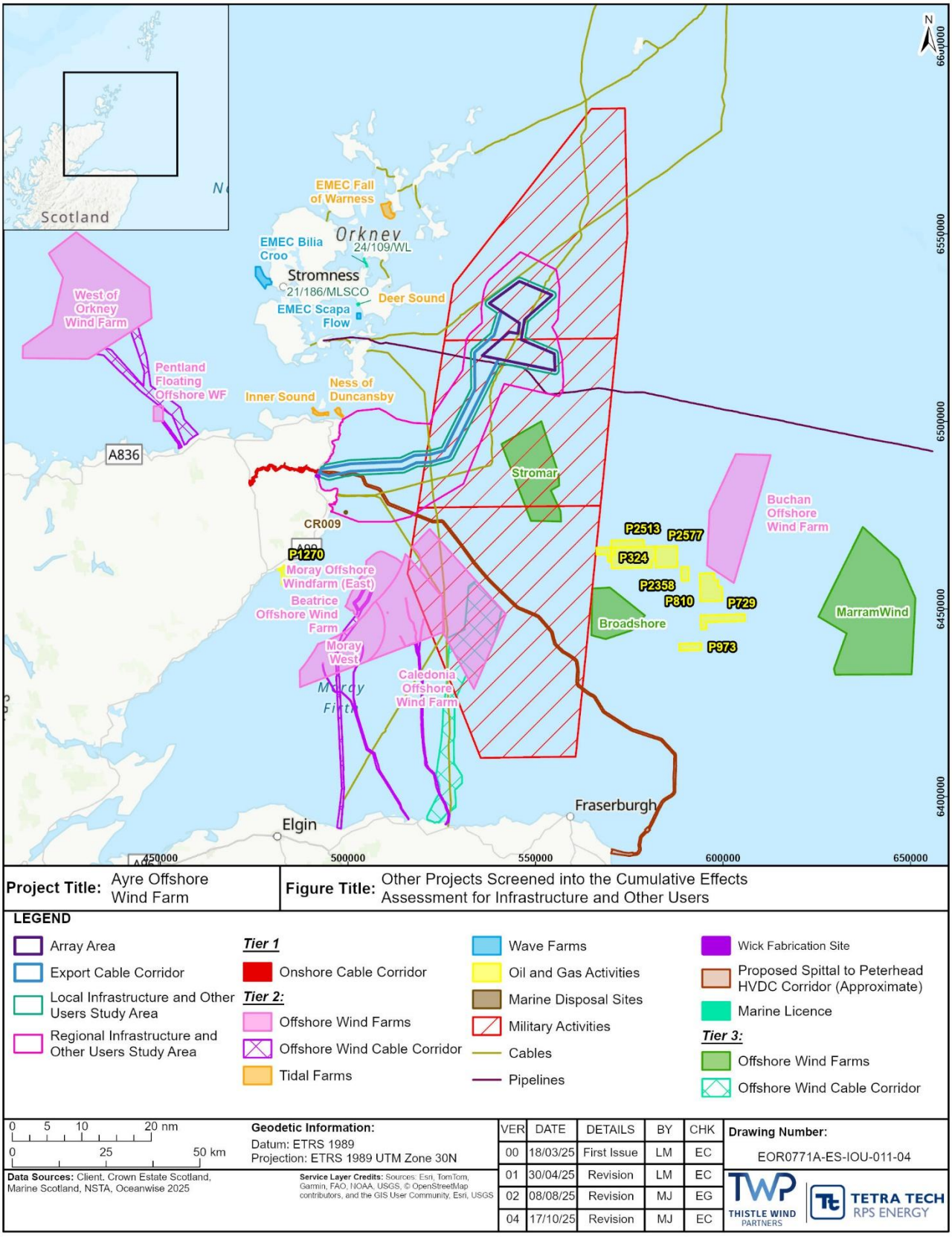


**Figure 16.11: Other Projects Screened into the CEA for Infrastructure and Other Users**

### Maximum Design Scenario

16.12.7 The MDS identified in Table 16.20 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. The cumulative effects presented and assessed in this section have been selected from the details provided in Volume 1, Chapter 3: Project Description as well as the information available on other projects (see Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment - Screening), to inform a MDS'. Any other development scenario within the PDE, will result in the same, or less, level of environmental effect.

**Table 16.20: MDS Considered for Each Impact as part of the Assessment of Likely Significant Cumulative Effects on Infrastructure and Other Users**

| Potential Cumulative Effect | Phase* | | | Tier | MDS |
|---|---|---|---|---|---|
| | C | O | D | | |
| **Displacement of recreational activities (including recreational sailing, cruising and recreational fishing) due to Safety Zones and/or advisory safe passing distances in the Proposed Development may result in a loss of recreational resource.** | ✓ | ✓ | ✓ | **Tier 1**<br>• Ayre Onshore Infrastructure<br>**Tier 2**<br>• Beatrice OWF<br>• Beatrice Offshore Export Cable Route<br>• Caledonia OWF<br>• Buchan OWF<br>• Moray OWF (East)<br>• Moray OWF (West)<br>• Pentland Floating Offshore Wind<br>• West of Orkney Wind Farm<br>• Deer Sound, Orkney (Orbital Marine Power)<br>• EMEC Fall of Warness<br>• Inner Sound MeyGen PLC (Phase 1)<br>• Ness of Duncansby<br>• Billia Croo<br>• EMEC Scapa Flow<br>• South Head - CR009 Disposal Site<br>• Oil and gas activities; P1270, P2513, P324, P2577, P2358, P810, P973, and P729<br>• Piper B 30" Oil Export Pipeline (the Flottta subsea pipeline)<br>• SHEFA-2 Seg 08 and 09<br>• Shetland HVDC<br>• R100 projects<br>• Caithness to Moray HVDC<br>• Orkney to Caithness HVAC<br>• Spittal to Peterhead HVDC<br>• Wick Fabrication Site<br>• Military Activities; D809(N), D809(S) and D809(C)<br>• Planning Application 24/109/WL<br>• Planning Application 21/186/MLSCO | MDS as described for the Proposed Development (Table 16.11) assessed cumulatively with the following other projects/plans present. |

| Potential Cumulative Effect | Phase* | | | Tier | MDS |
|---|---|---|---|---|---|
| | C | O | D | | |
| | | | | **Tier 3**<br>• Broadshore Hub OWFs<br>• Marram OWF<br>• Stromar OWF<br>• Caledonia Offshore Wind Farm Limited - offshore cable corridor | |
| **Physical impact to early development cables or loss of access to existing cables and pipelines due to Safety Zones and advisory safe passing distances in the Proposed Development may result in other operators unable to carry out maintenance activities on their assets.** | ✓ | ✓ | ✓ | **Tier 2**<br>• Beatrice OWF<br>• Beatrice Offshore Export Cable Route<br>• Caledonia OWF<br>• Buchan OWF<br>• Moray OWF (East)<br>• Moray OWF (West)<br>• Pentland Floating Offshore Wind<br>• West of Orkney Wind Farm<br>• Deer Sound, Orkney (Orbital Marine Power)<br>• EMEC Fall of Warness<br>• Inner Sound MeyGen PLC (Phase 1)<br>• Ness of Duncansby<br>• Billia Croo<br>• EMEC Scapa Flow<br>• South Head - CR009 Disposal Site<br>• Oil and gas activities; P1270, P2513, P324, P2577, P2358, P810, P973, and P729<br>• Piper B 30" Oil Export Pipeline (the Flottta subsea pipeline)<br>• SHEFA-2 Seg 08 and 09<br>• Shetland HVDC<br>• R100 projects<br>• Caithness to Moray HVDC<br>• Orkney to Caithness HVAC<br>• Spittal to Peterhead HVDC<br>• Wick Fabrication Site<br>• Military Activities; D809(N), D809(S) and D809(C)<br>• Planning Application 24/109/WL | MDS as described for the Proposed Development (Table 16.11) assessed cumulatively with the following other projects/plans present. |

| Potential Cumulative Effect | Phase* | | | Tier | MDS |
|---|---|---|---|---|---|
| | C | O | D | | |
| | | | | • Planning Application 21/186/MLSCO<br>**Tier 3**<br>• Broadshore Hub OWFs<br>• Marram OWF<br>• Stromar OWF<br>• Caledonia Offshore Wind Farm Limited - offshore cable corridor | |

* Project Phase refers to construction (C), O&M (O) and decommissioning (D).

### Cumulative Effects Assessment

16.12.8 An assessment of the likely significance of the cumulative effects of the Proposed Development upon Infrastructure and Other Users receptors arising from each identified impact is given below. There are no Tier 4 projects carried through to CEA due to no pathway for Infrastructure and Other Users cumulative effects to arise between the Proposed Development and Tier 4 projects.

#### *Displacement of Recreational Activities (Including Recreational Sailing, Cruising and Recreational Fishing) Due to Safety Zones and/or Advisory Safe Passing Distances in the Proposed Development May Result in a Loss of Recreational Resource*

##### *Tier 1, 2 and 3*

*Construction Phase*

Magnitude of Impact

16.12.9 The installation of Offshore Infrastructure within the Array Area and along the Export Cable Corridor, together with the Tier 1, 2 and Tier 3 projects identified in Table 16.20, may displace recreational activities, resulting in a loss of recreational resource.

16.12.10 Figure 16.11, provides a synoptic overview of the location of other projects screened into the cumulative assessment in relation to recreational interests. There are general sailing areas associated with Orkney Sailing Club and Holm Sailing Club. Both sailing clubs are adjacent to the Array Area, and west to north-west of the Export Cable Corridor. General boating areas are also located in Holm, Orkney. Medium intensity recreational boating occurs parallel to the coastline with the stretch of sea between the mainland of north Scotland to Orkney experiencing the highest amount of recreational boating, with AIS tracks extending east towards the Array Area (Figure 16.3). Smaller levels of displacement may also occur due to site investigation activities associated with Caledonia OWF, Stromar OWF, Buchan OWF and military activities in D809. Additional displacement may also occur during maintenance activities undertaken at Beatrice OWF, Moray OWF (East), Moray OWF (West), Pentland Floating Offshore Wind, the Flotta Pipeline, and other energy projects relating to tidal and wave described in Table 16.10.

16.12.11 The spatial extent of the impact on recreational activities taking place in the Moray Firth and off the east coast of Orkney will be relatively small in the context of available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the individual Safety Zones and advisory safe passing distances around structures and vessels associated with each project. The impact of Safety Zones in place during the construction phase is mostly reversible as they are temporary in nature and once each structure has been installed and commissioned these will be removed. Advisory safe passing distances around vessels will be transient as the vessel progresses through the relevant installation, maintenance and survey activity. It is unlikely that the activities of all projects

would temporally coincide to displace the same recreational vessel on multiple events.

16.12.12 As described in Table 16.17, NtMs will be issued regularly during the construction phase, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly. The Applicant will also distribute Kingfisher Bulletins and other navigational warnings of the position and nature of works associated with the Proposed Development. Similar measures are likely to apply at the other projects as standard practice.

16.12.13 The cumulative impact is predicted to be of regional spatial extent, short to medium-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

Sensitivity of Receptor

16.12.14 It is anticipated that recreational activities (including recreational sailing, cruising and recreational fishing) will be able to alter their route or transit past installation activities and associated advisory Safety Zones and advisory safe passing distances, given the adequate sea room in the vicinity of each project. There are other locations available for sailing, recreational boating and sea angling which are unlikely to be affected by multiple projects concurrently, such that alternatives are available.

16.12.15 The receptor is deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of Effect

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

Additional Mitigation and Residual Effect

16.12.17 No Additional Mitigation is considered necessary because the likely cumulative effect in the absence of mitigation is not significant in EIA terms.

*O&M Phase*

Magnitude of Impact

16.12.18 The presence of Offshore Infrastructure and/or O&M activities within the Array Area and along the Export Cable Corridor, together with the Tier 1, 2 and Tier 3 projects identified in Table 16.20, may displace recreational activities, resulting in a loss of recreational resource.

16.12.19 It is understood that the Orkney – Caithness HVAC cable is under construction, Pentland Floating Offshore Wind, West of Orkney Wind Farm and Planning Application 24/109/WL has been consented, Caledonia OWF, Buchan OWF, Ness of Duncansby, and the Spittal - Peterhead HVDC are at the planning stage. Broadshore Hub OWFs, Marram OWF, and Stromar Offshore Wind Farm are at the Scoping stage. Therefore, it has been assumed for the purposes of this

assessment, as a MDS, O&M phases of these projects may overlap with the O&M phase for the Proposed Development. However, due to the lack of project information at this stage, a qualitative assessment is provided below. For the purposes of this assessment, these projects are expected to include similar maintenance activities as those described for the Proposed Development, including similar types of vessels. Further displacement may arise during maintenance activities undertaken at Beatrice OWF and Export Cable Route, Moray OWF (East), tidal farms; Deer Sound, Inner Sound, and EMEC Fall of Warness, wave farms; EMEC Billia Croo and EMEC Scapa Flow, South Head marine disposal site, Flotta subsea pipeline, subsea cables; SHEFA-02 SEG 8 and 9, Shetland HVDC, Caithness-Moray HVDC, military activities and various oil and gas operations listed in Table 16.19.

16.12.20 The Beatrice OWF and Export Cable Route, tidal farms; Inner Sound, and EMEC Fall of Warness are likely to be decommissioned during the lifetime of the Proposed Development. The decommissioning strategy for these projects is predicted to be similar to that proposed for the Proposed Development.

16.12.21 As described in Section 16.6, there are a number of recreational vessel activities taking place in the Moray Firth and off the east coast of Orkney, with activity likely to be concentrated inshore of the projects considered in this cumulative assessment. Once the infrastructure has been installed for each project, only temporary and infrequent maintenance is likely to be required over the project lifetimes, which is unlikely to take place concurrently at multiple project locations. Therefore, the potential for cumulative displacement of recreational activities within the nearshore sea area is considered to be low. There is potential for recreational vessels undertaking long distance journeys further offshore to be displaced by the presence of infrastructure within each application area.

16.12.22 The spatial extent of the impact on recreational boating activities taking place in the Moray Firth and off the east coast of Orkney will be relatively small in the context of available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the individual Safety Zones and advisory safe passing distances around structures and vessels associated with major maintenance activities at each project. It is improbable that maintenance activities at all projects would temporally coincide to displace the same recreational vessel on multiple events.

16.12.23 As described in Table 16.17, NtMs will be issued regularly during the lifetime of the Proposed Development, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly. The Applicant will also distribute Kingfisher Bulletins and other navigational warnings of the position and nature of works associated with the Proposed Development. Similar measures are likely to apply at the other projects as standard practice.

16.12.24 The cumulative impact is predicted to be of regional spatial extent, long-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

Sensitivity of Receptor

16.12.25 It is anticipated that recreational activities (including recreational sailing, cruising and recreational fishing) will be able to alter their route or transit past installation activities and associated Safety Zones and advisory safe passing distances, given the adequate sea room in the vicinity of each project. There are other locations available for sailing, recreational boating and sea angling which are unlikely to be affected by multiple projects concurrently, such that alternatives are available.

16.12.26 The receptor is deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of Effect

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

Additional Mitigation and Residual Effect

16.12.28 No Additional Mitigation is considered necessary because the likely cumulative effect in the absence of additional mitigation is not significant in EIA terms.

*Decommissioning Phase*

Magnitude of Impact

16.12.29 The decommissioning of Offshore Infrastructure within the Array Area and along the Export Cable Corridor, together with the Tier 1, 2 and Tier 3 projects identified in Table 16.20, may displace recreational activities, resulting in a loss of recreational resource.

16.12.30 Figure 16.11 provides a synoptic overview of the location of other projects screened into the cumulative assessment in relation to recreational interests. There are general sailing areas associated with Orkney Sailing Club and Holm Sailing Club. Both sailing clubs are adjacent to the Array Area, and west to north-west of the Export Cable Corridor. General boating areas are also located in Holm, Orkney. Medium intensity recreational boating occurs parallel to the coastline with the stretch of sea between the mainland of north Scotland to Orkney experiencing the highest amount of recreational boating, with AIS tracks extending east towards the Array Area (Figure 16.3). Smaller levels of displacement may also occur due to site investigation activities associated with Caledonia OWF, Stromar OWF, Buchan OWF and military activities in D809. Additional displacement may also occur during maintenance activities undertaken at Beatrice OWF, Moray OWF (East), Moray OWF (West), Pentland Floating Offshore Wind, the Flotta Pipeline, and other energy projects relating to tidal and wave described in Table 16.10.

16.12.31 The spatial extent of the impact on recreational boating activities taking place in the Moray Firth and off the east coast of Orkney will be relatively small in the context of available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the

individual Safety Zones and/or advisory safe passing distances around structures and vessels associated with each project. Safety zones will be temporary in nature until each structure has been removed and decommissioned, and advisory safe passing distances around vessels will be transient as the vessel progresses through the relevant decommissioning activity. It is unlikely that the activities of all projects would temporally coincide to displace the same recreational vessel on multiple events. It is improbable that the activities at all projects would temporally coincide to displace the same recreational vessel on multiple events.

16.12.32 At the end of the operational lifetime of the Proposed Development, it is anticipated that all structures above the seabed or ground level will be completely removed where this is feasible and practicable. This will be kept under review depending on current legislation and guidance requirements, best practice and other options may be required including cutting structures below the seabed. It is proposed that an assessment will be undertaken on a MDS of removing all IACs, Interconnector Cables and Offshore Export Cables. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.

16.12.33 As described in Table 16.17, NtMs will be issued regularly during the decommissioning phase of the Proposed Development, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly. The Applicant will also distribute Kingfisher Bulletins and other navigational warnings of the position and nature of works associated with the Proposed Development. Similar measures are likely to apply at the other projects as standard practice.

16.12.34 The cumulative impact is predicted to be of regional spatial extent, short to medium-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

Sensitivity of Receptor

16.12.35 It is anticipated that recreational activities (including recreational sailing, cruising and recreational fishing) will be able to alter their route or transit past decommissioning activities and associated Safety Zones and/or advisory safe passing distances, given the adequate sea room in the vicinity of each project. There are other locations available for sailing, recreational boating and sea angling which are unlikely to be affected by multiple projects concurrently, such that alternatives are available.

16.12.36 The receptor is deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of Effect

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

Additional Mitigation and Residual Effect

16.12.38 No Additional Mitigation is considered necessary because the likely cumulative effect in the absence of additional mitigation is not significant in EIA terms.

***Installation and Presence of Wind Turbines, OSPs, and Offshore Export Cables Including Associated Safety Zones and Advisory Safe Passing Distances in the Proposed Development May Impact Early Development Cables or Restrictions on Access to Existing Cables or Pipelines***

***Tier 2 and 3***

*Construction Phase*

Magnitude of Impact

16.12.39 The installation of Offshore Infrastructure within the Array Area and along the Export Cable Corridor, together with the Tier 2 and Tier 3 projects identified in Table 16.20, may impact upon early development cables or restrict access to existing cables and pipelines due to increased presence of vessels and temporary advisory Safety Zones and advisory safe passing distances, resulting in a loss of access to these assets. There is no potential for cumulative effects to occur with Tier 1 projects as the only Tier 1 project identified is the onshore elements of the Project and there is no pathway for potential cumulative effect.

16.12.40 Figure 16.11 provides a synoptic overview of the location of other projects screened into the cumulative assessment in relation to cable and pipeline interests. There are two active cables (power cables SSEN Caithness to Moray HVDC Link and SSEN Shetland HVDC Link), two active subsea telecommunication cables (SHEFA 2 Seg-08 and Seg-09), and one active pipeline (Flotta 30'' subsea pipeline) that overlap the Regional Infrastructure and Other Users Study Area, of which three crosses over the Local Infrastructure and Other Users Study Area. Early development cables such as the Spittal to Peterhead transmission system (which is currently in planning phase) is 220 km of subsea cable route and would overlap the Regional Infrastructure and Other Users Study Area. Smaller levels of displacement may also occur due to site investigation activities associated with Caledonia OWF, Stromar OWF, Buchan OWF and military activities in D809. Additional displacement may also occur during maintenance activities undertaken at Beatrice OWF, Moray OWF (East), Moray OWF (West), Pentland Floating Offshore Wind, the Flotta Pipeline, and other energy projects relating to tidal and wave described in Table 16.10.

16.12.41 The spatial extent of the impact on accessibility to existing cables and pipelines, and to early development cables in the vicinity of the Proposed Development, together with the Tier 2 and 3 projects will be relatively small. Any restriction of access with any Safety Zones and/or advisory safe passing distances placed around structures or individual vessels carrying out construction activities is expected to be temporary in nature, and it is unlikely that the activities of all projects would temporarily coincide to restrict the access to existing cables and pipelines, or to early development cables.

16.12.42 As described in Table 16.17, NtMs will be issued regularly during the construction phase, advising of the location, nature and timing of activities, and associated

Safety Zones and/or advisory safe passing distances, ensuring that construction and maintenance works on development and existing cables and pipelines can be planned accordingly. The Applicant will also distribute Kingfisher Bulletins and other navigational warnings of the position and nature of works associated with the Proposed Development. Similar measures are likely to apply at the other projects as standard practice.

16.12.43 The cumulative impact is predicted to be of regional spatial extent, short to medium-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

Sensitivity of the Receptor

16.12.44 It is anticipated that third-party vessels operating on cables and pipelines in the vicinity of the Proposed Development will be aware of the project construction activities and they will be able to plan and re-route with minimal interference to access.

16.12.45 Crossing and proximity agreements alongside continued and regular communication with cable and pipeline operators in line with industry standard will ensure relevant parties are kept informed of planned construction activities in order to minimise spatial and temporal interactions between conflicting activities and maximise coexistence.

16.12.46 The receptor is deemed to be of medium vulnerability, medium recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of the Effect

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

Additional Mitigation and Residual Effect

16.12.48 No Additional Mitigation is considered necessary because the likely cumulative effect in the absence of additional mitigation is not significant in EIA terms.

*O&M Phase*

Magnitude of Impact

16.12.49 The presence of Offshore Infrastructure and/or O&M activities within the Array Area and along the Export Cable Corridor, together with the Tier 2 and Tier 3 projects identified in Table 16.20, may impact upon early development cables and restrict access to existing cables and pipelines due to increased presence of vessels and temporary Safety Zones and/or advisory safe passing distances, resulting in a loss of access to these assets.

16.12.50 It is understood that the Orkney – Caithness HVAC cable is under construction, Pentland Floating Offshore Wind, West of Orkney Wind Farm and Planning Application 24/109/WL has been consented, Caledonia OWF, Buchan OWF, Ness of Duncansby, and the Spittal - Peterhead HVDC are at the planning stage.

Broadshore Hub OWFs, Marram OWF, and Stromar Offshore Wind Farm are at the Scoping stage. Therefore, it has been assumed for the purposes of this assessment, as a MDS, O&M phases of these projects may overlap with the O&M phase for the Proposed Development. However, due to the lack of project information at this stage, a qualitative assessment is provided below. For the purposes of this assessment, these projects are expected to include similar maintenance activities as those described for the Proposed Development, including similar types of vessels. Further displacement may arise during maintenance activities undertaken at Beatrice OWF and Export Cable Route, Moray OWF (East), tidal farms; Deer Sound, Inner Sound, and EMEC Fall of Warness, wave farms; EMEC Billia Croo and EMEC Scapa Flow, South Head marine disposal site, Flotta subsea pipeline, subsea cables; SHEFA-02 Seg 8 and 9, Shetland HVDC, Caithness-Moray HVDC, military activities and various oil and gas operations listed in Table 16.19.

16.12.51 The Beatrice OWF and Export Cable Route, tidal farms; Inner Sound and EMEC Fall of Warness are likely to be decommissioned during the lifetime of the Proposed Development. The decommissioning strategy for these projects is predicted to be similar to that proposed for the Proposed Development.

16.12.52 The spatial extent of the impact on accessibility to early development cables and existing cables and pipelines in the vicinity of the Proposed Development, together with Tier 2 and 3 projects will be relatively small. Any restriction of access with any Safety Zones and/or advisory safe passing distances placed around structures or individual vessels carrying out major maintenance activities is expected to be temporary in nature, and it is unlikely that the activities of all projects would temporarily coincide to restrict the access to existing cables and pipelines, or to early development cables.

16.12.53 As described in Table 16.17, NtMs will be issued regularly during the O&M phase, advising of the location, nature and timing of activities, and associated Safety Zones/advisory safe passing distances, ensuring that construction and maintenance works on development and existing cables and pipelines can be planned accordingly. The Applicant will also distribute Kingfisher Bulletins and other navigational warnings of the position and nature of works associated with the Proposed Development. Similar measures are likely to apply at the other projects as standard practice.

16.12.54 The cumulative impact is predicted to be of regional spatial extent, short to medium-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

Sensitivity of the Receptor

16.12.55 It is anticipated that third-party vessels operating on cables and pipelines in the vicinity of the Proposed Development will be aware of the project maintenance activities and they will be able to plan and re-route with minimal interference to access.

16.12.56 Crossing and proximity agreements alongside continued and regular communication with cable and pipeline operators in line with industry standard

will ensure relevant parties are kept informed of planned maintenance activities in order to minimise spatial and temporal interactions between conflicting activities and maximise coexistence.

16.12.57 The receptor is deemed to be of medium vulnerability, medium recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of the Effect

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

Additional Mitigation and Residual Effect

16.12.59 No Additional Mitigation is considered necessary because the likely cumulative effect in the absence of additional mitigation is not significant in EIA terms.

*Decommissioning Phase*

Magnitude of Impact

16.12.60 The decommissioning activities of the Proposed Development within the Array Area and along the Export Cable Corridor, together with the Tier 2 and Tier 3 projects identified in Table 16.20, may impact upon early development cables or restrict access to existing cables and pipelines due to increased presence of vessels and temporary Safety Zones and/or advisory safe passing distances, resulting in a loss of access to these assets.

16.12.61 Figure 16.11 provides a synoptic overview of the location of other projects screened into the cumulative assessment in relation to cable and pipeline interests. There are two active cables (power cables SSEN Caithness to Moray HVDC Link and SSEN Shetland HVDC Link), two active subsea telecommunication cables (SHEFA 2 Seg-08 and Seg-09), and one active pipeline (Flotta 30'' subsea pipeline) that overlap the Regional Infrastructure and Other Users Study Area, of which three crosses over the Local Infrastructure and Other Users Study Area. Early development cables such as the Spittal to Peterhead transmission system (which is currently in planning phase) is 220 km of subsea cable route and would overlap the Regional Infrastructure and Other Users Study Area. Smaller levels of displacement may also occur due to site investigation activities associated with Caledonia OWF, Stromar OWF, Buchan OWF and military activities in D809. Additional displacement may also occur during maintenance activities undertaken at Beatrice OWF, Moray OWF (East), Moray OWF (West), Pentland Floating Offshore Wind, the Flotta Pipeline, and other energy projects relating to tidal and wave described in Table 16.10.

16.12.62 At the end of the operational lifetime of the Proposed Development, it is anticipated that all structures above the seabed or ground level will be completely removed where this is feasible and practicable. This will be kept under review depending on current legislation and guidance requirements, best practice and other options may be required including cutting structures below

the seabed. It is proposed that an assessment will be undertaken on a MDS of removing all IACs, Interconnector Cables and Offshore Export Cables. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.

16.12.63 As described in Table 16.17, NtMs will be issued regularly during the decommissioning phase, advising of the location, nature and timing of activities, and associated Safety Zones and/or advisory safe passing distances, ensuring that activities on development and existing cables and pipelines can be planned accordingly. The Applicant will also distribute Kingfisher Bulletins and other navigational warnings of the position and nature of works associated with the Proposed Development. Similar measures are likely to apply at the other projects as standard practice.

16.12.64 The cumulative impact is predicted to be of regional spatial extent, short to medium-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be low.

Sensitivity of the Receptor

16.12.65 It is anticipated that third-party vessels operating on cables and pipelines in the vicinity of the Proposed Development will be aware of the project decommissioning activities and they will be able to plan and re-route with minimal interference to access.

16.12.66 Crossing and proximity agreements alongside continued and regular communication with cable and pipeline operators in line with industry standard will ensure relevant parties are kept informed of planned decommissioning activities in order to minimise spatial and temporal interactions between conflicting activities and maximise coexistence.

16.12.67 The receptor is deemed to be of medium vulnerability, medium recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of the Effect

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

Additional Mitigation and Residual Effect

16.12.69 No Additional Mitigation is considered necessary because the likely cumulative effect in the absence of additional mitigation is not significant in EIA terms.

## 16.13 Proposed Monitoring

16.13.1 No monitoring to test the predictions made within the assessment of likely significant environmental effects on Infrastructure and Other Users is considered necessary.

## 16.14 Transboundary Effects

16.14.1 A screening of transboundary effects has been carried out (see Volume 3, Technical Appendix 4.5: Transboundary Impacts Screening) and has identified that there were no likely significant transboundary effects with regard to Infrastructure and Other Users from the Proposed Development upon the interests of European Economic Area (EEA) states.

## 16.15 Summary of Impacts, Mitigation, Likely Significant Environmental Effects and Monitoring

16.15.1 Information on Infrastructure and Other Users within the Infrastructure and Other Users Study Areas was collected through desktop review and consultation, in addition to results obtained through the VTS which can be found in Volume 3, Technical Appendix 14.1: Shipping and Navigation Risk Assessment. This information is summarised in Table 16.21 and Table 16.22.

16.15.2 Table 16.21 presents a summary of the potential impacts, Embedded Mitigation and the conclusion of likely significant environmental effects in EIA terms in respect to Infrastructure and Other Users. The impacts assessed include:

- displacement of recreational activities (including recreational sailing, cruising and recreational fishing); and
- impacts to development cables or pipelines or restrictions on access to cables or pipelines.

16.15.3 Overall, it is concluded that there will be no likely significant environmental effects arising from the Proposed Development during the construction, O&M or decommissioning phases.

16.15.4 Table 16.22 presents a summary of the potential impacts, Embedded Mitigation and the conclusion of likely significant environmental effects on Infrastructure and Other Users in EIA terms. The cumulative effects assessed include:

- displacement of recreational activities (including recreational sailing, cruising and recreational fishing) due to Safety Zones and advisory safe passing distances in the Proposed Development may result in a loss of recreational resource; and
- installation and presence of Wind Turbines, OSPs, and Export Cable Corridor cabling including associated Safety Zones and advisory safe passing distances in the Proposed Development may impact development cables or restrictions on access to existing cables or pipelines.

16.15.5 Overall, it is concluded that there will be no likely significant cumulative effects from the Proposed Development alongside other projects/plans.

16.15.6 No likely significant transboundary effects have been identified in regard to effects of the Proposed Development.

**Table 16.21: Summary of Assessment of Significance**

| Description of Impact | Embedded Mitigation | Magnitude of Impact | Sensitivity of Receptor | Significance of Effect | Additional Mitigation | Significance of Residual Effect | Proposed Monitoring |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| **Displacement of recreational activities (including recreational sailing, cruising and recreational fishing)** | N/A | Low | Medium | Minor | None required. | N/A | None |
| **Impacts to development cables or pipelines or restrictions on access to cables or pipelines** | N/A | Low | Medium | Minor | None required. | N/A | None |
| **O&M Phase** | | | | | | | |
| **Displacement of recreational activities (including recreational sailing, cruising and recreational fishing)** | N/A | Low | Medium | Minor | None required. | N/A | None |
| **Impacts to development cables or pipelines or restrictions on access to cables or pipelines** | N/A | Low | Medium | Minor | None required. | N/A | None |
| **Decommissioning Phase** | | | | | | | |
| **Displacement of recreational activities (including recreational sailing, cruising and recreational fishing)** | N/A | Low | Medium | Minor | None required. | N/A | None |
| **Impacts to development cables or pipelines or restrictions on access to cables or pipelines** | N/A | Low | Medium | Minor | None required. | N/A | None |

**Table 16.22: Summary of Cumulative Effects Assessment**

| Description of Impact | CEA Tier | Magnitude of Impact | Sensitivity of Receptor | Significance of Effect | Additional Measures | Significance of Residual Effect | Proposed Monitoring |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| **Displacement of recreational activities (including recreational sailing, cruising and recreational fishing) due to Safety Zones and advisory safe passing distances in the Proposed Development may result in a loss of recreational resource)** | Tiers 1, 2 and 3 | Low | Medium | Minor | None required | N/A | None |
| **Installation and presence of Wind Turbines, OSPs, and Export Cable Corridor cabling including associated Safety Zones and advisory safe passing distances in the Proposed Development may impact development cables or restrictions on access to existing cables or pipelines** | Tiers 2 and 3 | Low | Medium | Minor | None required | N/A | None |
| **O&M Phase** | | | | | | | |
| **Displacement of recreational activities (including recreational sailing, cruising and recreational fishing) due to Safety Zones and advisory safe passing distances in the Proposed Development may result in a loss of recreational resource)** | Tiers 1, 2 and 3 | Low | Medium | Minor | None required | N/A | None |
| **Installation and presence of Wind Turbines, OSPs, and Export Cable Corridor cabling including associated Safety Zones and advisory safe passing distances in the Proposed Development may impact development cables or restrictions on access to existing cables or pipelines** | Tiers 2 and 3 | Low | Medium | Minor | None required | N/A | None |
| **Decommissioning Phase** | | | | | | | |

| Description of Impact | CEA Tier | Magnitude of Impact | Sensitivity of Receptor | Significance of Effect | Additional Measures | Significance of Residual Effect | Proposed Monitoring |
|---|---|---|---|---|---|---|---|
| **Displacement of recreational activities (including recreational sailing, cruising and recreational fishing) due to Safety Zones and advisory safe passing distances in the Proposed Development may result in a loss of recreational resource)** | Tiers 1, 2 and 3 | Low | Medium | Minor | None required | N/A | None |
| **Installation and presence of Wind Turbines, OSPs, and Export Cable Corridor cabling including associated Safety Zones and advisory safe passing distances in the Proposed Development may impact development cables or restrictions on access to existing cables or pipelines** | Tiers 2 and 3 | Low | Medium | Minor | None required | N/A | None |

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