Energy developments in Shetland, and their interactions with fisheries

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GLOSSARY

Acronym	Meaning
AIS	Automatic Identification System (vessel tracking transponder)
COMAH	Control of Major Accident Hazards (safety regulations)
Defra	Department for Environment, Food & Rural Affairs (UK Government)
EEZ	Exclusive Economic Zone
EU	European Union
EV	Electric Vehicle
FLO	Fisheries Liaison Officer
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables (industry group)
FPSO	Floating Production, Storage and Offloading (offshore oil vessel)
FTE	Full-Time Equivalent (workload of one full-time worker)
GW	Gigawatt (1,000 megawatts of power capacity)
GWh	Gigawatt-hour (one billion watt-hours of energy)
HVDC	High-Voltage Direct Current (power transmission technology)
INTOG	Innovation and Targeted Oil & Gas (offshore leasing round)
KIS-ORCA	Kingfisher Information Service – Offshore Renewables and Cables Awareness
kV	kilovolt (1,000 volts of electric potential)
kW	kilowatt (1,000 watts of power)
MPA / MPAs	Marine Protected Area(s)
MoU	Memorandum of Understanding
MSC	Marine Stewardship Council (sustainable fisheries certification body)
MW	Megawatt (1 million watts of power capacity)
O&M	Operations and Maintenance (of energy facilities)
Ofgem	Office of Gas and Electricity Markets (UK energy regulator)
ORION	Opportunity for Renewable Integration with Oil and Net-Zero (clean energy project)
P2X	Power-to-X (conversion of electricity to alternative fuels like hydrogen)
SFA	Shetland Fishermen’s Association
SGN	Scotia Gas Networks (gas distribution company)
SSE	SSE plc (formerly Scottish and Southern Energy, a UK utility)
SSEN	Scottish & Southern Electricity Networks (power grid operator)
SSMO	Shetland Shellfish Management Organisation
SVT	Sullom Voe Terminal
UHI	University of the Highlands and Islands
WoSE	West of Shetland Electrification

SECTION 1: EXECUTIVE SUMMARY & REPORT INTRODUCTION

Shetland's thriving fishing fleet is overwhelmingly owned by local families: in this context, offshore developments can result in a transfer of the economic utility of sea space from locals to businesses owned outside of Shetland

1.0 EXECUTIVE SUMMARY & INTRODUCTION

1.1. Executive Summary

1.1.1. Energy developments are set to expand rapidly in the seas around Shetland, reshaping the region's strategic role within the UK energy sector. Developers are bringing forward large offshore wind farms, tidal energy arrays, subsea power cables, and onshore hydrogen and wind projects with associated coastal infrastructure.

1.1.2. These initiatives are driven by national climate targets and energy security goals, and they herald significant investments in infrastructure. From a Shetland Fishermen's perspective, however, this wave of projects raises profound concerns about the displacement of traditional fishing activities and the equitable distribution of benefits. In short, Shetland's seas are becoming a proving ground for the "just transition" – a test of whether decarbonisation can be achieved without undue negative impacts on the livelihoods of local communities who have stewarded these waters.

1.1.3. The report finds that the scale and spatial footprint of proposed energy developments could "squeeze" Shetland's fishing grounds. Significant areas of the hypothetical 'Shetland Exclusive Economic Zone (EEZ)' – from inshore voes to offshore banks – are now overlapped by proposed wind farms, cable corridors, oil and gas infrastructure and marine protected areas.

1.1.4. Fishermen fear a patchwork of exclusion areas that collectively erode their accessible grounds and viability. Skippers have voiced widespread anxiety that fishing vessels will be crowded out by the cumulative effects of offshore wind turbines, seabed cables and new regulations. This cumulative spatial impact is expected to increase significantly in the coming decades *if* all current proposals proceed. In the fishermen's view, this encroachment directly threatens an industry that is both economically vital and environmentally efficient. One fisherman noted: "*We all need to eat, and fishing is far more efficient in terms of greenhouse gas emissions than nearly all other forms of food production*".

1.1.5. During the evidence gathering stage of this study, the SFA and its members consistently reiterated the view that, without careful management and mitigation, Shetland's fishermen could become *"accidental casualties"* of the energy transition – unintended victims of policies meant to combat climate change.

1.1.6. Alongside the spatial conflicts, this report highlights significant socio-economic and cultural risks for Shetland's fishing-dependent communities. Fishing has been central to Shetland's economy and cultural identity for centuries, and it remains a cornerstone of employment in the isles. A forced contraction of the fleet or loss of productive grounds could cascade through the local economy – from fish processors and markets to local suppliers and hauliers.

1.1.7. Older fishermen fear that younger generations may see no future in fishing if encroachment continues. *"A wind technician job […] cannot replace the pride and independence of skippering your own fishing boat"* was a common sentiment shared during discussions with fishermen.

1.1.8. All of the large offshore wind and infrastructure projects are led by developers or utilities from outside Shetland, meaning that where local boats are excluded from productive grounds, the economic utility shifts from local residents to outside interests.

1.1.9. Community leaders and local representatives therefore stress that a just transition requires mechanisms to keep a fair share of the new industry's value in Shetland – for example by basing operations locally, contracting local vessels, and offering community benefit payments and/or ownership stakes. At present however, even the possibility of these broader benefits are little consolation to local fishermen, many of whom remain opposed to schemes that they do not feel they have consented to, yet will carry a burden for.

1.1.10. The fishermen and fishing representatives who contributed to the compilation of this report generally share a common perception: that a future is looming where Shetland's seas generate wealth for distant parties, as local fishermen and those engaged in the fisheries supply chain lose income. This report therefore calls attention to the need for balance: the development of sustainable energy in Shetland's waters must only proceed in tandem with robust measures to safeguard fishing livelihoods, the indirect fishing economy, and Shetland's marine ecosystem for the long term.

1.2. Introduction to this Report

1.2.1. This report examines how proposed energy developments within the “Shetland EEZ” will interact spatially with the fishing industry. The aim is to provide an evidence-based analysis that documents the scale of upcoming projects, the spatial pressures they may place on fishing grounds, and the potential socio-economic consequences for Shetland’s fishing community.

1.2.2. This report is primarily concerned with the spatial implications of developments within Shetland’s hypothetical EEZ area on fishing activity and ***does not cover the broader ecological or environmental considerations*** associated with the development of this infrastructure in the seas around Shetland.

1.2.3. By bringing together the latest information on energy proposals and fisheries data, the report seeks to inform both local stakeholders and national policymakers about the challenges and choices ahead. The timing of this analysis aligns with pivotal policy debates on what constitutes a “just transition” for communities like Shetland, ensuring that climate change mitigation efforts do not disproportionately burden traditional industries.

1.2.4. In this context, the report’s findings are intended to contribute to policy and marine planning decisions to support fair, sustainable working arrangements for fishermen *alongside* other sea users.

1.3. Relevance

1.3.1. The SFA, representing Shetland’s fishermen, has a direct stake in how new offshore wind farms, tidal turbines, subsea cables and other energy schemes develop. Shetland’s waters are among the most productive fishing grounds in Europe, and fishing remains a critical provider of jobs and supporter of the wider economy locally. Any loss of fishing opportunity in Shetland could have outsized impacts on the community and on seafood sector supply chains.

1.3.2. The analysis in this report is relevant to the Shetland fishing community and intended as a tool to help articulate their concerns and propose solutions. It is equally relevant to policy audiences, including marine regulators, planners and government decision-makers. The report also profiles insights from fishermen that should be factored into consent decisions, spatial planning, and compensation mechanisms.

1.3.3. The analysis offers a case study in balancing national energy objectives with local socio-economic well-being: a balance that will be of interest to stakeholders in other regions facing similar transitions.

1.3.4. Ultimately, the report’s purpose is to ensure that Shetland’s voice – and especially the fishermen’s perspective – is heard in the fast-moving development of offshore energy in the North Atlantic.

1.4. Report Structure

1.4.1. The report is organised into sections that together provide a comprehensive overview of developments and their implications:

- **Section 1: Executive Summary & Introduction**
- **Section 2: Timeline and Overview of Proposed Energy Developments**
- **Section 3: Potential Impacts on Fishing Grounds**
- **Section 4: Benefits, Drawbacks & Mitigations**
- **Section 5: Wider Political Context**
- **Section 6: Conclusions**

1.4.2. The structure of the report takes the reader from a broad overview of developments (what is happening, where, when, and who is involved) through increasingly focused analysis of possible impacts and trade-offs on fisheries.

1.4.3. This approach is intended to equip readers with a clear understanding of the situation. Given the diverse audience (spanning policymakers, regulators, government officials, fishermen and industry developers) appropriate references and development summary visualisations have been provided to support key points. The overarching goal is to inform evidence-based decision-making that supports Shetland's future as a continued and thriving centre of sustainable fisheries.

SECTION 2: TIMELINE & OVERVIEW OF PROPOSED ENERGY DEVELOPMENTS

The floating wind farm projects progressing to the east of Shetland have a proposed capacity of 2.8 GW (56 times Shetland's current peak electrical demand), with seabed lease areas of c.558km² - equivalent to 38% of Shetland's land area

2.0 INDICATIVE SHETLAND DEVELOPMENT TIMEFRAMES 2025-35

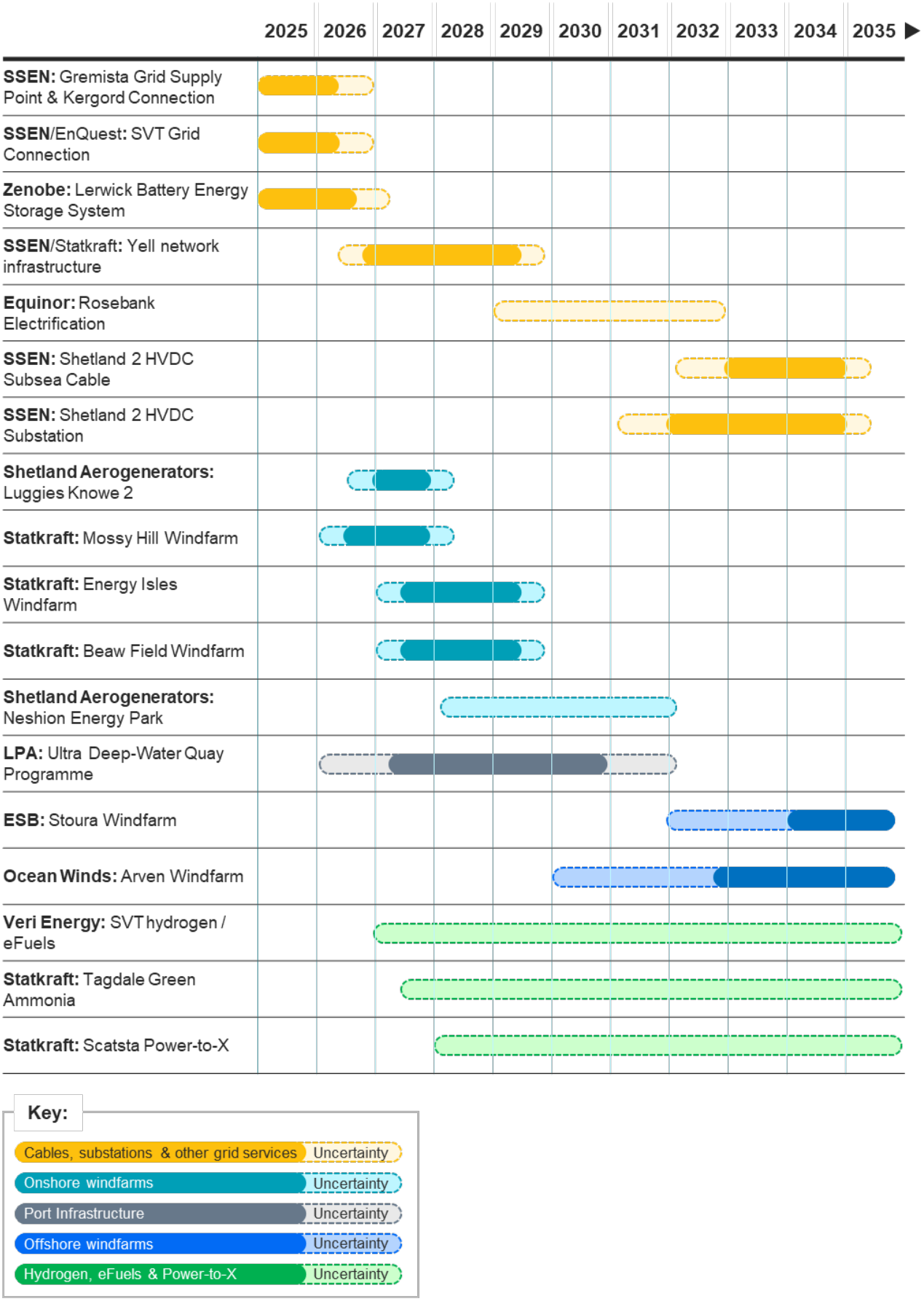


Figure 1: Indicative Shetland Energy Developments Timeline - 2025 to 2035

2.1. Introduction

2.1.1. This section of the report provides an overview of current and future planned energy developments in Shetland that have scope to interact with fisheries. For completeness, details on energy infrastructure which is already installed (Viking & Shetland HVDC link, etc.) are included as appendices at the end of this document.

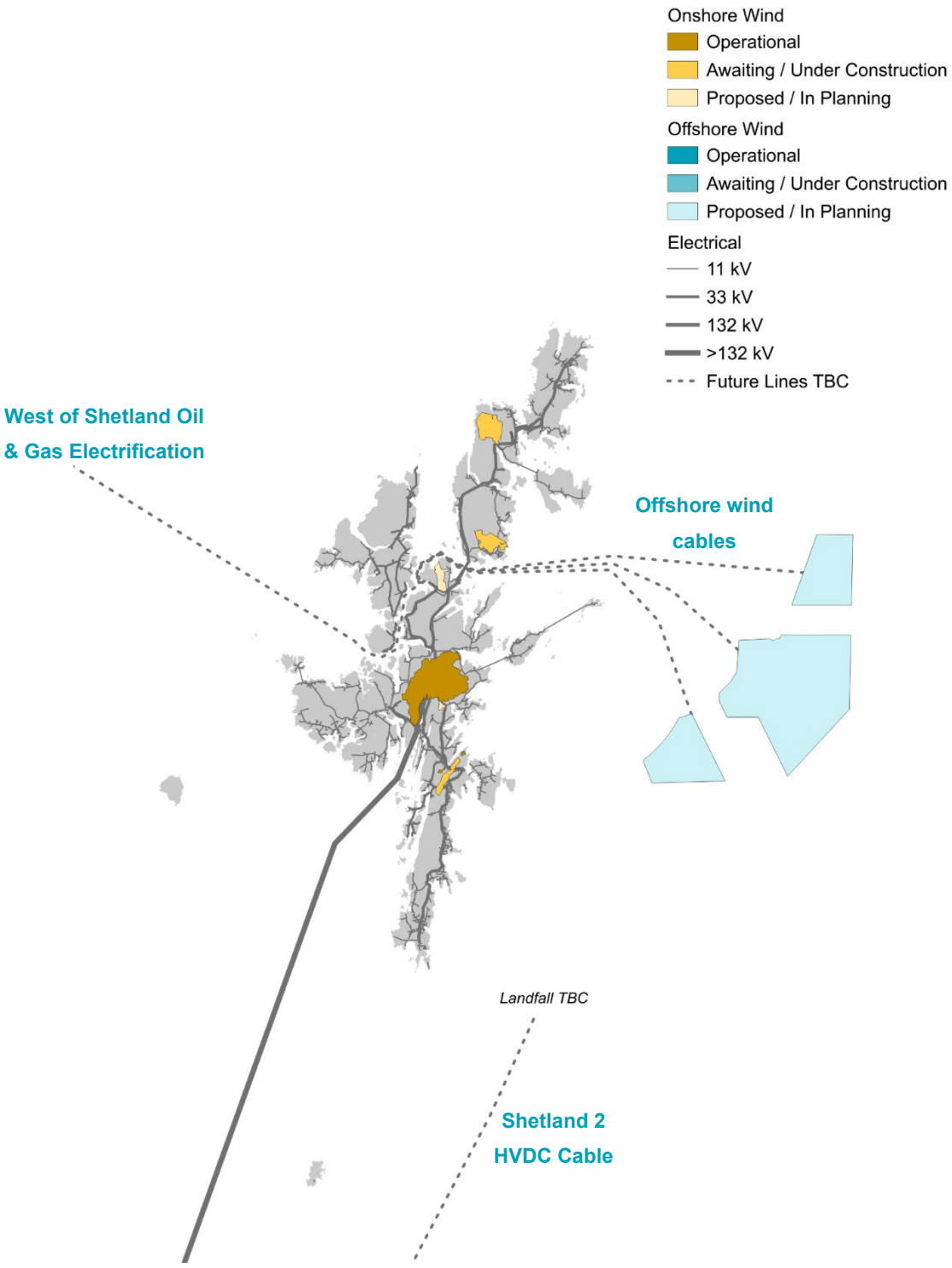


Figure 2: Overview of Shetland Electrical Infrastructure Developments (as of July 2025)

OFFSHORE WIND & TIDAL ENERGY

2.2. Offshore Wind Projects

2.2.1. Two floating wind farm projects are in development east of Shetland, with a combined capacity of 2.8 GW (56 times Shetland's peak electrical demand), with the seabed lease areas comprising c. 558km^2 of sea area (equivalent to 38% of Shetland's land area).

2.2.2. These projects are in early stages but are central to Shetland's energy roadmap given their scale and their interactions with both the marine environment and future onshore infrastructure.

2.3. Arven Offshore Wind Farm

2.3.1. The Arven project is a 2.3 GW floating wind development located ~30 km to the east of mainland Shetland[1]. The seabed lease area occupies 458km^2.

2.3.2. Arven spans two adjacent lease areas: one of 1.8 GW and another of 500 MW to its south. Originally, Arven was a 50-50 joint venture between Ocean Winds (EDP Renewables/ENGIE) and Mainstream Renewable Power. The partnership combined their awarded sites into one project branded Arven. In mid-2025, however, the Shetland News[2] and Shetland Times reported[3] that Mainstream had withdrawn from the project, leaving Ocean Winds as the sole developer (Ocean Winds has stated it "remains committed" and is ensuring continuity of the project).

2.3.3. Project Description

2.3.4. Arven plans to use floating turbine technology (semi-submersible platforms or similar) given water depths of more than 100 m in the area[4]. To reach 2.3 GW over a hundred turbines are expected, with the exact number to be determined as turbine technology develops. The project is targeting first operation in the early-to-mid 2030s. An offshore transmission system will export power to Shetland, where a new HVDC converter station is planned (connecting to the Shetland 2 HVDC transmission cable, discussed in 2.7).

2.3.5. Timeline & Status

2.3.6. Arven is at the concept and survey stage. An offshore scoping report was submitted to Scottish Government in June 2024[5]. The developers have commenced baseline environmental surveys (e.g. offshore wind resource measurement, bird and marine life surveys) and stakeholder engagement with key groups including the fisheries community.

2.3.7. Public Engagement

2.3.8. The project sponsors have held initial supply chain and community events in Shetland. They emphasise opportunities for local jobs (estimating 1,500 direct and indirect jobs during construction) and have a stated commitment to keep the Shetland community informed and involved in planning. At the time of writing no formal Environmental Impact Assessment had been submitted.

[1] https://www.arvenoffshorewind.com/the-project/
[2] https://www.shetnews.co.uk/2025/07/04/proposed-yell-wind-farms-given/
[3] https://www.shetlandtimes.co.uk/2025/06/27/poll-do-you-think-offshore-windfarms-can-benefit-shetland
[4] https://www.arvenoffshorewind.com/homepage/
[5] https://www.arvenoffshorewind.com/wp-content/uploads/2024/06/Scoping-Report-%E2%80%93-SCOP-0048-%E2%80%93-Arven-Offshore-Wind-Farm.pdf

2.3.9. According to Arven's public materials, the aim is to reach consent and issue contracts by the late 2020s, enabling construction to commence in the early 2030s and commissioning by ~2035[6]. Ocean Winds is coordinating with SSEN and government on the required onshore grid reinforcements (see 2.6).

2.3.10. Current status

2.3.11. Active development phase, pre-scoping, with Ocean Winds now driving the project forward after partner changes.

2.4. Stoura Offshore Wind Farm

2.4.1. The Stoura project is a 500 MW floating wind farm to be developed by ESB (Electricity Supply Board of Ireland) about 40 km east of Out Skerries. The license area occupies 100km^2. This site was also awarded in ScotWind (originally named "Sealtainn"), and in 2023 ESB rebranded it Stoura[7].

2.4.2. Project Description

2.4.3. Stoura is expected to consist of around 25 floating turbines, up to 385 m tall to blade tip.

2.4.4. The wind farm will have one or two offshore substation platforms and export power by up to two subsea cables to Shetland[8]. The precise landing point in Shetland is not yet fixed; ESB's scoping indicates that a route via Yell Sound (entering Shetland's north mainland) is a prime option. The export cable would then connect to the planned Shetland 2 HVDC hub/converter.

2.4.5. Stoura is being designed in tandem with those grid developments: its construction schedule "needs to align" with onshore grid availability by 2035, per the project's Scoping Report.

2.4.6. Timeline & Status

2.4.7. As of July 2025, Stoura has reached the Scoping stage of environmental assessment. ESB submitted an Offshore Scoping Report to Marine Scotland, which is considered a "key milestone". This report outlines the broad project parameters and initiates formal consultation on environmental issues. For example, it proposes up to 40 turbines and acknowledges potential impacts such as fishing ground exclusion during construction and operation.

2.4.8. Notably, the scoping confirms that full construction is not expected until the onshore HVDC link is in place (anticipated ~2035). Stoura's construction phase may take up to 5 years, given the need for suitable weather windows and novel floating installations.

2.4.9. The anticipated project timeline is: consent applications around 2026 to 27, construction in 2030s, and commissioning mid to late 2030s, aligning with the planned second HVDC cable. This timing is explicitly acknowledged by ESB, who note the project's programme will be refined once grid delivery dates are confirmed.

2.4.10. Current status

[6] https://www.arvenoffshorewind.com/the-project/
[7] https://www.stouraoffshorewind.com/info
[8] https://www.shetnews.co.uk/2025/07/10/scoping-report-milestone-offshore-wind/

2.4.11. Undergoing EIA scoping, baseline surveys (wind, wave, ecology) are being conducted, and ESB has begun public exhibitions. The first public consultation events were held in mid-2023 and early 2024[9].

2.4.12. Interactions with the Sea & Fisheries

2.4.13. Both Arven and Stoura will be located in offshore waters used by fishing vessels (for demersal and pelagic fishing). Exclusion zones around floating turbines and cables laid through fishing grounds will have impacts on offshore and inshore fisheries, due to these being areas where fishing activity currently occurs.

2.4.14. The Stoura scoping highlights the risk of *"reduction in access to, or exclusion from established fishing grounds during all phases".* Mitigation (such as cable routing and fishing industry consultations on navigation and safety) will be a focus of the forthcoming Environmental Impact Assessments.

2.5. Tidal

2.5.1. Shetland lies at the interface of the Atlantic and North Sea, with strong tidal currents running through the sounds, particularly at Yell and Bluemull Sound. This has given rise to pioneering tidal energy projects that, while small in scale, have been significantly important to the development of the global tidal industry. The main development in Shetland is owned by Nova Innovation, a Scottish tidal energy company:

- **Bluemull Sound Tidal Array.** Nova Innovation installed the world's first operational tidal turbine array in Bluemull Sound, between Yell and Unst. Starting with three 100 kW turbines in 2016 and 2017, the array was expanded to six turbines by early 2023. The array (600 kW) operated fully submerged on the seabed, exporting power to the Shetland distribution network. In fact, with the fifth and sixth turbines commissioned, Nova achieved a world-first 6-turbine tidal array, which in 2023 became the largest such array in operation globally[10]. A novel subsea hub connects multiple turbines to a single export cable to shore, which is designed to reduce seabed cabling impacts.

2.5.2. Status

2.5.3. Three of the six Bluemull Sound turbines remain operational and delivering power to the local grid. The array's success has been supported by EU Horizon 2020 funding (the EnFAIT project) and Scottish Government innovation grants.

2.5.4. Expansion Plans (Yell Sound)

2.5.5. Nova secured a lease in 2021 for a prospective 15 MW tidal site in Yell Sound, which could also tie into future hydrogen production ambitions. While details are not yet fully public, and it remains unclear whether Nova intend to progress this development, this could involve dozens of turbines scaling to several MW of capacity. The goal is to capitalise on lessons from the pilot array and approach commercial-scale generation.

2.5.6. Timeline

[9] https://esb.ie/media-centre-news/press-releases/article/2024/08/13/esb-announce-details-of-first-public-exhibition-for-stoura-floating-offshore-wind-farm
[10] https://www.shetnews.co.uk/2023/01/31/novas-six-strong-tidal-energy-array-completed/

2.5.7. These larger projects are in very early development stage, and consent applications have not yet been filed. Nova had previously indicated interest in deployment by the late 2020s, contingent on continued government support. Notably tidal power is now included in UK renewable auctions, a form of government subsidy. This inclusion provides financial incentives for developers and increases the potential for new tidal developments to move forward.

2.5.8. Integration with Energy Systems

2.5.9. A unique aspect of Shetland's tidal projects is integration with downstream uses. In 2022, Nova installed the world's first EV charging point powered purely by tidal energy on Yell.

2.5.10. Nova also leads the EU-funded GHOST project (Green Hydrogen and Oxygen from Sea Tidal), studying hydrogen electrolysis powered by tidal turbines[11]. This is in-step with Shetland's hydrogen ambitions by potentially siting electrolysers near tidal sites to produce green hydrogen and oxygen (the oxygen could potentially supply local aquaculture requirements).

2.5.11. In 2023 the Scottish Government's Hydrogen Innovation Scheme awarded Nova funding to assess tidal-to-hydrogen[12]. Nova's CEO has emphasised that the Shetland Tidal Array's expansion demonstrates scalability and commercial readiness of tidal energy. The company's vision is to replicate Shetland's success globally once economics improve.

2.5.12. Environmental and Fisheries Notes

2.5.13. Tidal turbines are seabed-mounted and have a smaller physical footprint than wind farms, but they are located in sounds that can be subject to fishing activity. Nova's deployments have been accompanied by environmental monitoring, so far showing minimal impact on marine life and no turbine strikes on marine mammals observed. Nonetheless, any expansion will require continued consultation with fishermen regarding exclusion zones around subsea turbines and cables. Given Bluemull Sound's relatively confined area, coordination with local aquaculture and fisheries has been important. The Shetland community has been predominantly supportive of the efforts; local contractors were used for fabrication and deployment.

2.5.14. In summary, tidal energy is an operational reality in Shetland waters, albeit at small scale. There is scope for its presence to modestly grow through future arrays, although it's impact and generation potential is expected to be very small in comparison to other renewable initiatives currently planned for Shetland.

[11] https://www.offshore-energy.biz/scots-start-exploring-green-hydrogen-production-using-tidal-energy/
[12] https://renewablesnow.com/news/nova-led-team-to-explore-tidal-powered-electrolysis-in-shetland-822689/

TRANSMISSION & ELECTRIFICATION

2.6. Transmission, Grid & Energy Infrastructure Overview

2.6.1. Upgrading Shetland's electrical grid and energy infrastructure is fundamental to enabling the new energy developments in Shetland. Historically, Shetland's power system was self-contained (with local diesel generation at Lerwick and small-scale wind generation). Now, a series of major transmission projects are expanding capacity to handle thousands of megawatts (gigawatts) of new generation. Key projects include subsea interconnectors, high-voltage substations, and energy storage systems, as well as local distribution upgrades (Figure 3).

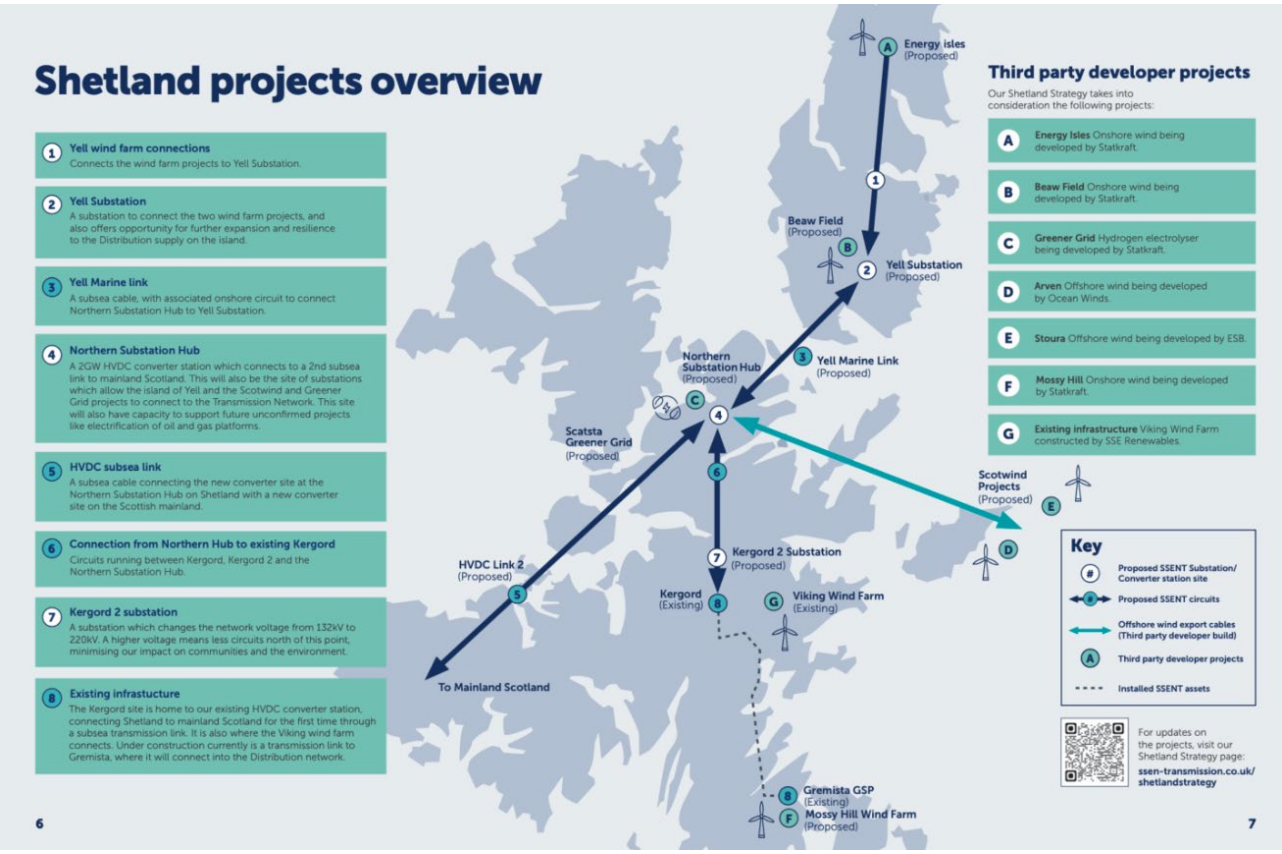


Figure 3: Grid upgrades overview[13]

2.6.2. Details of the existing Shetland HVDC link have been included as Appendix 1.

2.7. Second Shetland HVDC Link (Subsea cable to Mainland Scotland)

2.7.1. The rapid expansion of renewables means that the initial HVDC link (600 MW) may be fully utilised within a few years of Viking and other onshore wind projects coming online. To accommodate the ScotWind offshore projects and additional generation, a second, higher-capacity HVDC link is being actively planned:

- **Shetland 2 HVDC Link:** SSEN Transmission, in coordination with National Grid ESO's Holistic Network Design (HND), has proposed a 1.8 GW HVDC subsea cable from Shetland to Scotland by the mid-2030s (with 2035 connection dates being offered). This "Shetland 2" link would likely run from a new converter station in Shetland (significantly larger than the Kergord HVDC substation) to either Caithness or Aberdeenshire (route under evaluation). Given the export capacity of Arven and Stoura (2.8GW in total), this suggests that up to 1GW of demand may be

[13] https://www.shetnews.co.uk/2025/10/10/ssen-provides-details-future-energy/

anticipated in Shetland, through hydrogen schemes or other sources of electrical demand. If this demand doesn't materialise, and the cable capacity remains at 1.8GW, development of the offshore wind projects themselves could be constrained.

- **HVDC Converter & 400 kV AC Hub at Scatsta:** Core to this plan is creating an HVDC Northern Substation Hub (Figure 3) to collect incoming power from multiple sources: the offshore wind farms Stoura and Arven (via their export cables, potentially landing in the vicinity of Yell Sound) and the onshore Yell wind farms (via a new 220 kV AC circuit from Yell). A new 220/132 kV substation on Yell ("Yell Substation") is envisaged to aggregate Energy Isles and Beaw Field outputs and send them via subsea cable to Northern Substation Hub which would then convert all this power to direct current for export through the 1.8 GW HVDC Link 2. In essence, the Northern Substation Hub becomes the onshore grid node for all new generation. The project includes large AC substations (likely 400 kV switchgear to interface with HVDC converters)[14].

2.7.2. Timeline & Status

2.7.3. SSEN has begun initial development work, obtaining marine survey licenses, securing outline planning, etc., though formal regulatory approval (from Ofgem) for the second HVDC link is pending the confirmation of generation projects. According to SSEN, they hope to start construction around 2028 to 2029 and complete by 2035. Shetland News reported SSEN is in the process of obtaining licenses and permissions, aiming for a 2035 in-service date. The timeline aligns with ScotWind developers' schedules (e.g. Arven aims for mid-2030s operation[15]).

2.7.4. Current status

2.7.5. Planned (conceptual). The need is recognised in national grid planning, but formal consent processes (marine EIA for the cable, local planning for the converter) are just beginning. A Scoping Opinion for the converter and associated works will be sought likely in 2025 to 26. Meanwhile, SSEN is already reinforcing parts of the existing grid to prepare; for example, it has projects in motion to increase capacity of the main 132 kV lines on mainland Shetland ("North Mainland reinforcement", which covers some route upgrades beyond SVT)[16].

2.7.6. Implications

2.7.7. The second HVDC link is pivotal for the development of offshore wind projects around Shetland. For the fishing industry, a new HVDC cable means another long subsea route with potential temporary disruption during installation (trenching operations) and constraints on demersal trawling if not fully buried. Early engagement should be expected to plan a cable route that avoids important fishing grounds or uses existing corridors (e.g., the second link might be routed parallel to the first for part of the way, although there are technical challenges associated with running high-voltage cable close to each other). Regardless of the cables landing point, all aquaculture farm, inshore, and offshore fishermen must be meaningfully consulted as well.

2.7.8. Onshore, the large converter station may be near Sullom Voe Terminal. Visual and noise impacts will be assessed, but siting it in an existing industrial zone would likely be a preferred scenario across

[14] https://www.shetnews.co.uk/2025/07/10/scoping-report-milestone-offshore-wind/
[15] https://www.arvenoffshorewind.com/homepage/
[16] https://www.shetnews.co.uk/2025/07/04/proposed-yell-wind-farms-given/

the stakeholder groups. This hub could also facilitate the stated hydrogen production ambitions in the area by providing easy interconnection for electrolysers. In fact, the hub concept explicitly includes the ability to supply a *"large-scale planned hydrogen production"* facility in the area.

2.7.9. Regulatory and Economic

2.7.10. Ofgem's approval will depend on demonstrable generation projects. The consented onshore wind projects alone indicate that, by 2030, generation will already exceed Shetland's export capacity, which will offer justification for the second link. The project would likely cost in the order of £2 billion (given its length and capacity). There is also strong government support; the British Energy Security Strategy (2022) highlighted the need to integrate ScotWind projects.

2.7.11. To summarise, the Second HVDC Link and Scatsta Hub represent the next generation of grid investment in Shetland: moving from an isolated grid (up until 2024) to a multi-terminal, high-capacity node of the UK grid by 2035.

2.8. Other Grid Services and Developments

2.8.1. A few additional points complete the picture of Shetland's grid infrastructure:

- **Inter-Island Distribution Cables:** Shetland's isles (Yell, Unst, Whalsay etc.) are fed by subsea distribution cables from the Mainland. As small new generation comes onstream in the future or if electrical demand grows in the isles, there may be a need to reinforce these links (higher capacity or parallel cables). Any new inter-island cables will be subject to Marine Directorate licensing and should be timed to avoid sensitive ecological seasons. Historically, such works have had minor, short-term impacts.

- **Grid Stability Services:** Beyond the Zenobe battery, Shetland may see synchronous condensers or new grid-forming inverters installed to support system stability. The Neshion Energy Park plan explicitly mentions including "grid forming and synchronous compensators" on site[17]. This indicates developers are planning for grid support equipment (flywheels or synchronous machines) that can provide inertia and voltage support as the diesel engines go offline. These devices would be located at key substations (perhaps at Gremista or Kergord). While not high-profile projects, they are essential technical additions.

- **Future Interconnections and Substations:** Looking somewhat speculatively beyond 2030, there have even been ideas of connecting Shetland internationally. For example, a Norway-UK interconnector via Shetland. Although the "NorthConnect" project (Norway to Peterhead HVDC) was shelved, the concept of a spur from Shetland to Norway (given Shetland's new HVDC hub) might resurface in discussions of a North Sea grid, however there are currently major technical and regulatory barriers associated with such a concept, and so it should be treated as highly speculative for the time being. Likewise, if hydrogen becomes major, an ammonia export terminal (or terminals) could be considered an energy "interconnector" of sorts (by sea rather than cable). Further to the developments shown in Figure 3, an earlier SSEN update (a June 2024 webinar) also raised the possibility of additional substations (Table 1).

[17] https://www.shetlandaero.co.uk/news/shetland-aerogenerators-ltd-leads-proposals-for-energy-park-located-next-to-one-of-europes-largest-oil-terminals

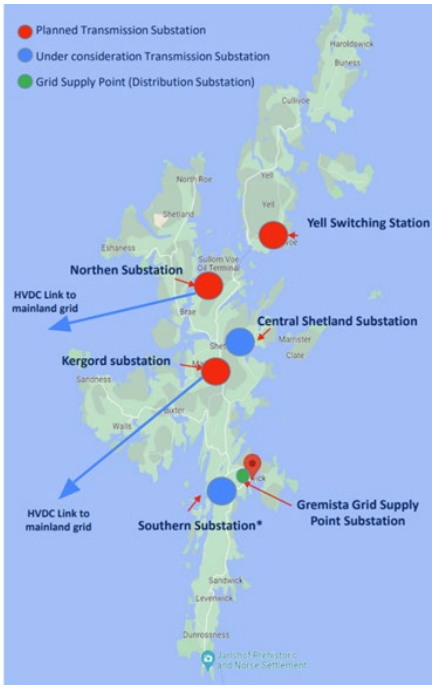
Transmission asset	Voltage levels under consideration	SSEN Concept Diagram (2024)
Shetland 1 HVDC Link	132 kV (AC) – 600 MW	
Kergord Substation	220 / 132 kV	
Yell Switching Station (now referred to as “Yell Substation)	220 kV / 132 kV	
Northern Substation (now referred to as “Northern Substation Hub”	400 / 275 kV and 220 / 132 kV	
Southern Substation (high electrification / hydrogen scenario)	132 kV potentially 220 kV	
Shetland 2 HVDC Link	400 / 275 kV (AC) – 1,800 MW	

Table 1: Overview of transmission assets, voltage levels and whole system design concept (2024)[18]

2.8.2. Summary

2.8.3. Shetland’s electrical and energy infrastructure is undergoing the most significant upgrades seen in decades. The traditional model of isolated generation is giving way to integrated, flexible networks with subsea links, advanced control systems, and energy storage.

2.8.4. These developments will enable new economic activities in Shetland (hydrogen production, data centres, and other electrical demand concepts). All these infrastructure projects require careful planning to minimise environmental footprint (e.g., routing lines to avoid social and ecological impacts, re-using industrial sites for new plants), although a degree of environmental impact is inherently unavoidable.

2.8.5. While most of the infrastructure referred to here would be built onshore, the most direct impacts on the fishing relate to subsea cable installation, protection and landfall areas. A related impact in a scenario of growth in the hydrogen sector is the volume of brine that desalination plants would produce in providing water to these processes.

2.8.6. The SFA also highlights a number of important lessons learned from the installation of the first Shetland interconnector:

- Approximately 30% more rock was deposited than licensed (320,000 tonnes vs 245,000 – increasing the areas rendered unsuitable or high risk for trawling) and parts of the cable remained

[18] https://www.ssen-transmission.co.uk/globalassets/projects/shetland-downloads/ssen-transmission-2nd-shetland-webinar-2024.pdf

unburied for longer than initially planned, prolonging temporary closures to fishing activity in affected areas.[19]

- No compensation was provided to the impacted trawlers / scallopers with a history of fishing in the area.
- The guard vessels used were not local boats, but UK mainland vessels which re-registered in Lerwick prior to work commencing[20].

2.9. Oil & gas electrification

2.9.1. In parallel with renewable projects, Shetland is seeing developments aimed at decarbonising offshore oil and gas operations, which have significant interactions with the sea and fishing sector. The UK's Innovation and Targeted Oil & Gas (INTOG) leasing round (2023) made small seabed leases available for renewable projects that directly power oil installations (although no leases were awarded in the vicinity of Shetland during that round). Additionally, operators are planning subsea power cables from Shetland to platforms, as outlined below.

2.9.2. **West of Shetland Electrification (WoSE) Hub:** Major operators (Equinor, BP, Ithaca Energy and others) signed an MoU to explore a coordinated electrification of multiple fields west of Shetland[21]. The concept is to create a power hub that could supply platforms like Clair, Rosebank, and Cambo with renewable electricity instead of the current platform fossil fuel generation. Full electrification of this cluster is estimated to need 200+ MW of steady power. In Dec 2022 the WoSE group highlighted technical challenges of deep water (>500 m depths) and distance (>130 km from Shetland) but expressed commitment to overcome these to make WoS fields some of the UK's first electrically powered oil sites.

2.9.3. These projects are at the feasibility stage, while concept engineering and regulatory discussions are ongoing. The North Sea Transition Authority (NSTA) supports this as part of the UK's North Sea Transition Deal, with studies on cable routing and wind options in progress. No physical construction is underway yet, although stated target timelines align with field development schedules (late 2020s / early 2030s).

2.9.4. Equinor has stated a "major ambition" to electrify Rosebank's production by supplying its FPSO (floating production vessel) with power from shore. One option is a dedicated high-voltage AC cable from Shetland to Rosebank. As of June 2025, no final decision on the electrification method has been made.

2.9.5. Equinor officials noted that the *"availability of power"* in Shetland is the big uncertainty – essentially whether the grid can deliver 50+ MW to the field. Equinor is modifying the FPSO to be *"electrification-ready"* (investing £80m in the vessel's power systems)[22]. If a cable from Shetland is pursued, it would likely be laid in the late 2020s / early 2030s, possibly bundling power for other nearby fields. The UK regulators have signalled encouragement of electrification, but did not make it a strict condition of

[19] https://www.shetnews.co.uk/2023/12/21/more-rock-protection-than-expected-required-for-subsea-cable/
[20] https://www.shetnews.co.uk/2023/03/30/fishing-industry-less-than-impressed-by-sses-community-spirit/
[21] https://www.equinor.com/news/uk/20221206-west-of-shetland-electrification-options
[22] https://www.energyvoice.com/oilandgas/north-sea/west-of-shetland/435571/equinor-expects-80m-investment-in-rosebank-fpso-electrification/

Rosebank's approval[23]. The current status is feasibility and design studies; no marine licence application for a cable has been submitted at the time of writing in 2025.

2.9.6. Summary

2.9.7. The WoSE electrification MoU, witnessed by the UK Energy Minister, signals the industry are looking seriously at shore-to-asset power. The approach aligns with Shetland's ORION project vision, wherein oil infrastructure is integrated with renewables. In summary, while offshore oil electrification proposals are not as advanced as wind farms, they are an emerging part of Shetland's energy seascape. We should expect formal project announcements and, if found viable, consent applications made in the next 1 or 2 years as feasibility work progresses.

[23] https://www.stopcambo.org.uk/updates/everything-you-need-to-know-about-the-rosebank-oil-field

HYDROGEN & POWER-TO-X

2.10. Hydrogen & Power-to-X

2.10.1. Shetland is being positioned as a future green hydrogen and "Power-to-X" hub (meaning, to use electrical power to produce another product, such as hydrogen, non-fossil based eFuels, green ammonia, etc.) using Shetland's wind resources. The concept, championed by the Shetland Islands Council (SIC) sponsored ORION project (Opportunity for Renewable Integration with Oil and Net-Zero), is to transform Shetland from an oil-and-gas province into a diversified clean energy centre.

2.10.2. This involves producing hydrogen (and derivative e-fuels like synthetic / green diesel, ammonia or methanol) for local use and export, using renewable electricity, and repurposing facilities like the Sullom Voe Terminal. Several initiatives are underway:

2.11. ORION Clean Energy Project Framework

2.11.1. ORION is a partnership originated and led by Shetland Islands Council and industry (including the Net Zero Technology Centre, and oil operators like EnQuest / Veri Energy). It was intended to provide the strategic umbrella for many developments, aiming to diversify Shetland's economy as oil output declines. Under ORION's roadmap, the Sullom Voe Terminal (SVT), one of Europe's largest oil terminals, would become a central hub for hydrogen production, carbon capture & storage, and renewable energy integration[24],[25]. Key elements include:

- **Hydrogen Production at SVT:** Plans called for large-scale electrolysers at or near Sullom Voe, powered by onshore and offshore wind, to generate green hydrogen. This hydrogen could serve multiple purposes: fuelling local transport and ferries, with the ultimate ambition of large-scale export from Shetland. An associated idea is to use by-product oxygen in aquaculture[26].

- **Hydrogen Export via Port Facilities:** With SVT's deep-water jetties (and unused land), Shetland could ship hydrogen or ammonia (a hydrogen carrier) by tanker to mainland Europe. The sheltered port of Sullom Voe and its oil storage tank sites are seen as assets. The Council's evidence to the UK Parliament highlighted using SVT for *"hydrogen-laden tankers"* as a route to market[27].

- **Electrification & Grid Integration:** ORION also covers electrification of oil and gas, e.g. powering offshore platforms from onshore renewables, and grid reinforcement to enable new industries. Indeed, connecting SVT to the grid is a critical first step in this transition. By 2026, SVT will have a connection to the Shetland distribution network[28], allowing it to draw power for existing terminal operations, small-scale hydrogen production initially, and eventually host larger-scale hydrogen production once the Shetland 2 network is built in the area (SVT / Scatsta).

2.11.2. Timeline & Status

2.11.3. ORION isn't a specific energy project in its own right, rather it was a large-scale development-focused framework for Shetland's energy sector. Phase 1 (2020 to 2025) focused on studies and

[24] https://www.gov.scot/publications/scottish-offshore-wind-green-hydrogen-opportunity-assessment/pages/4/
[25] https://renews.biz/69651/strathclyde-university-joins-shetland-clean-energy-project/
[26] https://www.offshorewindscotland.org.uk/media/12655/deepwind-orion-ne1-presentation-feb-2021.pdf
[27] https://committees.parliament.uk/writtenevidence/19799/pdf/
[28] https://www.shetnews.co.uk/2024/11/21/plans-new-electrical-substation-near/

pilot projects[29]. As per ORION's public updates, the 2030 goal is to have commercial hydrogen production underway at SVT, aligned with new wind projects becoming operational.

2.11.4. At the time of writing, the ORION project appears to have been largely superseded by more recent related developments such as the Sullom Voe Development Framework[30], with one SIC source describing ORION as *"having served its purpose"* [in attracting energy developer interest around Shetland and Sullom Voe in particular].

2.12. Sullom Voe Hydrogen & E-Fuels (Veri Energy / EnQuest)

2.12.1. A concrete project has emerged from the ORION vision; Veri Energy (a clean energy company, wholly owned by oil & gas company EnQuest) is exploring a hydrogen and e-fuels facility at Sullom Voe Terminal. Veri Energy's proposal would use renewable electricity to produce green hydrogen, then synthesise it with captured carbon dioxide to form e-fuels like methanol or sustainable aviation fuel (SAF). This would utilise part of the SVT site for clean fuel production.

2.12.2. The project is still in formative stages. According to local reports, Veri Energy have held regular discussions with Shetland Islands Council officials and leadership.

2.12.3. Since 2023, EnQuest (Veri's parent company) have stated an ambition of "targeting export of 1 million tonnes of hydrogen per annum"[31],[32]. Such a volume of green hydrogen production would require in the region of 9.8GW of installed wind generation capacity (3.5 times the capacity of the currently proposed offshore wind developments east of Shetland). This ambition has however not recently been restated.

2.12.4. Veri's current ambitions for production capacity is not publicly known, but will likely involve up to 50 MW of electrolysis in initial phases[33], scaling up as more capacity becomes available, potentially from offshore wind generation that exceeds export capacity.

2.12.5. Status & Timeline

2.12.6. This initiative appears to be at feasibility/MoU stage. No planning application has yet been submitted for new plant at SVT. However, EnQuest & Veri have signaled "serious intent" to pivot SVT beyond petroleum, given 50% of the site's industrial land is unused[34]. Shetland renewables could supply initial power for electrolysis once SVT is connected to the local distribution network.

2.12.7. A target often quoted in ORION context is producing hydrogen by 2030 for export. Public statements suggest the partners aim for a phased approach; perhaps a pilot electrolyser by 2027, expanding thereafter.

2.12.8. Current status

[29] https://coins.shetland.gov.uk/viewSelectedDocument.asp?c=e%97%9Df%8Fo%82%8B
[30] https://sullomvoedevelopmentframework.co.uk/
[31] https://www.enquest.com/fileadmin/content/Presentations/2023_Half_Year_Results_vF.pdf
[32] https://www.shetnews.co.uk/2023/02/24/svt-operator-aims-to-produce-one-million-tonnes-of-green-hydrogen-per-year/
[33] https://www.shetnews.co.uk/2024/02/27/government-commits-funding-svt-hydrogen/
[34] https://www.energyvoice.com/renewables-energy-transition/wind/uk-wind/293179/west-of-shetland-electrification-net-zero-orion/

2.12.9. Planning and pre-front end engineering design studies. Community consultation will be necessary once plans formalise. Since SVT is an existing industrial site, repurposing it for hydrogen may face fewer planning hurdles, but environmental assessments will be required. Especially for any marine discharges, such as high salinity brine, which could pose significant risks to fish populations, during larger scale development phases, alongside any assessments related to new hydrogen/ammonia storage.

2.12.10. Environmental/Regulatory

2.12.11. Producing e-fuels at SVT would involve significant new industrial processes (electrolysis, fuel synthesis) and possibly the import (or capture) of CO_2. Environmental assessments will consider impacts on air (oxygen release, any combustion emissions) and water (the terminal's SEPA permits may need updating). That said, using an existing oil terminal site can utilise existing jetty facilities and safety systems. EnQuest / Veri are likely engaging with regulators early; indeed, this kind of project fits within Scotland's decarbonisation strategy, and could attract further government funding.

2.13. Statkraft "Power-to-X" Projects (Lerwick and Scatsta)

2.13.1. The wind developer Statkraft has signalled interest in downstream value-adding of the electricity from its Shetland projects via "Power-to-X" proposals. Two concept projects have been mentioned:

- **Lerwick Power-to-X / Green Ammonia Facility (Also known as: "Tagdale Green Ammonia", and previously "Shetland Hydrogen Project 1"):** Statkraft has floated plans for a green ammonia plant in Lerwick, producing ammonia from green hydrogen. While details are sparse publicly, a pre-application planning document indicates the facility could be of the order of 60 to 80MW[35]. The timeline is unclear, but given Statkraft's wind farms (Mossy Hill etc.) might produce before a second interconnector is ready, a Lerwick ammonia project could act as a strategic offtake. Statkraft representatives had previously indicated that a Lerwick Power-to-X project is under development, with a potential construction start around 2028 to 2029.

- **Scatsta Power-to-X Hub:** Similarly, Statkraft has eyed the Scatsta area (near Sullom Voe Airport) for a green ammonia production installation, at an initial power demand scale of 400MW, scaling up to 1GW[36]. Scatsta is proximate to both the planned HVDC hub and the SVT site. A plant there could take power from onshore or future offshore wind, and produce hydrogen or e-fuels at an industrial scale.

- Notably, Statkraft confirmed to local media that a "Scatsta hydrogen development" is on the table, with an indicative construction window of 2028 to 2029 and grid connection by 2032. This aligns with Yell wind farms' connection timing, implying Statkraft might build electrolysis to utilise Energy Isles/Beaw Field power before the export cable is live (producing hydrogen in the interim).

- In May 2025, Statkraft announced that their other hydrogen projects outside of Shetland have been halted[37], and that for those continuing, "investors [will be] sought to take them into construction and operation".

[35] https://www.shetnews.co.uk/2025/10/23/details-emerge-ammonia-plant-near/
[36] Presentation: *"Statkraft on Shetland Project Update",* March 2024
[37] https://www.statkraft.co.uk/newsroom/2025/statkraft-to-stop-development-of-new-green-hydrogen-projects/

2.13.2. Status

2.13.3. Conceptual planning. The Scatsta Hydrogen Hub could be central to Shetland's future energy developments, turning wind into hydrogen and then into green ammonia at source, whilst Tagdale Green Ammonia could act as a strategic offtake for nearby onshore wind projects (specifically Mossy Hill, with which it shares a site). Such a project would require environmental consent (likely an EIA for a green hydrogen or ammonia production plant), which would likely be pursued in the late 2020s.

2.13.4. Public and Stakeholder Reception

2.13.5. Thus far, these hydrogen/green ammonia ideas have been discussed in local economic strategy forums with a degree of polarisation, though concrete details (like precise locations, sizes, environmental impacts) are awaited.

2.13.6. Stakeholders such as the fishing community will watch for any coastal or marine infrastructure requirements (for instance, if an ammonia plant needs a new pier for tanker loading, or if ammonia product will be shipped through Lerwick or Sullom Voe – those could have navigational and safety considerations). The Shetland Fishermen's Association and other stakeholders should be consulted at the earliest possible opportunity.

2.14. Summary of Hydrogen Prospects and Environmental Assessments

2.14.1. Shetland's hydrogen and Power-to-X developments are at an early stage. 2026 to 2027 will likely be the period where many move into concrete planning, are sold (partly or entirely), or cease development, should they be determined not to be viable:

- Expect Environmental Impact Assessments (EIAs) for large electrolysis plants (covering visual impact, water usage, safety of hydrogen storage, etc.). For example, a 1 GW electrolyser at SVT would be unprecedented in Scotland and fall under major infrastructure planning. Community safety concerns (for hydrogen handling) will be addressed via stringent regulations (COMAH, HSE oversight), which is familiar to Shetland industry due to oil & gas safety experience.

- By design, these developments involve continuous consultation. As projects like Neshion Energy Park, Veri's hub, and Statkraft's green ammonia projects come forward, consultations will be specific to each project.

- There is potential synergy in the long term. Some hydrogen-derived fuels could fuel hybrid fishing vessels. This is being studied, with limited real-world examples currently. Nonetheless, careful spatial planning is needed so that new onshore plants or export jetties do not encroach on key coastal fishing areas or spawning grounds (for example, new pipeline routes, new tanker traffic patterns, or the introduction of by-products to the marine environment (such as brine) will require to be examined).

PORT INFRASTRUCTURE

2.15. Port Infrastructure

2.15.1. Shetland's ports and harbours are crucial enablers for energy projects, serving as construction bases, operations & maintenance (O&M) hubs, and potential export points for energy products. Accordingly, significant port infrastructure investments are underway or proposed, often with direct relevance to marine users:

2.16. Ultra-Deep-Water Quay (Dales Voe)

2.16.1. Lerwick Port Authority (LPA) is advancing a flagship project to construct the UK's first Ultra-Deep-Water Quay (UDWQ) at Dales Voe, north of Lerwick. Dales Voe is already a deep-water harbour (current depth 12.5 m alongside) used for oil/gas decommissioning, notably the 14,500-tonne Ninian platform topside was offloaded here in 2020[38]. The UDWQ project will deepen part of the voe to up to 21m depth and build a new heavy-duty quay wall, enabling the port to receive some of the largest offshore structures in the world directly to quayside. This is a game-changer for both decommissioning of oil platforms and future offshore wind deployments (floating turbine platforms or substation barges can be assembled or serviced in port).

2.16.2. The new quayside will be about 100m long with adjacent deep water for the world's largest crane vessels (like Allseas' Pioneering Spirit which visited in 2020).

2.16.3. A Scoping Report for the UDWQ was submitted to Marine Scotland in mid-2024. Environmental studies (for dredging impacts, disposal of dredge spoil, etc.) are underway. LPA anticipates that if consents and funding align, quay construction could begin in 2027, with the facility operational in the early 2030s. Already, "small scale enabling works" like dredging the approach channel are being lined up for 2025[39]. The Scottish Government has pledged £9 million via the Islands Deal toward this project.

2.16.4. Current status

2.16.5. Consenting & design phase. By late 2024, LPA was preparing marine license applications for both the UDWQ and ancillary dredging at North Ness and Gremista (Lerwick's inner harbour improvements).

2.16.6. Relevance to Energy Projects

2.16.7. This UDW quay is explicitly aimed at attracting offshore wind work to Shetland. Floating wind projects like Arven will require assembly or maintenance of huge floating turbines; having a >20 m deep port allows the largest floating substructures to be outfitted here. LPA notes[40] it would support *"preparation for installation and maintenance"* of floating wind units. It also ensures Shetland can compete in the decommissioning sector, keeping that economic activity local (rather than lost overseas). The scoping report states it will help secure more of the growing decommissioning and renewable market, providing UK capability matching overseas yards.

[38] https://www.shetnews.co.uk/2024/07/31/progress-ultra-deep-quay-project/
[39] https://www.shetlandtimes.co.uk/2025/06/16/3-2m-deep-water-port-project-to-remove-450000-cubic-metres-of-materials
[40] https://www.lerwick-harbour.co.uk/sectors/energy/renewables

2.16.8. Impacts and Mitigations

2.16.9. Dredging such a volume will cause turbidity and seabed disturbance in Dales Voe. Environmental surveys have identified disposal sites for dredge material (likely at sea, in approved spoil grounds). Benthic habitat loss in the immediate footprint is considered acceptable given the existing industrial nature of the area. Noise from rock blasting/dredging will be managed to avoid marine mammals, timing restrictions and monitoring are expected. LPA will also ensure any UXO (unexploded ordnance) from WWII in the area is safely cleared. The new quay lies within an established port, so navigational changes are minimal, just improved depth.

2.16.10. For fisheries, Dales Voe isn't a fishing ground due to existing port activity. However, broader positives exist: by supporting offshore wind locally, the quay can support jobs. LPA's chief executive Calum Grains hailed these projects as heralding a *"significant phase"* in Lerwick Harbour's development and demonstrating commitment to invest for new opportunities.

2.17. Lerwick Harbour Upgrades and O&M Bases

2.17.1. Apart from Dales Voe, Lerwick Port is executing other upgrades to support energy and marine sectors:

- **Deepening North Ness and Gremista Approach:** LPA is deepening and widening the approach channel at North Ness and around Gremista. This involves dredging to improve access for larger vessels, for instance, vessels servicing offshore wind construction or the new freight required for energy projects. At the time of writing, harbour dredging is underway.
- **Dedicated O&M Facilities:** As offshore wind moves forward, developers will need Operations & Maintenance (O&M) bases. Lerwick has the scale and amenities, and it could be anticipated that Ocean Winds and ESB will establish O&M bases. No formal announcement yet, but likely that construction work will commence on this in the early 2030s.
- **Support to Oil & Gas Projects:** Lerwick's Greenhead Base and Holmsgarth continue to support offshore oil projects. For example, during 2025 and 2026, large shipments for the Rosebank field are being staged at Greenhead. The port is constructing additional laydown to cater to these kinds of needs. These are incremental improvements, with many already underway.

2.17.2. Port Infrastructure and Fishing

2.17.3. Generally, port expansions have minimal direct adverse effects on fisheries since they occur within port limits. Indirectly, however, more harbour activity means more vessel traffic in inshore waters (e.g. heavy transports, etc.). Navigational coordination (through the harbour authority and Marine Traffic Zone) will mitigate risks. Many local fishermen see harbour investments as beneficial to Shetland's economy, but they do remain watchful that any reclamation or dredging doesn't, for instance, impact inshore nursery habitats. So far, dredging plans have been scrutinised via EIAs and deemed acceptable.

2.18. Sullom Voe Port and New Facilities

2.18.1. While primarily an oil export port, SVT could get new infrastructure for the energy transition:

- **Hydrogen/Ammonia Export Facility:** If hydrogen production takes off at SVT and Scatsta, modifications to the jetties or new loading arms might be needed to load liquefied hydrogen carriers or, more likely, ammonia tankers. Sullom Voe has two deepwater jetties (26 m depth) that currently handle oil and gas tankers. One concept is to retrofit one for ammonia, since ammonia shipping is similar to LPG. Another is to build a dedicated smaller berth for regional hydrogen barges (for example, shipping hydrogen to mainland Scotland). This is 2030s if hydrogen export proves to be viable (which significant questions remain about).

- **Redevelopment of Construction Jetty, and Quay Extension at Sella Ness:** Plans have long been discussed to redevelop the construction jetty at SVT to handle larger structures. Adjacent to SVT, at Sella Ness, there is an established base for oil-related vessels (tug harbour and layby berth). Expansion here could accommodate support vessels for offshore wind in the northern North Sea.

2.19. Other harbours

2.19.1. Ports with a less central role in energy developments – but important roles in the fishing sector – include Scalloway and Cullivoe.

2.20. Summary of Port Developments

2.20.1. Lerwick's ultra-deep quay is the headline project, backed by government and critical for offshore wind and decom. Other enhancements in Lerwick and potentially Sullom Voe are in various planning stages, all aimed at ensuring Shetland has the physical infrastructure to capture the economic benefits of the energy developments in its EEZ. From a technical report standpoint, these port projects provide the necessary onshore logistics capacity. They will be built to modern environmental standards (e.g., careful disposal of dredge spoil, mitigation for noise and protected species).

2.20.2. For the fishing community, it will be important that port construction schedules and exclusion zones are communicated (though most port works will be localised). In operation, a busier port could mean more vessel movements through inshore waters, requiring vigilance and possibly new routing schemes or notice to mariners to avoid conflicts with fishing boats. However, these developments, especially Dales Voe, have been broadly welcomed in Shetland as they promise jobs and long-term use of Shetland's strategic geographical position. Fishing industry representatives do however perceive a risk that increased offshore wind presence in ports could lead to the fishing sector being marganilised and / or constrained by increasingly busy harbours.

2.21. Chapter Summary

2.21.1. The Shetland Exclusive Economic Zone is on the cusp of an energy transformation, with a comprehensive array of developments proposed across renewables, infrastructure, and supporting facilities. Additional onshore wind farms like Mossy Hill and Energy Isles are moving from planning to reality, backed by new transmission links that bind Shetland to the national grid[41]. Offshore, massive floating wind farms (Arven & Stoura) are being scoped, to harness the winds east of Shetland by the 2030s[42],[43]. Tidal energy has already proven feasible in Bluemull Sound, with

[41] https://www.vikingenergy.co.uk/construction
[42] https://www.arvenoffshorewind.com/homepage/
[43] https://www.shetnews.co.uk/2025/07/10/scoping-report-milestone-offshore-wind/

possible expansion plans in motion[44]. Meanwhile, the drive for hydrogen, ammonia and efuels is integrating with these projects - from plans for 10-turbine energy parks powering electrolysers[45] to studies on tidal-powered hydrogen[46] - aiming to create a new energy export sectors from Shetland's shores.

2.21.2. Crucially, the timelines are interlinked: many projects hinge on grid upgrades, such as the second HVDC link around 2035. The visualisation of project timelines shows GSP commissioning by 2026, further wind and hydrogen pilot projects in the late 2020s/early 2030s, and offshore wind and HVDC2 in the mid 2030s. Most are currently in the planning or early development phases, with only Viking and Nova's tidal array being operational thus far.

2.21.3. From a stakeholder perspective - especially for the Shetland Fishermen's Association - this overview highlights that many of these projects have marine interactions requiring careful management. Whether it is a de facto exclusion zone around floating offshore wind, a subsea cable across a fishing ground, or increased traffic of heavy transport vessels, the fishing industry will experience changes.

2.21.4. Environmental assessments (EIAs) for each project are evaluating these issues, and public consultations are ongoing or upcoming to gather input. Mitigation measures, like routing cables to avoid key areas, timing construction outside of spawning seasons, creating navigation plans, and contracting local commercial fishing vessels as guard boats – will be put in place as conditions of consent.

2.21.5. Finally, these developments will bring benefits for sections of the Shetland community: e.g. jobs in construction, port operations, turbine maintenance, and at hydrogen production facilities, or opportunities for local businesses (engineering firms, equipment hire; vessel charters, etc.)[47] The challenge and task ahead, which subsequent chapters of this report will examine, is to balance these benefits against the downside risks to fisheries and the marine environment, and to identify strategies so that Shetland's traditional industries (like fishing) can continue to thrive.

[44] https://www.shetnews.co.uk/2023/01/31/novas-six-strong-tidal-energy-array-completed/
[45] https://www.shetlandaero.co.uk/news/shetland-aerogenerators-ltd-leads-proposals-for-energy-park-located-next-to-one-of-europes-largest-oil-terminals
[46] https://www.offshore-energy.biz/scots-start-exploring-green-hydrogen-production-using-tidal-energy/
[47] https://www.shetnews.co.uk/2024/11/21/plans-new-electrical-substation-near/

SECTION 3: POTENTIAL IMPACTS ON FISHING GROUNDS

“You can’t fish where the fish aren’t”

3.0 OVERVIEW OF THE POTENTIAL IMPACTS ON FISHING GROUNDS

3.1. Introduction

3.1.1. The hypothetical Shetland Exclusive Economic Zone (EEZ), roughly 127,000 km² of waters around the islands, is of critical importance to Scotland's fishing industry, yielding nearly one-third of all fish (by weight) caught in UK waters[48].

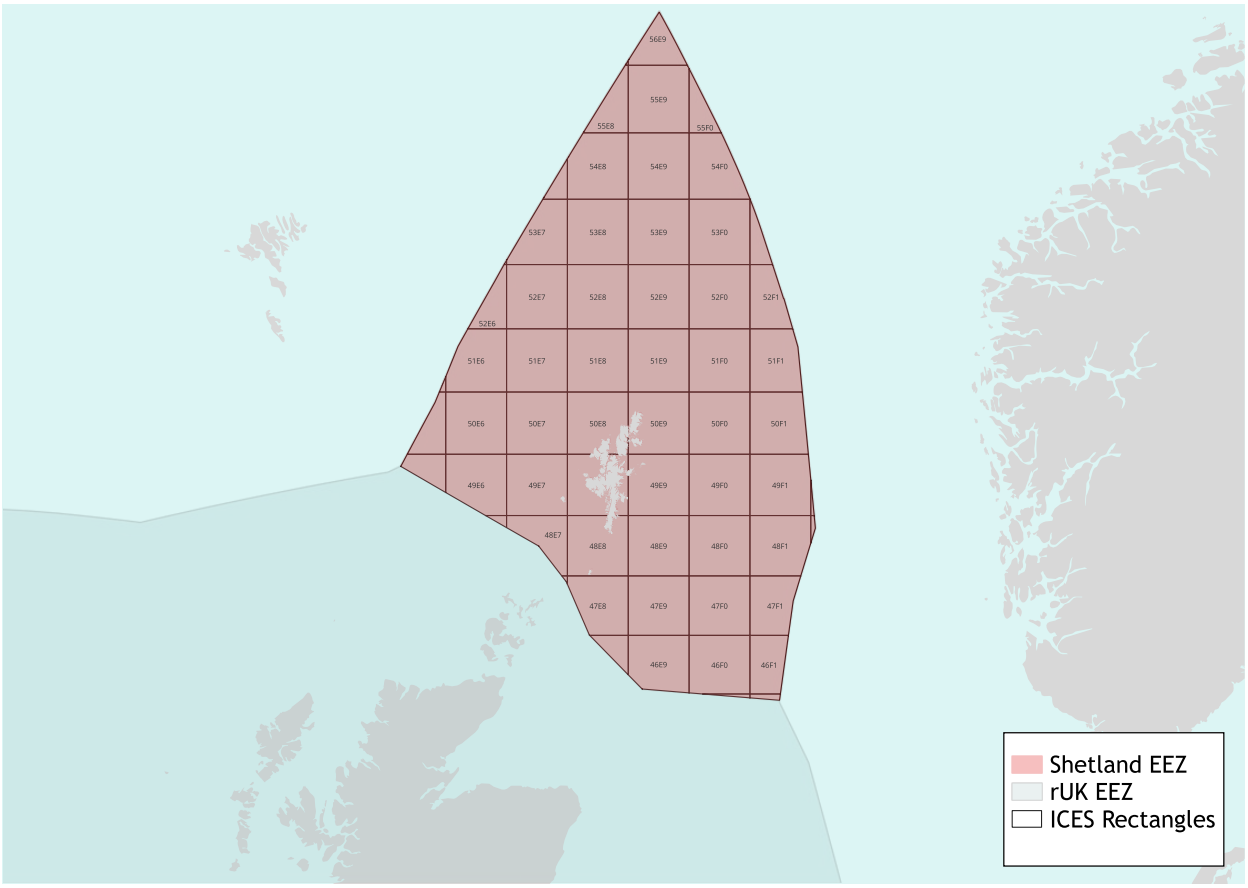


Figure 4: Shetland's 'hypothetical' EEZ[49]

This hypothetical Shetland EEZ is calculated by using the UK EEZ and dividing it based on which land it falls closest to, the Shetland Islands or the rest of the UK (rUK). Catch is recorded based on which International Council for the Exploration of the Sea (ICES) statistical rectangle it falls into. Any ICES rectangle that is split between the Shetland EEZ and rUK is calculated based on how much of its area is within the Shetland EEZ. e.g. if 60% of the rectangle is within the Shetland EEZ, then 60% of the recorded catch in the rectangle is classified as "Catch in Shetland's EEZ". This is the same methodology used in previous papers on this subject[50].

3.1.2. Shetland's productivity includes rich demersal (whitefish) grounds, major pelagic fish (e.g. herring and mackerel) populations, and localised shellfish areas. On average from 2016 to 2018, about

[48] https://www.shetland.uhi.ac.uk/t4-media/one-web/uhi-shetland-images-and-documents/research/statistics/eez-reports/Shetland-EEZ-2020-11-04.pdf

[49] https://gis.ices.dk/sf/index.html / https://marine.gov.scot/?q=data/uk-hydrographic-office-uk-exclusive-economic-zone-map

[50] https://www.shetland.uhi.ac.uk/t4-media/one-web/uhi-shetland-images-and-documents/research/statistics/eez-reports/Shetland-EEZ-2020-11-04.pdf

450,000 tonnes of fish and shellfish worth £370 million were harvested annually from the Shetland EEZ by UK and EU vessels.

3.1.3. As a proportion of the UK total, these waters produced approximately 33% of the national catch by weight (and ~25% by value) despite constituting only ~17% of UK sea area. This underscores that Shetland's maritime zone is exceptionally productive; nearly three times more productive per unit area for demersal fish than the rest of the UK EEZ by weight. Therefore, any loss or restriction of fishing grounds here could have disproportionate effects.

3.1.4. Multiple new marine and energy developments are now proposed within the Shetland EEZ, each with the potential to impose spatial or operational constraints on fishing activity. These include large-scale offshore wind farms (the ScotWind Arven and Stoura floating wind projects east of Shetland, together ~2.8 GW), small-scale tidal arrays, anticipated hydrogen and power-to-X infrastructure, extensive new subsea cabling (high-voltage transmission links and interconnectors tying Shetland in to the mainland grid, as well as cables for wind farms and platform electrification), and expanded marine protected areas (MPAs) or other fishery management closures (to conserve habitats and species).

3.1.5. Each of these initiatives has an individual footprint, whether a fixed exclusion zone, a subsea cable corridor, or a regulated no-take area, that can displace fishing activity. Cumulatively, their overlap results in "spatial squeeze," whereby Shetland's fishermen have access to diminishing fisheries areas[51]. In other words, established fishing grounds face increasing competition from other marine uses, and this competition is expected to *"increase significantly in the coming decades",* according to national spatial analysis.

3.1.6. Crucially, the nature and severity of impacts will differ for each segment of the fishing fleet. Demersal fisheries, which tow bottom gear over the seabed, are sensitive to any exclusion from productive benthic grounds or obstructions on the seabed. Pelagic fisheries, which target mid-water shoals of herring, mackerel, and blue whiting, operate over broad offshore areas and may be affected by large-scale offshore structures or wide no-go zones in open water. Shellfish fisheries, often smaller vessels working static gear or benthic dredges in inshore waters, have a more localised footprint and limited range.

3.1.7. A spatially-aware analysis is therefore needed - for example, inshore voes are critical for shellfish and some juvenile fish, whereas deeper offshore banks and shelf edges are key for pelagic and demersal fish - to understand how each development might constrain each fishery.

3.1.8. This chapter examines the potential impacts on fishing grounds in the Shetland EEZ by fishery sector (demersal, pelagic, and shellfish), highlighting both individual and cumulative effects.

3.1.9. The graph below provides an overview of annual catch from the Shetland EEZ by weight and value of pelagic and demersal species, illustrating the dominance of pelagic species in volume and the importance of demersal species in value.

[51] https://s3.eu-west-2.amazonaws.com/assets.sff.co.uk/publications/R3900_SpatialSqueeze_MainRpt-Final_23Jun2022.pdf

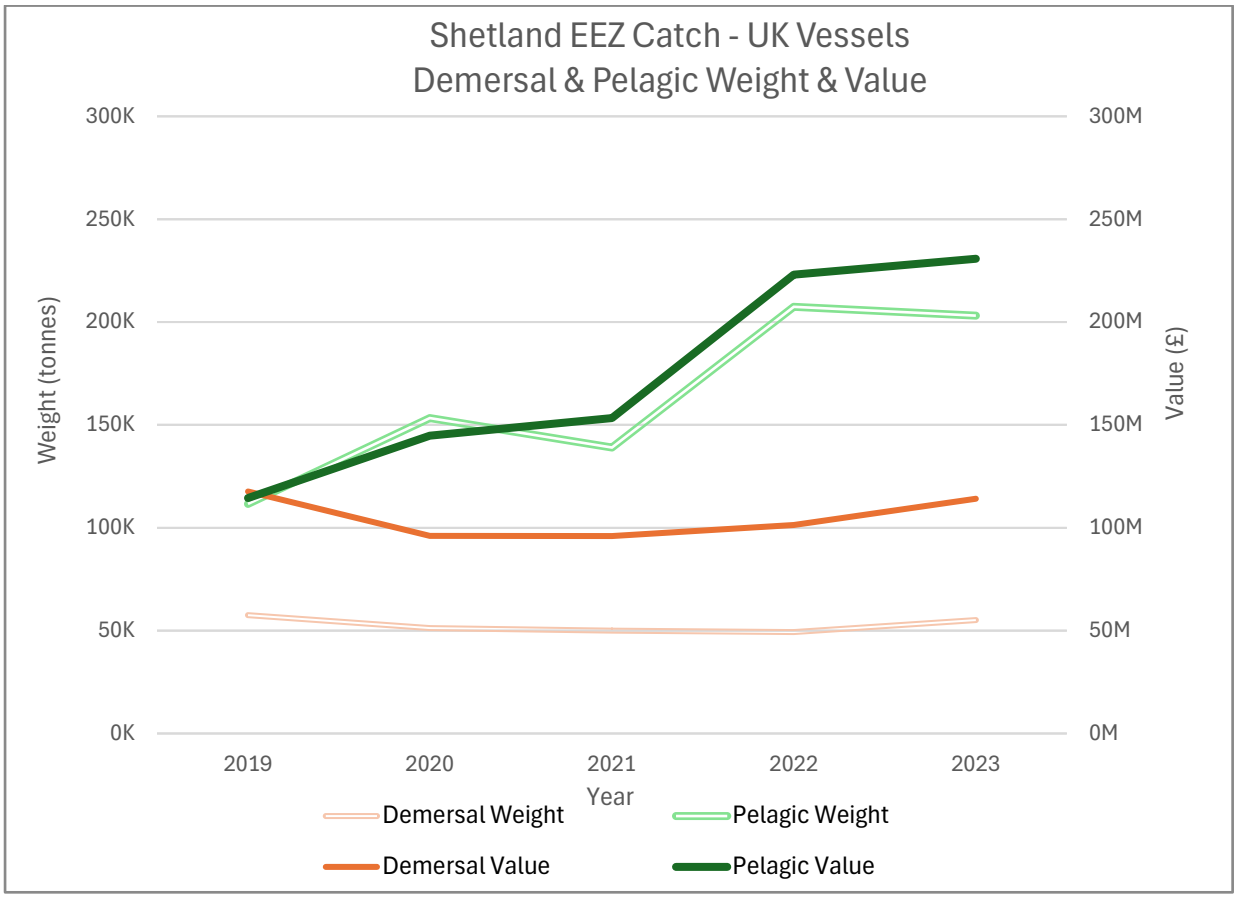


Figure 5: Annual demersal and pelagic catch from the Shetland EEZ (2019–2023)[52]

3.1.10. Pelagic species comprise the bulk of tonnage from these waters in 2023 (~79%), while demersal fish - though a smaller share of volume - contribute a large share of the total value (~33%) due to their higher unit prices[53].

3.1.11. Shellfish (not shown on the above graph) account for a relatively small portion of the catch in Shetland's waters (only ~1% of weight and 2% of value), but they sustain important inshore fleets and community economies.

3.1.12. Shellfish fisheries within six nautical miles of Shetland are managed by the SSMO under a Scottish Government Regulating Order. The SSMO controls effort through permits, seasonal closures, catch limits, gear rules, and spatial measures. This system is designed to keep fishing within sustainable limits, so shellfish catches in Shetland's inshore waters are intentionally restricted by design.

3.1.13. Any spatial restriction that impacts pelagic fishing grounds can affect a huge volume of landings, whereas restrictions in demersal grounds can significantly impact the high-value whitefish sector, and inshore losses can disproportionately hurt small vessels reliant on shellfish.

3.1.14. In the following sections, we assess each fishery sector in turn, noting how proposed wind farms, tidal arrays, cables, oil infrastructure, and MPAs could alter the availability or quality of their fishing grounds. We then consider the cumulative spatial impact across all sectors on Shetland's fishing industry.

[52] https://www.gov.uk/government/statistics/uk-sea-fisheries-annual-statistics-report-2023
[53] https://www.shetland.gov.uk/downloads/file/10684/no-44-shetland-in-statistics-2024

WHITEFISH FISHERIES

3.2. Demersal Fisheries (Whitefish Sector)

3.2.1. The demersal fleet targets groundfish species (such as cod, haddock, saithe, whiting, monkfish, and hake) that live on or near the seabed. Fishing is typically conducted with mobile bottom-contact gears (e.g. bottom trawls and seines) and so access to extensive trawlable seabed areas is critical for this fishery, as not all areas of seabed are trawlable. For example, naturally occurring features such as rocky outcrops, boulder fields, and areas of cold-water corals are generally avoided due to damage to the trawl gear.

3.2.2. Shetland's demersal grounds are among the most productive in the North Atlantic. In fact, roughly one-third of all demersal fish caught in the UK EEZ have historically come from the waters around Shetland (by weight)[54]. Key fishing grounds span from the inshore 12-nautical-mile zone (used by smaller vessels for cod, plaice and monkfish) out to offshore banks and shelf edges in the North Sea and northwest of Shetland.

3.2.3. Many of these grounds, have been fished for generations and are well known to local crews. Given this broad spatial footprint, demersal fisheries are impacted by any development that limits access to seabed or requires fishermen to alter trawl routes. Finding alternate trawl routes is not an easy task due to the litany of geographical issues which determine if grounds are suitable for trawling.

3.3. Offshore Wind Farms

3.3.1. The most prominent new energy-related constraint looming for demersal crews is the establishment of large floating wind farms in traditional fishing areas. Under ScotWind leasing, two projects are proposed within the Shetland EEZ to the east of the isles.

3.3.2. These projects could involve over one hundred turbines anchored in waters deeper than 100 m (using mooring lines and subsea anchors) and linked by inter-array cables. While still at early planning stages, their combined area (558km^2) is substantial and located in offshore waters actively used by demersal fishing vessels.

3.3.3. During construction and operation, exclusion zones will be established around work vessels, and safety zones (typically a 500 m radius) will surround each structure and offshore substation. For a densely developed floating wind farm, the cumulative effect is essentially an exclusion of trawling throughout the wind lease area.

3.3.4. Trawling inside an array of turbines is fraught with hazard and is unlikely to be feasible: nets risk entanglement on mooring lines or cables, and navigation is constrained by the pattern of surface towers. Industry leaders have bluntly stated that *"fishing and floating wind turbines will not be possible together"* in the same space[55].

3.3.5. The Scottish Fishermen's Federation, for instance, warns that the planned floating wind farms (including those off Shetland) *"are threatening to destroy fishing as an industry"* if implemented without robust safeguards. Such assessments reflect fears that large portions of "prime" fishing ground could become effectively off-limits.

[54] https://www.shetland.uhi.ac.uk/t4-media/one-web/uhi-shetland-images-and-documents/research/statistics/eez-reports/Shetland-EEZ-2020-11-04.pdf
[55] https://www.shetnews.co.uk/2024/10/04/fishing-floating-wind-farms-able/

3.3.6. Evidence from the project scoping confirms that key demersal grounds overlap the proposed wind farm sites. Shetland Fishermen's Association representatives point out that the northern half of the Stoura wind farm area lies in *"prime whitefish grounds"* for species like cod and haddock, which local vessels presently utilise. Similarly, the Arven lease spans an area used by both demersal and pelagic fleets.

3.3.7. Loss of access to these grounds, even if wind farms occupy only a small percentage of the EEZ, will likely be significant - because fishermen concentrate effort in the most productive patches, those patches are not easily replaced elsewhere. Displacement to adjacent areas can lead to crowding and gear conflict if multiple vessels are forced into smaller zones around a wind farm. It can also increase operating costs (longer steam times to alternative grounds) and potentially reduce yields, both if the alternative grounds are less abundant and an increased concentration of fishing effort on these grounds over time.

3.3.8. In summary, offshore wind in eastern Shetland waters poses the largest new energy-related spatial impact on demersal fisheries, with the potential to exclude trawling from high-yield fishing grounds. This impact is individual (each wind farm has its footprint) but also cumulative, since multiple projects or phases could serially reduce available area. Increased fishing effort in alternative areas can intensify competition and alter catch composition, potentially affecting stock sustainability and the wider fishing economy.

3.4. Subsea Cables and Electrification Infrastructure

3.4.1. Demersal trawl fisheries are also sensitive to the laying of subsea cables, pipelines, and other seabed infrastructure, because trawling gear can snag or must be kept clear of such obstacles.

3.4.2. Shetland is currently being integrated into the national electricity grid, and the first HVDC transmission cable (High-Voltage Direct Current link) from Shetland to mainland Scotland was installed in 2023. Despite careful routing, this 260 km cable passes through fishing areas for species like squid and demersal fish.

3.4.3. The developer (SSEN) buried the cable ~1.5 m below seabed and is monitoring for exposure to prevent gear snags and allow trawling to resume over the route[56]. This example highlights the hazard (an unburied cable can permanently obstruct bottom tows) and the mitigation approach (deep burial >1m).

3.4.4. Looking ahead, however, Shetland faces multiple new cable projects: a second HVDC link is planned by 2030 to 2035 to export ScotWind power and provide grid redundancy; inter-array and export cables from the Arven and Stoura wind farms will come ashore (likely North Mainland of Shetland) to feed a converter station; there are also ongoing upgrades to inter-island distribution cables within Shetland's archipelago.

3.4.5. Additionally, if oil platforms are electrified, that could entail new power cables running from Shetland out to fields west of Shetland (e.g. the Rosebank, Clair and potentially Cambo areas), traversing fishing grounds along the way. Each of these cables brings the risk of a linear fishing restriction - often a 0.25 nautical mile (0.46 km) buffer is recommended where trawling should not occur, unless

[56] https://marine.gov.scot/sites/default/files/00010610_-_cable_burial_and_protection_plan.pdf

burial is assured[57]. A recent UK-wide analysis found that by 2050, cables could affect up to 25,500 km² of seabed if such no-trawl buffers are applied.

3.4.6. For Shetland's demersal fleet, the concern is that important corridors (e.g. between fishing grounds and ports, or between densely fished grounds) could be intersected by cable routes, forcing detours and effectively fragmenting the continuous fishing area. While a single cable has a narrow footprint, the cumulative network of multiple cables (HVDC circuits, wind farm arrays, telecommunications lines, etc.) starts to subtract non-trivial areas from the trawlable seabed.

3.4.7. Notably, fishermen have urged developers to *"co-operate to ensure that cables are routed into shared corridors and deeply buried"* so as to minimise these spatial losses[58]. Each additional cable also comes with temporary exclusion during installation (trawling may be halted for months along the route while trenching is underway). In summary, demersal fisheries will experience increased operational constraints from the growing network of seabed cables and pipelines in the Shetland EEZ.

3.4.8. Their impacts, while linear and narrow individually, add to the overall squeeze on fishing space, especially if any cable remains or becomes unburied and necessitates permanent avoidance.

3.5. Marine Protected Areas and Fisheries Management Closures

3.5.1. Another major driver of change for demersal fishing grounds is the expansion of spatial conservation measures. Nature conservation MPAs, Special Areas of Conservation (SACs), and other designations have expanded in Scotland's waters in recent years, many of which introduce restrictions on bottom-contact fishing to protect vulnerable seabed habitats or spawning stocks. For example, within the Shetland EEZ there are existing protected features where bottom trawling is limited or prohibited by conservation orders.

3.5.2. In coming years, policies such as Scotland's initiative to protect Priority Marine Features (PMFs) could formalise a trawling exclusion zone in coastal areas (e.g. out to 3 nm). In 2023, a controversial proposal for Highly Protected Marine Areas (HPMAs) – which would ban all fishing in upwards of 10% of Scottish waters – was paused after industry backlash.

3.5.3. National scenario modelling by ABPmer (2022) shows that by 2050 a "Future 3" high-restriction scenario could see over 56% of Scotland's EEZ closed to trawling, compared to roughly 17% today. Even under more moderate assumptions, the spatial footprint of MPAs and fisheries management closures appears set to rise markedly.

3.5.4. The Shetland fleet, which has a limited range of operation (especially smaller demersal vessels that cannot simply move to entirely new regions), is particularly vulnerable to such home-waters closures. A clear example is the seasonal/area closures to protect spawning cod or juvenile fish - if key nursery or spawning grounds are closed (as scientific advice sometimes recommends), that directly hits the local whitefish fleet's routines. Indeed, the SFA recently highlighted new research identifying several critical cod and haddock nursery areas in shallow inshore waters of Shetland (e.g. in Weisdale Voe,

[57] https://s3.eu-west-2.amazonaws.com/assets.sff.co.uk/publications/R3900_SpatialSqueeze_MainRpt-Final_23Jun2022.pdf
[58] https://www.shetlandfishermen.com/news/offshore-wind-developers-urged-to-protect-local-fishing-industry

Lunna Ness, and Aith/Skeetlie) and warned that these areas are under *"unprecedented potential pressure due to large-scale energy projects and aquaculture proposals."*[59].

3.5.5. While that warning was aimed at safeguarding juveniles (for the sake of future stocks), it also highlights that development and conservation needs intersect in these waters. If those inshore nursery areas become formal protected zones with fishing restrictions, demersal effort would be displaced seaward, adding pressure to the remaining open grounds. In combination with offshore wind exclusion zones, the demersal sector could be pinched from two sides: closures impacting inshore and industrial development excluding areas offshore. This double impact is what fishermen refer to as the spatial squeeze. This is already underway (for instance, bottom trawling has been curtailed inside several existing MPAs around Shetland), and it is expected to intensify as Scotland pursues both its 'Blue Economy' and conservation commitments.

3.6. Tidal Energy Installations

3.6.1. Tidal energy in Shetland remains at early stages, with a small operational array in Bluemull Sound. Nova Innovation's project there has a handful of seabed-mounted tidal turbines. While this is a pioneering development, its current footprint is very limited - a few tens of meters around each device. This possesses challenges for smaller inshore trawling vessels whilst having negligible impact on demersal trawling (indeed, large trawl vessels do not operate in narrow, tidal, rocky sounds like Bluemull). However, future tidal proposals could target other channels (for example, Yell Sound has been studied for tidal potential).

3.6.2. Generally, though, tidal energy sites will likely remain in high-current areas that have historically seen little fishing (often due to seabed hazards or fast tides). The individual impact of tidal projects on demersal fisheries is therefore expected to be low and very localised. It is mentioned here for completeness - to note that any seabed structure is a potential trawl obstruction - but compared to wind farms or MPAs, tidal devices are a minor factor for demersal fishing ground availability in the foreseeable future.

3.7. Oil & Gas Infrastructure

3.7.1. Shetland's surrounding waters host significant oil and gas fields with their associated infrastructure: fixed platforms, subsea wellheads, pipelines, etc. These already impose some spatial restrictions (e.g. 500 m safety zones around platforms and well installations where fishing is prohibited). Most of these exclusions have existed for years and the fishing fleet has adapted to them.

3.7.2. The new development on the horizon is platform electrification. As noted, direct offshore wind projects for powering platforms near Shetland did not receive licenses in the 2023 INTOG round[60].

3.7.3. For demersal fisheries, the main considerations are the additional subsea cables (addressed above) and any new fixed structures.

3.7.4. One scenario under the Shetland Islands Council-led ORION initiative, and now being carried forward by EnQuest and Veri Energy is the repurposing the Sullom Voe Terminal area for hydrogen

[59] https://www.shetlandfishermen.com/news/warning-over-impact-of-development-on-key-fishing-nursery-areas
[60] https://www.shetnews.co.uk/2023/03/24/no-successful-applications-for-seas-around-shetland-in-oil-and-gas-offshore-wind-leasing-round/

and Carbon Capture and Storage (CCS), which might not directly affect fishing grounds at sea, unless additional energy generation build-out is required to produce increasing volumes of hydrogen.

3.7.5. Such large-scale concepts remain speculative at this stage. In summary, oil and gas legacy infrastructure has long been part of the spatial picture. The incremental impact of adding power cables or a few new structures for electrification is relatively small in area, but again, it is the cumulative effects of all such activities that must be considered. The demersal fleet continually has to navigate around more "no-go" dots and lines on the chart, which removes flexibility in how fishing operations are conducted.

3.8. Summary of Impacts on Demersal Grounds

3.8.1. The demersal whitefish sector stands to lose access to portions of valuable grounds due to the overlay of energy and environmental designations in the Shetland EEZ. Offshore wind farm zones in the North Sea sector will remove large trawling areas, while an expanding network of cables and potential electrification routes could dissect others.

3.8.2. Conservation-driven closures, particularly for inshore habitats and spawning areas, may further curtail where bottom fishing can occur, especially within coastal waters. Individually, each development (a wind farm here, a cable there, a closed area elsewhere) might only occupy a few hundred square kilometres but collectively they could shrink the effective area open to demersal trawling by a material percentage.

3.8.3. In practical terms, a demersal skipper in 2030 may find that several established fishing zones are now off-limits or otherwise restricted requiring more time and fuel to reach alternative grounds.

3.8.4. Increased competition on the remaining open grounds could lead to congestion and gear conflicts between vessels, and possibly lower catch rates if effort concentrates on smaller areas.

3.8.5. In this regard, the industry's concern is not simply about the inconvenience; the primary concern (which was consistently articulated during the compilation of this report) was that being *"crowded out of important fishing grounds"* by other marine uses could translate into lost landings and income, fleet contraction, and knock-on effects for fish markets and processing in Shetland. [61]

[61] https://www.shetlandfishermen.com/news/offshore-wind-developers-urged-to-protect-local-fishing-industry

PELAGIC FISHERIES

3.9. Pelagic Fisheries (Herring and Mackerel Sector)

3.9.1. Shetland's pelagic fishery targets schooling species that roam the open waters, notably Atlantic mackerel, herring, and blue whiting. These species undertake extensive migrations, and fishing for them tends to occur in specific seasons and areas: e.g., mackerel in late summer through winter to the West / North of Shetland and across the Northern North Sea, herring in summer through autumn in coastal North Sea grounds (including around Shetland), and blue whiting in late winter to spring along the Atlantic fringe.

3.9.2. The pelagic fleet consists of large, highly mobile vessels such as midwater trawlers that can cover wide distances and often follow fish across EEZ boundaries. The catch volumes are enormous - pelagic fish accounted for roughly 79% of the total tonnage from the Shetland EEZ in recent years[62] (though much of that was taken by non-locally owned vessels).

3.9.3. For Shetland's own fleet, pelagic species are a mainstay of earnings (e.g. mackerel and herring together make up over two-thirds of the landed value). Unlike demersal or shellfish boats, pelagic vessels fish off the seabed. The scale and nature of upcoming developments - particularly floating wind farms - do therefore raise concerns for pelagic operations. This section assesses how the same categories of developments could impact pelagic fishing grounds and activities.

3.10. Offshore Wind Farms (Floating)

3.10.1. The prospect of large energy developments in Shetland's offshore zone is a material concern for pelagic skippers. While midwater trawling does not interact with the seabed, it does require substantial sea room for safe operation.

3.10.2. A pelagic trawler towing a net can extend for hundreds of meters behind the vessel. The presence of surface and sub-surface structures (e.g. wind turbine platforms, mooring lines, and dense patterns of mooring cables in the water column) eliminates the ability to fish in that volume of water.

3.10.3. The two ScotWind sites off Shetland lie in portions of the North Sea that are fished for both pelagic and demersal species. During the development of this report, skippers reiterated the sentiment that they would not risk working inside an operational turbine array due to safety concerns and insurance implications. The Scottish Fishermen's Federation has emphasised their view that mobile fishing and floating wind farms *"are simply not able to co-exist"* [63]. Scottish government reports have explicitly noted that *"offshore wind may impact upon Shetland's fishing industry"*[64].

3.10.4. Research is ongoing into how North Sea herring and mackerel shoals respond to large-scale wind deployments. From a spatial perspective, if a portion of the mackerel stock's migratory route or overwintering area falls inside a wind lease, the fleet might lose access to a proportion of the stock.

3.10.5. Such ecological dynamics are uncertain (and again, not the primary focus of this report), but the spatial loss can be quantified based on current development plans.

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[62] https://www.shetland.uhi.ac.uk/t4-media/one-web/uhi-shetland-images-and-documents/research/statistics/eez-reports/Shetland-EEZ-2020-11-04.pdf

[63] https://www.shetnews.co.uk/2024/10/04/fishing-floating-wind-farms-able/

[64] https://www.gov.scot/publications/draft-updated-sectoral-marine-plan-offshore-wind-energy-islands-communities-impact-assessment/pages/3/

3.10.6. In economic terms, even a small percentage loss of Shetland pelagic catch translates to a large tonnage of fish and value. By way of example, if 5% of Shetland's overall pelagic catch was negatively affected by exclusion zones, this would represent 15 to 20 thousand tonnes of fish annually, worth around £20 million.

3.11. Cabling and Grid Infrastructure

3.11.1. Pelagic trawling generally does not make contact with the seabed, so subsea cables generally have low impact. Indeed, once a cable is properly buried, a midwater trawler can pass overhead without issue. There are, however, a few considerations:

3.11.2. Dynamic cables in floating wind farms; these are cables that run from the turbine floating platform down through the water column to the seabed connection. Such cables could potentially extend well above the seabed (suspended in a catenary curve when unburied in the water), meaning a midwater trawl could snag them if towing at depth. This again reinforces that pelagic gear likely won't operate inside wind farm boundaries at all.

3.11.3. Unburied cable sections or crossings; in areas where a cable, say an export cable from a wind farm, comes close to the surface (near shore or at platform landing), pelagic vessels will steer clear during installation periods to avoid interference. By and large, though, cables are a far greater issue for demersal gear than pelagic. One exception might be if future power interconnector cables create exclusion corridors that also restrict pelagic transit; for example, during the laying of a second HVDC cable to Shetland, there could be temporary exclusion zones that incidentally block a route a herring boat might take, but these are short-term and localised. Therefore, the individual impact of subsea cables on pelagic fishing is minimal.

3.12. Marine Protected Areas and No-Take Zones

3.12.1. Pelagic fisheries have traditionally been somewhat less constrained by MPAs than demersal fisheries, because many conservation areas focus on seabed features or sedentary species. For instance, a reef MPA might ban trawling to protect coral, but still allow midwater trawling above, since the pelagic nets do not touch the bottom. However more holistic protection, and certain new designations, could affect pelagic fishing.

3.12.2. One such example is Highly Protected Marine Areas (HPMAs) or nature reserves where all extraction is prohibited. Had the Scottish HPMA proposal been implemented, even pelagic fishing would be barred in those zones. Future fisheries management areas to protect spawning aggregations of pelagic fish (e.g. a closure during herring spawning season in coastal Shetland waters) are another possibility.

3.12.3. Internationally, there have been closures for blue whiting spawning areas to manage stock health, and contributors to this report noted that something similar could be introduced in Shetland if science dictates. Climate-driven shifts in fish distribution could also lead to new protected areas for forage fish or key prey species (like sandeels) that indirectly constrain pelagic effort. Indeed, sandeel fishing is already prohibited in much of the North Sea (to protect the food chain for seabirds, etc.), which removes those grounds from any industrial fishing; though the Shetland pelagic fleet does not target sandeel, it's worth noting as a spatial claim in the EEZ.

3.12.4. Overall, MPAs to date have not significantly impeded Shetland pelagic fishing, but the sector is not immune. If, for example, an MPA were established to protect a marine mammal feeding area and that overlapped a herring ground, midwater trawling might face new regulations or seasonal limits.

3.12.5. Additionally, as mentioned earlier, if coastal nursery areas are protected (like the inshore cod nurseries identified by UHI research[65]), there may be restrictions on even small-scale pelagic operations within shallower areas or closer to shore.

3.13. Oil & Gas Activities

3.13.1. The pelagic fleet seldom interacts with oil infrastructure except to avoid the immediate vicinity of platforms. West of Shetland, where some pelagic fishing (e.g., mackerel fishery) occurs, there are a number of installations (Clair, Schiehallion, etc.). These already have safety zones that vessels honor. The addition of platform electrification does not change much in terms of surface obstacles – the platforms remain. If anything, reduced platform flaring (a byproduct of electrification) might slightly alter fish attraction at night (some pelagic skippers note fish can aggregate under bright platform lights), but such effects are understood to be minor.

3.13.2. The oil and gas decarbonisation push is not expected to materially alter pelagic fishing patterns unless it introduces new wind farm areas. The 2023 INTOG leasing outcome means no dedicated wind farms in the six proposed areas around Shetland got the go-ahead, so in the near term, no new exclusion zones in the established pelagic grounds west/north of Shetland are imminent.

65 https://www.shetlandfishermen.com/news/warning-over-impact-of-development-on-key-fishing-nursery-areas

3.14. Summary of Impacts on Pelagic Grounds

3.14.1. In summary, the dominant concern for pelagic fisheries is the loss of open-ocean space to large offshore wind developments[66]. Floating wind farms of the scale proposed (hundreds of square km) becomes a no-fishing zone for the pelagic fleet (and other fisheries as noted) within its boundaries. Two such farms east of Shetland, plus any future additions, could push pelagic effort either further offshore or into corridors between wind arrays.

3.14.2. Pelagic fishermen are highly mobile, but they are still constrained by where the fish go; if fish congregations overlap wind farm areas, those fish would likely be unavailable to the fishery.

3.14.3. Other impacts on pelagic fishing (cables, MPAs, etc.) are either secondary or more speculative at this stage, but they contribute to the cumulative picture. For instance, pelagic skippers might not be able to take certain routes or might have to time their operations around other marine activities.

3.14.4. One potentially positive aspect to acknowledge is that offshore structures can act as Fish Aggregating Devices (FADs) that aggregate some pelagic fish or their prey; there have been instances globally of fishermen jigging or line-fishing near oil platforms because fish gather there. However, that is not an accessible option for large-scale pelagic trawling, so any such ecological benefit of turbines may not offset the lost trawling opportunities. It should also be noted that research (and scientific debate) remains ongoing around the complex subject of whether the presence of FADs result in an overall increase of fish in an environment, or not.

3.14.5. Ultimately, the pelagic fishery's spatial freedom - the ability to roam wide expanses chasing schools - will be increasingly hemmed in by fixed infrastructure. Policymakers will need to consider whether and how these two sectors can meaningfully coexist. If they cannot coexist, then governments must consider compensation.

3.14.6. The Deputy First Minister of Scotland has spoken of enabling coexistence[67], but the practical measures for that remain to be seen. Here it is enough to conclude that pelagic fishing grounds face encroachment, chiefly from offshore wind, with the potential for unforeseen consequences for pelagic stock behaviours, and ultimately the Shetland fleet.

[66] https://www.shetnews.co.uk/2024/10/04/fishing-floating-wind-farms-able/
[67] https://www.shetlandtimes.co.uk/2024/10/11/poll-can-offshore-wind-co-exist-with-fishing-industry

SHELLFISH FISHERIES

3.15. Shellfish Fisheries

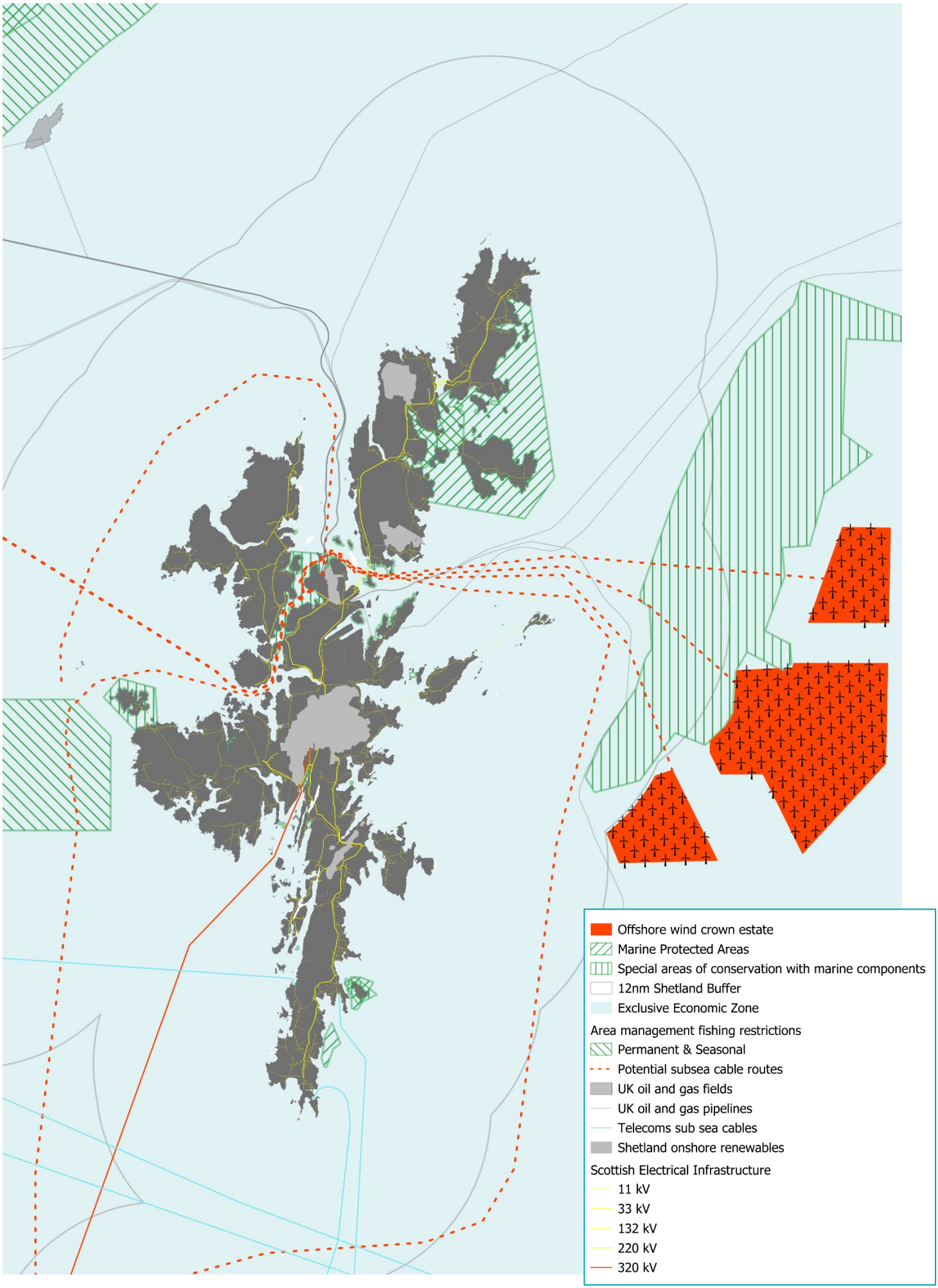
3.15.1. Shetland's shellfish fisheries are primarily conducted in coastal and inshore areas, typically within a few miles of the shore, nearly all inside 6nm, within the SSMO boundary. Key species include scallops (king scallops and queen scallops), which are harvested by dredging on suitable seabeds; brown crab, velvet crab, and lobster, caught by static creels set on the seabed.

3.15.2. In economic terms, shellfish form a smaller share of the catch around Shetland's waters - roughly 4,000 tonnes worth ~£6 to 7 million landed in Shetland annually in recent years[68],[69] - but they are vital for smaller vessels and island communities.

3.15.3. Many of the ~215 or so under-12m boats in Shetland are engaged in creeling for crab and lobster, and scallop fishing. Shellfish grounds have a distinct spatial character: often in shallow, sheltered waters or near complex coastlines (for lobsters and crabs) and on specific benthic habitats like gravelly sand banks (for scallops). These inshore areas are also the zones seeing a variety of other marine uses - aquaculture sites, coastal construction, shipping, etc. - which can all compete for space. The developments we consider (wind, tidal, cabling, MPAs, etc.) each have a different interface with the shellfish sector compared to offshore fleets.

3.15.4. Most shellfish vessels are relatively small and consist of one or two person crews. They operate primarily from small piers and harbours dispersed around the isles, forming an important part of local coastal economies. These enterprises have limited flexibility to relocate if spatial pressures arise from new developments of area closures, meaning that displacement can have a disproportionate socio-economic effect on these communities. Further impacts on the shellfish are explored in 3.21.

[68] https://www.shetland.uhi.ac.uk/t4-media/one-web/uhi-shetland-images-and-documents/research/statistics/eez-reports/Shetland-EEZ-2020-11-04.pdf
[69] https://www.shetland.gov.uk/downloads/file/10684/no-44-shetland-in-statistics-2024


Offshore wind crown estate
Marine Protected Areas
Special areas of conservation with marine components
12nm Shetland Buffer
Exclusive Economic Zone
Area management fishing restrictions
Permanent & Seasonal
Potential subsea cable routes
UK oil and gas fields
UK oil and gas pipelines
Telecoms sub sea cables
Shetland onshore renewables
Scottish Electrical Infrastructure
11 kV
33 kV
132 kV
220 kV
320 kV

3.16. Offshore Wind Farms (and Onshore Wind Infrastructure)

3.16.1. The ScotWind projects east of Shetland are in offshore deep waters (~30 km offshore) and therefore do not directly occupy traditional shellfish fishing areas, which are mostly within a few kilometres of the coast.

3.16.2. The offshore wind farms will however export power to shore via subsea cables. Where those cables come ashore is an important consideration to ensure avoidance of sensitive inshore areas, or within the ~5.4% of Shetland's inshore area that is suitable for scallop fishing. Cable protection measures (rock armouring, etc.) can introduce snag risks for creels or dredges in that immediate vicinity, and as a result, established shellfish area could be impacted.

3.16.3. Where wind turbines themselves could intrude on shellfish grounds is if future nearshore energy projects emerge. For instance, if small-scale wave, wind or tidal devices were located closer to shore (in some sheltered bay or off a headland), they could have implications for fishing in that area.

3.16.4. Similarly, large onshore wind farms with coastal infrastructure (like the Viking Wind Farm's HVDC cable crossing Weisdale Voe) can have knock-on effects: in Weisdale Voe, dredging for the HVDC cable and the presence of the cable itself might affect scallop grounds or crab habitat on the voe floor.

3.16.5. The SFA noted this in context of fish nurseries, citing the HVDC cable in Weisdale Voe as one of the developments with "implications for the nursery areas" [70]. Scallop fishermen have historically worked in some voes like Weisdale, so there's an overlap. Each such case is site-specific and relatively small in area, but for the fishermen who operate there, it can be significant (i.e. losing an established sheltered dredging tow area). Therefore coastal wind infrastructure - while not a primary concern - can have localised impacts on shellfish fishing grounds when cables or construction intersect those areas.

3.17. Tidal Energy

3.17.1. Looking forward, plans to expand tidal arrays (Nova is understood to hold a lease option to develop in Yell Sound) would mean exclusion zones around each turbine during operation and maintenance.

3.17.2. A creel boat would need to avoid dropping gear too close to a turbine to prevent entanglement. If dozens of tidal devices eventually populate a sound, they could cumulatively occupy a notable fraction of that channel's fishable area, although this is understood to be an unlikely development at the time of writing this report.

3.17.3. Additionally, a tidal array usually requires its own small cable to shore, again adding a linear feature on the seabed (with similar issues as other cables).

3.17.4. In summary, tidal projects are small at present but could encroach inshore fishing grounds. One positive note is that such projects often involve more direct engagement of local fishermen, which can offset some of the impact. For this overview, the key point is: inshore renewable energy sites

[70] https://www.shetlandfishermen.com/news/warning-over-impact-of-development-on-key-fishing-nursery-areas

can directly overlap with shellfish grounds due to shared preference for sheltered, tidal areas. Any future expansion will need careful site selection to avoid shellfish habitats.

3.18. Subsea Cables (Electricity, HVDC, Telecom) in Inshore Areas

3.18.1. Cables from wind farms have already been touched on, but more generally, subsea cables around Shetland's coast can constrain shellfish fishing. Static gear fisheries (e.g. with creels) can coexist more easily with seabed cables than trawlers, which would be more likely to disturb buried cables or to become caught on rock dumps.

3.18.2. However, creels can get fouled on unburied cables or on protective rock berms. Fishermen tend to avoid known cable routes to prevent losing gear. In Shetland's case, beyond the existing HVDC power cable (landing on Shetland's west side), there are several inter-island communication and power cables, and at least two fibre-optic telecom cables coming ashore (one at Sandwick, one in Maywick) connecting Shetland externally.

3.18.3. Shetland has, at the time of writing, experienced three major subsea cable outages in recent years, all involving the Shefa-2 fibre-optic cable that connects the islands to Orkney, mainland Scotland, and the Faroe Islands. The first occurred on 20 October 2022, when damage to the cable caused a full island-wide loss of internet, landline, and mobile services. Government correspondence confirmed the cable was accidentally damaged, likely by fishing activity, though no vessel was formally identified[71]. A second incident took place in late July 2025, when a mainland-registered scallop dredger operating with its AIS switched off damaged the cable around nine kilometres off Orkney[72]. The third outage occurred on 03 October 2025, as the subsea cable was damaged near Orkney due to storm activity, causing service disruptions for some internet service providers for 3 weeks until repairs were completed later in the month.

3.18.4. A common view in the fishing sector is that given just how many new cables are planned, these cables should, where possible, be installed in trawl-proof configurations by the developer (i.e. buried), rather than placing the responsibility for cable protection on the fishing fleet.

3.18.5. Considering future projects, the second HVDC link is likely to make landfall at a different Shetland site. That will present a temporary works exclusion and a permanent cable presence. On a larger scale, ABPmer's study noted that by 2050 cables (with safety buffers) could affect thousands of square kilometres UK-wide[73], but in Shetland's context it will be more modest - perhaps a few corridors of a few kilometres length each in inshore waters.

3.18.6. It's worth noting also that electrification cables to oil platforms could depart Shetland (likely from the Sullom Voe vicinity) heading northwest. Their route out of the coastal zone could impact local grounds (for example, if a cable to West of Shetland fields runs through a known scallop bed). Again, these specifics are not decided yet, but local knowledge will be crucial to route planning.

[71] https://www.shetnews.co.uk/2023/01/19/governments-knew-what-caused-october-communication-outage-but-never-told-the-public/
[72] https://www.heraldscotland.com/news/25547848.orkney-shetland-undersea-cable-damaged-fishing-boat/
[73] https://s3.eu-west-2.amazonaws.com/assets.sff.co.uk/publications/R3900_SpatialSqueeze_MainRpt-Final_23Jun2022.pdf

3.18.7. In summary, cables contribute to the spatial footprint inshore, but with proper burial and planning their impact on shellfish grounds can be minimised - still, fishermen treat any new cable with caution and see it as another reduction of available open seabed.

3.19. Marine Protected Areas & Fishery Closures (Inshore)

3.19.1. Shellfish fisheries, particularly dredging and trawling for scallops, are often the first to be restricted when new marine conservation measures are implemented. This is because these methods can disturb the seabed and benthic habitats that MPAs seek to protect. Around Shetland, several inshore MPAs exist or are proposed to protect sensitive features such as maerl beds (that form nursery habitats) and geodiversity features.

3.19.2. The Scottish Government's Priority Marine Features management measures (in development) are expected to limit or ban dredging in areas where these marine features (like kelp forests or flame shell beds) are present.

3.19.3. A key point for shellfish fisheries is that inshore conservation zones tend to specifically target features which exist in the same habitats that are also productive for species such as scallops (soft sandy or muddy seabed). Weisdale Voe and Sandsound Voe, identified as important fish nursery areas, are a case in point.

3.19.4. In Shetland, many small islands and coastal communities rely on nearby shellfish grounds. If a new MPA or other closure overlaps with those grounds, those fishermen might have nowhere else practical to go, given range and weather limitations, particularly throughout the winter months. In Shetland, scallopers are also further limited in this regard by SSMO management measures - e.g. the curfew which prohibits dredging at nighttime. In shorter winter days, this limits how far they can steam away from home port and still achieve a worthwhile catch for their day. Removing grounds closer to home would have material limiting consequences.

3.19.5. The ABPmer report highlighted that *"local inshore fleets with limited operational range"* can be *"impacted even more severely"* by spatial squeeze. An offshore trawler can relocate in ways that a 20ft creel boat cannot. So even a relatively small closed area could end the viability of a particular small fishing operation if it was centred on that area. This highlights the sensitivity shellfish fisheries to spatial restrictions.

3.19.6. Already, Shetland's shellfish landings are modest compared to fish – partly because of careful local management (Shetland has its own Regulating Order for shellfish that limits effort), partly due to environmental limits, and because they are smaller vessels with less range and . But further erosion of accessible grounds via MPAs, alongside energy projects, tightens the margins for these fishermen.

3.20. Aquaculture and Other Coastal Developments

3.20.1. While not contained within the original brief for this report, it's worth noting aquaculture (salmon farms, mussel farms, and prospective seaweed/kelp farms) because they are explicitly mentioned in SFA's recent statement about nursery areas[74].

[74] https://www.shetlandfishermen.com/news/warning-over-impact-of-development-on-key-fishing-nursery-areas

3.20.2. Salmon farms occupy space in voes and sounds; each farm has a grid of cages and anchoring lines that exclude other uses in the immediate footprint. The SFA warning references a consented large salmon farm (Billy Baa project) in an area near Sandsound Voe, which overlaps fish nursery grounds and scallop habitat.

3.20.3. The cumulative effect of aquaculture + energy + MPAs is essentially what local fishermen see as the full picture of spatial squeeze. For shellfish fishermen, new fish farms can displace where they set creels, and farm moorings can snag static gear just like any other mooring system. While aquaculture is beyond the scope of this report's energy focus, it's part of the cumulative impact inshore.

3.21. Summary of Impacts on Shellfish Grounds

3.21.1. Shellfish fisheries are inherently tied to the health and accessibility of inshore ecosystems, making them vulnerable to both environmental protections and coastal industrial development.

3.21.2. Individually, many of the energy projects may seem to bypass the inshore: wind turbines are further offshore; hydrogen will be made on land; cables mostly run in deep water. However, the interfaces where these projects meet the coast are where shellfish activities occur. Each cable that must make landfall, each construction vessel that must transit a channel, each new protected reef or nursery zone all occur in the relatively confined coastal space that is utilised by the shellfish fleet.

3.21.3. Crab and lobster grounds could be locally affected by cable laying, and the electromagnetic effects of those cables.[75]

3.21.4. Already limited scallop dredging grounds could contract due to a combination of conservation closures (to protect seabed habitats) and avoidance of any areas with new infrastructure (like cables, pipelines, or fish farm moorings).

3.21.5. The water depth and conditions preferred by shellfish species (often <100 m, in voes or on the shallow shelf) coincide with areas which are relatively easier for other forms of development (for cables, tidal devices, fish farms, etc.). Therefore, spatial competition is most acute inshore, and the shellfish fleet often has the least ability to absorb it.

3.21.6. For small shellfish boats operating as small businesses with very tight margins, even a 10 to 20% loss of local area could be untenable. Already, there are anecdotal reports from the sector *"both off- and onshore developments are […] having an impact"* on critical nursery and fishing areas[76]. The shellfish sector is impacted through reduced safe fishing spots, increased gear conflict (more gear from more boats crammed into smaller areas), and potentially diminished catches if key habitat for target species is disturbed or closed. The spatial pressure upon Shetland's scallop fleet is such that there is a strong argument that good scallop grounds should now be protected from any significant encroachments from further developments.

3.21.7. However, many shellfish species are resilient and can coexist with certain structures (lobsters, for example, may settle around rocky subsea cable protection). But the ability to fish for them is the question at hand. From the perspective of Shetland's community and policymakers, protecting inshore fishing grounds is not just an ecological issue but a socio-economic one: these waters are

[75] https://www.mdpi.com/2077-1312/9/7/776
[76] https://www.shetlandfishermen.com/news/warning-over-impact-of-development-on-key-fishing-nursery-areas

of critical importance for certain communities, providing employment in areas where few alternatives exist. Any planning of new projects in these areas must weigh very carefully the trade-offs and attempt to minimise further encroachment on shellfish grounds.

Having examined demersal, pelagic, and shellfish fisheries separately, this report will now move to the cumulative and combined impacts that arise when all these spatial pressures are considered together across Shetland's marine environment.

3.22. Cumulative Spatial Impacts and Future Outlook

3.22.1. Individually, each development type - whether a wind farm, a cable, a tidal array, or an MPA - imposes a footprint of exclusion or altered access on fishing activity. However, it is the cumulative overlay of multiple developments and regulations that truly defines the challenge for Shetland's fishing grounds. A clear theme emerges from the above analysis: the area of sea available for unrestricted fishing activity in the Shetland EEZ is at risk of continued shrinkage. Spatial squeeze is characterised by increasingly crowded ocean space where fishing, once the primary use, must now compete or coexist with energy production, and other uses.

3.22.2. **Several points highlight the scale of the cumulative impact:**

3.22.3. **Geographic concentration.** Developments and closures are not spread evenly; they tend to cluster in certain zones. For Shetland, the east of Shetland is a hotspot (with ScotWind leases, existing oil/gas fields like Brent just south of the EEZ, proposed cabling corridors, etc.), meaning a large contiguous area of the North Sea sector could see layered restrictions. Meanwhile, coastal waters around the isles also face layered pressures (e.g., Yell Sound might simultaneously host tidal devices, aquaculture sites, new power cables, and fishing nursery MPAs). The result is that fishermen cannot shift effort a small distance. This is evident in the SFA's concerns about being "crowded out" of traditional grounds.

3.22.4. **Timing.** The timeline of projects extends over the next decade or more, but many will likely materialise around similar periods (late 2020s through 2030s). Section 2 of this report described how numerous energy developments are slated for the 2025 to 2035 window, from grid links to hydrogen plants to wind farm construction. If not sequenced with the sector in mind, fishermen could face simultaneous exclusion from multiple areas. Short-term, this compounds the problem: the fishing fleet's flexibility is reduced just when most adaptation is required. The cumulative impact is not just spatial but also in time - lost opportunities stacking up over a number of years.

3.22.5. **Magnitude of area.** Quantifying the exact area of "lost" fishing ground is complex, as some exclusions are partial or seasonal. However, broad estimates give a sense of scale. The 2022 ABPmer report for fishing federations concluded that under realistic future development pathways, the footprint of offshore wind and marine protected areas would expand several-fold, "of a scale not previously seen", leading to restrictions that *"cannot be absorbed by the remaining fishing grounds"* in many regions.

3.22.6. In Scotland, *worst-case* assumptions showed over 56% of Scotland's EEZ could be restricted to trawling by 2050. Even if Shetland's share is somewhat less, it suggests that thousands of square kilometres of what are now open fishing areas could become partially or wholly closed off. Losing comparatively less fishing grounds/trawlable area than the wider Scottish/UK EEZ is not necessarily a significant benefit from the Shetland perspective either, as the effect of extra displaced effort from around the UK would add fishing pressure to Shetland's EEZ, with a negative effect for the local fleet.

3.22.7. For context, if one overlays known proposals: two wind farm sites (~558 km² combined), new MPAs (~500 to 1,000 km², depending on new designations), plus buffers around numerous cables and infrastructure, plus potential fisheries exclusion in a 3 nm coastal band - the cumulative impact of spatial squeeze could quickly add up.

3.22.8. As one fisherman noted, *"you can't fish where the fish aren't"* - losing 5% of area that holds 30% of the catch is far more damaging than losing 5% of barren ground. As such, the effective impact on landings or income could outpace the raw percentage of area lost.

3.22.9. **Cumulative and knock-on effects.** Cumulative impact is also about what happens because fishing is displaced. Fishermen forced out of one ground will tend to intensify effort in another, potentially leading to local overfishing or even conflict over the remaining fishery. For example, if offshore trawlers can no longer fish inside a wind farm zone, they might crowd the edges of it, which could be hazardous and also ecologically stress those edge areas.

3.22.10. Inshore, if some voes close to dredging, all scallop effort might concentrate on the remaining open grounds, possibly depleting them faster or causing gear congestion. The ABPmer report warned that *"displacement […] could lead to reductions in output and job losses […] and greater environmental impacts at the areas to which effort is displaced".*

3.22.11. Shetland's case would likely mirror that: a spatial squeeze on local grounds could reduce catch per unit effort (CPUE) as more boats fish fewer areas, and some vessels may decide it's no longer economical to operate. That has community implications; fewer boats landing fish means less work for local processing factories, lower auction throughput, and fewer young people seeing a future in the sector. The SFF chief executive recently called this the *"biggest challenge we currently face as an industry"* - the risk that climate-focussed policies inadvertently *"decimate our world-class food production"* sector[77].

3.22.12. In Shetland, where fishing has been central to the economy for centuries, the stakes are especially high. The SFA's own communications stress that both sectors - renewable energy and fisheries - are vital, and a *"win-win"* where one does not collapse because of the other must be found.

3.22.13. **Spatial planning and policy.** It should be noted that the Marine Directorate and planners are aware of these cumulative issues. Scotland's National Marine Plan and Sectoral Marine Plans for Offshore Wind attempt to incorporate fishing considerations, and new strategic planning (like the draft spatial plan for 2025) has a renewed focus on coexistence zoning[78].

3.22.14. For instance, certain ScotWind areas were (on paper) constrained or adjusted to reduce overlap with known fishing hotspots. However, from the fishermen's perspective, the engagements so far have not allayed their fears. As of 2024, Shetland fishermen have been pushing for stronger commitments from developers - such as routing cables along shared corridors, creating transit corridors through wind arrays, and providing compensation for loss of grounds. These requests (the "Offshore Wind Developer Principles" SFA published) highlight that fishermen expect significant losses of fishing opportunity and are seeking ways to mitigate those[79].

3.22.15. In summary, the potential impacts on Shetland's fishing grounds from offshore wind, tidal, hydrogen, cabling, electrification, and MPAs are significant and multifaceted. Demersal fisheries risk losing key trawling areas to wind farms and conservation zones; pelagic fisheries face exclusion from

[77] https://www.shetnews.co.uk/2024/10/04/fishing-floating-wind-farms-able/
[78] https://www.gov.scot/publications/draft-updated-sectoral-marine-plan-offshore-wind-energy-2025/pages/9/
[79] https://www.shetlandfishermen.com/news/offshore-wind-developers-urged-to-protect-local-fishing-industry

productive open-water zones; and shellfish fisheries are squeezed in the inshore areas by a variety of uses and protections.

3.22.16. Cumulatively, without careful management, these pressures could reduce the fishable area to a level that diminishes catch yields and threatens the economic viability of segments of the fleet[80]. This written overview has aimed to detail these potential impacts with as much spatial and sectoral nuance as possible.

3.22.17. It is imperative that all stakeholders - from national government to energy developers to regulators - acknowledge the scale of the spatial challenges identified, so that proactive steps can be taken to ensure Shetland's fishermen are not simply left as *"accidental casualties"*[81] of the energy transition, but rather partners in a sustainably managed, multi-use marine future.

[80] https://s3.eu-west-2.amazonaws.com/assets.sff.co.uk/publications/R3900_SpatialSqueeze_MainRpt-Final_23Jun2022.pdf

[81] https://www.shetnews.co.uk/2024/10/04/fishing-floating-wind-farms-able/

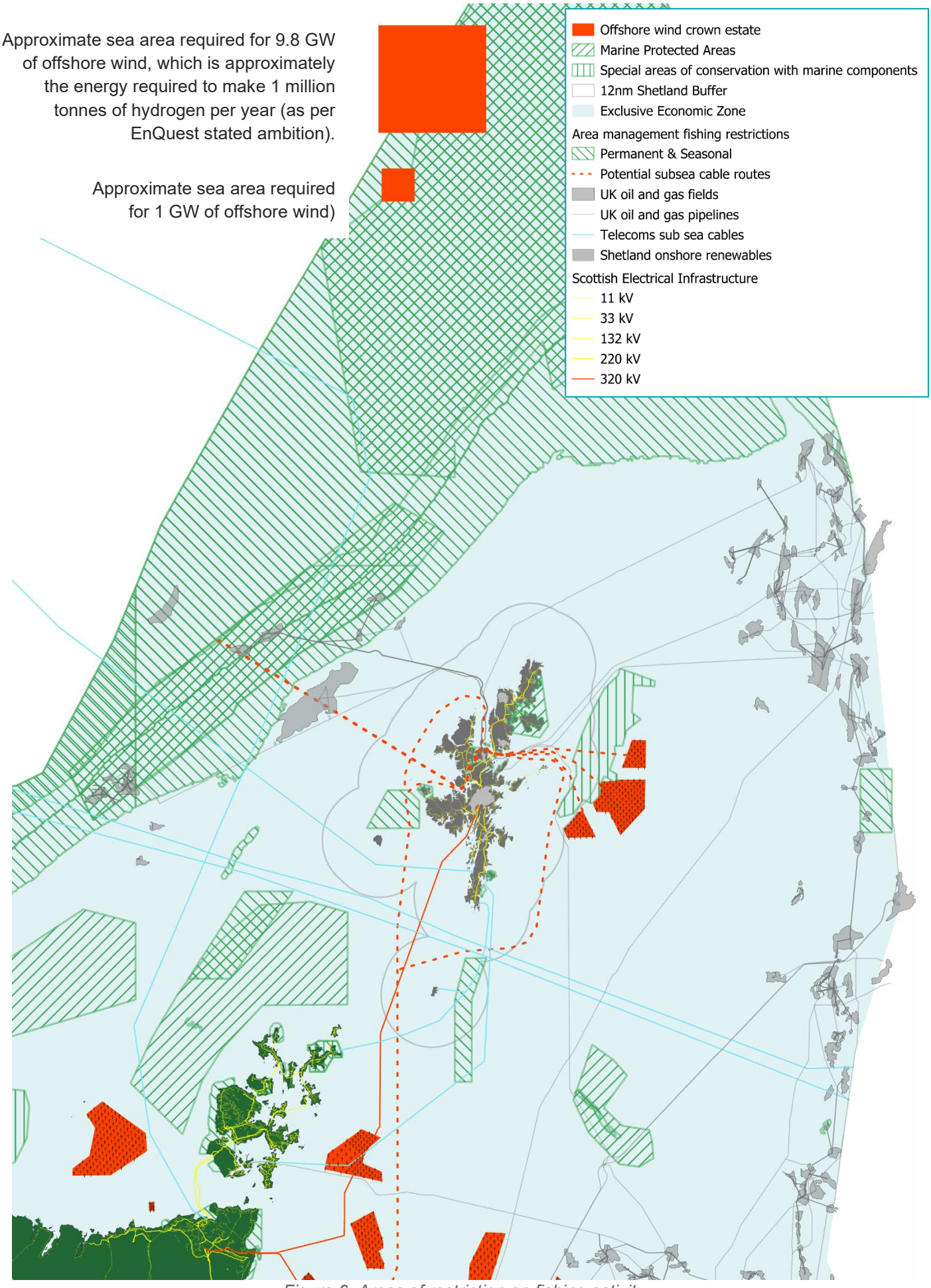


Figure 6: Areas of restriction on fishing activity

SECTION 4: BENEFITS, DRAWBACKS & MITIGATIONS

Integrated, forward-looking spatial planning is required to ensure that fishing interests are not an afterthought but a core factor in site selection, project design, and timing

4.0 ANALYSIS OF THE POTENTIAL BENEFITS, DRAWBACKS & MITIGATIONS OF RENEWABLE DEVELOPMENTS

4.1. Introduction

4.1.1. This chapter provides a qualitative, evidence-based assessment of both the potential benefits of offshore renewable energy developments (e.g. job creation, skills development, coastal infrastructure regeneration, supply chain investment) and their potential drawbacks, especially negative consequences for the fishing industry.

4.1.2. The chapter also examines how infrastructure like subsea cables, exclusion zones and spatial restrictions could affect the viability of important fishing areas (such as Shetland's MSC-certified scallop grounds) and assesses guard boat duty and other prospective opportunities and mitigations.

4.1.3. Stakeholder insights from Shetland fishermen and representatives gathered in early 2025 illustrate on-the-ground perspectives.

4.2. Potential benefits of offshore renewable energy development in Shetland

4.2.1. To present a balanced view, the wider economic benefits to the Shetland economy are considered below. We return to a fisheries-specific focus in the following section, where the drawbacks for fishing are considered.

4.2.2. Offshore renewable projects are often promoted as engines of economic development for coastal regions. For Shetland, a successful integration of renewables could support a just energy transition by creating new employment, upgrading port infrastructure, and attracting investment into the local supply chain.

4.2.3. **Job creation.** Large renewable projects can bring substantial employment, particularly during construction and in long-term operations and maintenance (O&M). An example is the Moray West offshore wind farm (882 MW) in the Moray Firth, which was visited by the authors this report in June 2025. Developed by Ocean Winds, Moray West involved an investment of ~£2.5 billion. Crucially, the project has delivered jobs both in the construction phase and will do for the decades of operation ahead.

4.2.4. During construction, Moray West created around 1,500 full-time equivalent (FTE) job-years of employment in Scotland. The operational wind farm now supports around 80 long-term direct jobs based at its O&M base in Buckie[82]. These are high-quality roles (technicians, engineers, marine coordinators, etc.) and will last for the 25 to 30 year lifespan of the wind farm. In total, projects in the Moray Firth (Moray East, Moray West, and future Caledonia) are expected to support over 200 operational roles in the north-east of Scotland on a continuous basis[83].

4.2.5. Such jobs often require new skills and training, providing an impetus for workforce development. In the case of Moray West, the developers have invested in local training and education initiatives, including workforce transition programmes and apprenticeships to ensure local people can fill these

[82] https://www.borntoengineer.com/moray-west-offshore-wind-farm-commences-power-generation-a-milestone-in-scotlands-renewable-energy-journey
[83] https://www.oceanwinds.com/wp-content/uploads/2024/06/OW-Supply-Chain-V7.pdf

new roles. For Shetland, this implies that if forthcoming offshore projects (such as the 2.3 GW Arven floating wind farm east of the isles) base their activities locally, islanders could benefit from similar opportunities.

4.2.6. **Infrastructure investment & regeneration.** Offshore renewables can drive significant upgrades to port infrastructure. During the Moray West project, a new 1,991 m² operations base facility was constructed on a brownfield quayside site, including offices, warehouses, workshops, and staff amenities[84]. The harbour received a new pontoon and upgraded quayside facilities to accommodate crew transfer vessels (CTVs) and service boats. The existing harbour office was incorporated into the new building, effectively modernising the port's infrastructure. Local officials noted that this development was "a positive boost to the regeneration of Buckie Harbour", that it would bring much-needed activity, income and footfall to the town, and could spur wider investment and employment beyond the wind farm itself. Indeed, Buckie had seen a downturn in traditional fishing use, so the wind farm base has effectively given the port a new lease on life. Around 80 O&M staff are based there long-term, sustaining local shops and services[85].

4.2.7. For Shetland, with several high-quality harbours (Lerwick, Scalloway, and others) and proximity to offshore wind sites, similar opportunities could arise. If the ScotWind projects to the east of Shetland choose a Shetland port as their home base for construction or O&M, Shetland could expect further investment in port facilities. Harbour regeneration could benefit the fishing industry indirectly - for example increased traffic could justify improved services (fuel, engineering, transport links) that local fishermen can also make use of.

4.2.8. **Supply chain investment.** Beyond direct jobs and physical infrastructure, renewable developments could inject capital into the broader supply chain. Offshore wind farms source a huge array of goods and services - from vessel charters and fabrication of components to environmental consulting and accommodation - many of which can be supplied locally. Ocean Winds reports that over half of Moray West's investment and operating expenditures are set to benefit the UK economy[86]. Over its lifespan, Moray West is estimated to inject more than £800 million into the Scottish economy in gross value added (GVA).

4.2.9. Some key components for the Moray West project were sourced domestically (for instance, turbine foundation jackets were assembled in Scotland and cables manufactured in the UK). This kind of local content can help sustain manufacturing jobs and skills. If Shetland firms secure contracts (e.g. providing marine services, fabrication of secondary steelwork, accommodation for workers, or environmental monitoring), some of that spending would directly boost the islands' economy. Indeed, Shetland has a history of supporting the energy sector through its supply chain (from the oil and gas era) and could adapt those businesses to renewables.

4.2.10. Over the longer term, turbines can act as artificial reefs and no-trawl zones, creating refuges for some species – one study documented certain fish aggregating around fixed turbine structures.

4.2.11. It is worth noting that most fishermen do not appear to perceive significant ecological or fisheries-related benefits from the presence of offshore structures. A recent UK-wide survey of fishermen

[84] https://www.offshorewind.biz/2021/11/01/moray-west-homeports-in-buckie-harbour/
[85] https://www.grampianonline.co.uk/buckie/wind-farm-base-boost-for-buckie-hailed-255746/
[86] https://www.borntoengineer.com/moray-west-offshore-wind-farm-commences-power-generation-a-milestone-in-scotlands-renewable-energy-journey

found a small minority who identified any benefits from offshore wind farms for their fishing activity[87]. Those who did were mainly static-gear fishermen under 15 m who cited improved catches (e.g. lobsters or crabs proliferating around turbine foundations due to artificial reef effects) and the availability of compensation schemes or enhanced infrastructure (like new navigation buoys) provided by developers.

4.2.12. These ideas remain largely unproven in Shetland's context, but they underscore that not all outcomes are negative; much depends on implementation and technology specifics (e.g. fixed vs. floating). What is clear, however, is that the quantifiable economic benefits of renewables – jobs, investment, infrastructure – are substantial and more straightforward to capture, whereas any upside for fisheries tends to be indirect, harder to quantify, and often outweighed by access restrictions.

4.3. Guard Vessel Activities

4.3.1. There is a potential economic opportunity in the use of fishing vessels as guard vessels in support of offshore developments, as has been seen in the oil and gas sector. In practice, however, this work offers only marginal contributions. Serving as a guard boat requires round-the-clock presence for up to 6 weeks at a time, meaning at least 3 to 4 crew members onboard to cover rotating 24/7 shifts. In Shetland's often harsh sea conditions, a guard vessel will also burn significant fuel and experience wear and tear on equipment just to hold position or navigate rough weather. The crew must be paid fair wages (and fed and watered), so operating costs can be high throughout the assignment.

4.3.2. From a 24-hour rate of around £2,000, after covering fuel, maintenance, insurance, contribution to the vessel capital loan, and multiple salaries, the net daily income from typical guard contracts is slim. Anecdotal reports suggest that in this kind of work, vessel owners are often barely breaking even. This makes guard duty at best a stopgap measure, not a lucrative alternative to fishing. Indeed, researchers note that while offshore wind development can create some new jobs for mariners (such as guard vessel or survey work), these opportunities are quite limited and only certain vessels even qualify for them. Most fishermen, therefore, cannot rely on guard vessel work to meaningfully offset the loss of their fishing grounds or income.

4.4. Potential drawbacks and negative impacts on fishing

4.4.1. The economic prospects of renewables are undeniable. Shetland's fishermen have however voiced their concerns that the drawbacks may outweigh the benefits for their industry and for Shetland in general. Fishing has been central to the Shetland's economy and culture for generations, and any threat to its viability is taken very seriously by those in the sector and those related to it.

4.4.2. Offshore renewables, by virtue of their space-intensive nature, pose several interrelated challenges to fisheries which have already been covered in detail in previous sections of this report:

4.4.3. **Loss of fishing grounds and spatial conflict.** Perhaps the most immediate drawback is the permanent loss or restriction of access to fishing areas. Each wind farm comes with exclusion zones or safety buffers (especially during construction) and an array of subsea structures (turbine foundations, anchors, cables) that can make traditional fishing - particularly trawling or dredging - impossible in those zones.

[87] https://aura.abdn.ac.uk/bitstream/handle/2164/25092/Szostek_etal_EP_Spatial_Conflict_in_VOR.pdf?sequence=1

4.4.4. In Shetland, key fishing grounds span from inshore voes (for shellfish and nursery areas) to offshore shelf edges (for whitefish and pelagics). Several of the new developments overlap with these areas.

4.4.5. For example, the planned Arven and Stoura floating wind farms east of Shetland (ScotWind NE1/NE2) cover around 556 km² collectively in a region that SFA notes includes known haddock nursery grounds and saithe spawning areas[88].

4.4.6. The local haddock stock is hugely important to Shetland's fleet, and any impact on juvenile recruitment (the process by which young haddock survive into the adult population) could affect future catches.

4.4.7. **Displacement & intensification.** When fishing grounds are closed or reduced, fishermen must either shift to other areas or reduce their activity. Neither outcome is desirable: as noted elsewhere in this report, shifting effort elsewhere can lead to over-crowding and over-fishing in the remaining open areas, whereas reducing activity hits incomes and the wider seafood supply chain.

4.4.8. Section 3 highlighted a scenario: if inshore areas that are traditionally dredged for scallops are closed, all the scallop effort concentrates on the remaining open grounds, depleting them faster or causing gear congestion. Shetland's scallop dredgers have already experienced this effect on a small scale where Marine Protected Areas or other closures have come in - suddenly, more boats could be vying for ground that only a few worked before, quickly exhausting the supply. As Shetland's scallop fishery is arguable more regularly assessed and tightly regulated than anywhere else around the UK (through SSMO), the consequences of displacement/higher concentration of fishing effort/stock depletion would likely be the triggering of additional management measures/effort controls, which could also challenge viability of scallop vessels

4.4.9. Reduction of fishing activity wouldn't just affect the fishermen at sea. Fewer boats fishing or reduced catches mean less throughput for local fish markets, processing factories and suppliers of everything from fuel to food and spare parts, which could affect jobs on shore. If a whitefish trawler finds it no longer economical to operate and ties up permanently (a possibility if fuel costs rise whilst fishing opportunities fall), that's one less vessel landing boxes in the fishmarket - which means the market, hauliers, and processors all see less volume. *"Some vessels may decide it's no longer economical to operate,"* noted an SFA report, and fewer boats landing fish means less work for local processing factories, lower auction throughput, and fewer young people seeing a future in fishing. This would also affect adjacent industries, such as engineering firms, gear manufacturers, fuel and store suppliers, and other ancillary businesses.

4.4.10. This encapsulates the wider socio-economic risk; a decline in active fishing could lead to loss of skills and a diminished community identity. Shetland's population has many multi-generation fishing families; if that chain is broken because the next generation doesn't see viable fishing opportunities, the cultural fabric may fray.

4.4.11. **Environmental uncertainties:** There remains significant uncertainty around the environmental impact of large-scale offshore wind developments. Turbine construction involves heavy noise, increased vessel traffic, and seabed disturbance, all of which can affect fish behaviour and habitats. Turbine structures and cables may alter currents or create artificial reef effects that change local

[88] https://www.shetnews.co.uk/2022/08/22/research-needed-before-offshore-wind-farms-east-of-shetland-are-built-fishing-industry-warns/

ecosystems - potentially benefiting some species (as noted, lobsters, some fish) but displacing others.

4.4.12. To date, scientific understanding of these effects, especially on commercial species, is limited and evolving. Shetland fishermen point out that baseline research is lacking: *"The impact of these projects on nursery grounds and spawning sites is unknown, and research is urgently needed before [they] are destroyed"*[89].

4.4.13. By 2025, some progress had been made - for instance, a UHI Shetland study in early 2025 mapped out critical inshore nursery habitats for juvenile cod, haddock, whiting and plaice[90]. The study found many key nursery areas (shallow, sheltered, seaweed and sand habitats) in voes and coastal waters that are under potential pressure from developments. These include Weisdale Voe and Sandsound Voe (where an HVDC power cable and a proposed salmon farm could have combined impacts), and Lunna and Dales Lees on the east side (near sites of planned aquaculture and cable corridors).

4.4.14. The researchers and SFA warn that if developments proceed without caution in such areas, they could impair the recruitment of young fish into the fishery, effectively undermining stock sustainability in the long run. Shetland's fishermen have consistently argued that healthy marine ecosystems are critical to their industry; *"fishing relies entirely on the good state of marine ecosystems for its survival",* whereas offshore wind, once built, does not depend on ecosystem health in the same way[91].

4.4.15. This fundamental difference fuels a sense that the burden of ecological risk lies with the fishing sector. Policymakers are therefore urged to fully account for these long-term, knock-on ecological effects (not just the immediate spatial conflicts) when consenting projects - and to apply the precautionary principle.

4.4.16. **Scallop fisheries and MSC status**. A particular concern in Shetland is the fate of the scallop fishery, which is uniquely certified for sustainability. The inshore scallop and brown crab fishery around Shetland (0–6 nm) was the first in the UK (and indeed the only scallop fishery in the North East Atlantic) to achieve MSC certification for sustainability[92].

4.4.17. About ~1,300 tonnes of scallops are landed annually, worth several million pounds, under the stewardship of the Shetland Shellfish Management Organisation (SSMO). This fishery's viability depends on having sufficient productive seabed open to dredging on a rotational basis, while protecting sensitive habitats and juvenile scallops.

4.4.18. Already, marine protected areas and SSMO's own conservation measures have closed some inshore zones to dredging (e.g. around maerl beds). Fishermen accept those conservation closures as necessary - indeed it is part of maintaining MSC status - but they worry that additional spatial restrictions from energy infrastructure could push the scallop fishery past a tipping point.

4.4.19. The MSC certification of Shetland's scallops is predicated on tightly controlling effort and habitat impacts; if effort becomes concentrated into ever smaller patches of seabed, the risk is that scallop

[89] https://www.shetnews.co.uk/2022/08/22/research-needed-before-offshore-wind-farms-east-of-shetland-are-built-fishing-industry-warns/
[90] https://www.shetlandfishermen.com/news/warning-over-impact-of-development-on-key-fishing-nursery-areas
[91] https://www.shetnews.co.uk/2022/08/22/research-needed-before-offshore-wind-farms-east-of-shetland-are-built-fishing-industry-warns/
[92] https://www.shetlandfishermen.com/about/quality-assurance

stocks could degrade or the environmental impact per area would increase, undermining the basis for certification. In other words, fishermen fear a scenario where they are forced to intensify dredging on a few remaining open grounds, eroding the sustainability credentials they have built over the past decade.

4.4.20. As previously noted, given the very small area of Shetland's coastal zone which is good scallop habitat and the existing spatial pressure upon the scallop fleet, there is a strong argument that high quality grounds should now be protected from any significant encroachments from further developments.

4.4.21. **Finally, socio-cultural drawbacks must be mentioned**. Fishing is not just an industry in Shetland - it is a way of life and central to identity. The prospect of a few boats leaving the fleet or young folk turning away from fishing as a career causes palpable anxiety in coastal communities. One experienced skipper interviewed in March 2025 noted that *"we're being squeezed from every side – wind farms, MPAs, new cables".* Such sentiments reflect a deep-seated worry that Shetland could lose a part of its intangible cultural heritage if its fishing community diminishes. The benefits of renewable energy are not viewed as a like-for-like replacement for the loss. This makes the idea of a "just transition" very personal and sensitive in Shetland.

4.5. Compensation

4.5.1. When fishermen are displaced from traditional grounds by energy projects, the question of compensation becomes critical.

4.5.2. Unlike Denmark, where since 1991 a law has mandated that fishermen be compensated for loss of income when other ocean users take over fishing grounds[93], the UK has no standardised scheme for fisheries displacement. Instead, any payments are handled in an ad-hoc fashion, usually negotiated case-by-case. As a result, many fishermen may receive nothing at all even when effectively excluded from their established grounds.

4.5.3. There is also no established mechanism to compensate those indirectly affected, e.g. other boats that don't fish inside the wind farm but suffer knock-on impacts when displaced vessels crowd into their areas. This approach has led to a sense of unfairness and insecurity in fishing communities.

4.5.4. A 2025 survey of UK fishermen found widespread dissatisfaction, highlighting a *"lack of standardisation in compensation payments"* and calling for better, legally embedded guidelines[94]. In short, fishermen want clearer assurances that if they are asked to give up fishing ground for wider economic or environmental reasons, they won't bear the financial burden.

4.5.5. Notably, developers in other countries have begun offering structured compensation packages. Baltic Power, which is building the first large wind farm in Poland, launched a "transitional compensation" scheme before offshore construction began[95].

4.5.6. Local fishing vessel owners who historically worked in the planned wind farm area are now receiving annual payments ranging from about €3,500 up to €11,500 per year, depending on the size of their

[93] https://newbedfordlight.org/blown-away-offshore-wind-regulators-ignore-danger-to-fishing-industry/
[94] https://pml.ac.uk/news/can-offshore-wind-farms-and-the-uk-fishing-industry-co-exist-effectively/
[95] https://www.linkedin.com/posts/chloetayloremanuel_baltic-power-issues-first-compensation-payments-activity-7279446897159798784-Gm05

vessel[96]. These payments are intended to offset the loss of access during both construction and operation of the turbines.

4.5.7. It was noted during interviews with Shetland fisherman that such compensation schemes fell far below the values of actual loss. Other UK-based fishermen similarly noted that compensation measures have been inadequate. They argue for a nationwide, industry-wide standard so that a crew put out of work by an offshore wind lease isn't left to negotiate alone.

96 https://renewablesnow.com/news/baltic-power-launches-plan-to-pay-fishermen-hurt-by-wind-farm-project-1268703/

SECTION 5: WIDER POLITICAL CONTEXT

A sense of powerlessness has emerged from top-down national decision-making

5.0 WIDER POLITICAL CONTEXT

5.1. National Influence

5.1.1. While the Shetland Islands Council (SIC) have a degree of control and influence to exercise regarding energy developments in and around Shetland, many levers of power remain at the national level, and it is these national powers which have predominantly shaped the dynamic between energy development and fisheries.

5.1.2. Control of Scotland's seabed lies with Crown Estate Scotland (a public body), and leasing decisions for offshore wind or tidal projects are made through national rounds (like ScotWind). Shetland Islands Council has no veto over which companies or how many wind farms are awarded.

5.1.3. The seabed option fees (totalling tens of millions of pounds over a project's lifetime) are paid to the Scottish Government, not the local community. A portion returns via the government's discretionary funding for island communities; Shetland receives an annual allocation of Crown Estate revenue, but this is a fraction of the lease values.

5.1.4. This top-down system contributes to the fishermen's sense of powerlessness, captured in Daniel Lawson's remark about *"privatising"* local seabed[97]. From Shetland's perspective, the leasing framework inherently prioritised national economic and climate objectives. While those objectives are shared in principle, the concern is that local knowledge and sectoral interests were only superficially integrated.

5.1.5. The SIC has worked to insert local voices where possible: it participated in consultations on Scotland's Sectoral Marine Plan for Offshore Wind (which in 2020 had identified areas like the NE1 lease areas as suitable), and it has lobbied via bodies like the Convention of Highlands and Islands (CoHI) for more community say in Crown Estate decisions. But legally, once the ScotWind leases were signed, Shetland's role was that of a consultee in the subsequent planning and licensing stages (handled by Marine Scotland for consent and by the Scottish Government or its agencies for environmental assessment).

5.1.6. The Council's own planning authority does not extend to offshore waters. As SIC noted in its strategy response, it feels like the Scottish Government must *"undertake considerable planning"* now to manage the offshore rollout responsibly[98]. The marine planning regime is set by the National Marine Plan and related policies, and the SIC argued that these need reform to better account for fishing[99]. One specific suggestion from Shetland and other coastal councils has been earlier and deeper stakeholder mapping, e.g. requiring developers to work with fishing interests on surveying grounds, agreeing on cable corridors and turbine layouts that minimise exclusion zones.

5.1.7. The SFA has advocated for measures like tension-leg moorings (which reduce anchor spread and seabed damage compared to catenary moorings) and shared corridors for export cables, to reduce seabed footprints from wind farms. Implementing such ideas, however, relies on regulatory

[97] https://www.shetnews.co.uk/2022/08/22/research-needed-before-offshore-wind-farms-east-of-shetland-are-built-fishing-industry-warns/
[98] https://www.shetnews.co.uk/2023/05/12/energy-transition-should-not-be-hijacked-for-corporate-shareholder-gain-sic-says/
[99] https://www.shetnews.co.uk/2023/05/13/councillors-remind-government-not-to-ignore-fishing-industry-in-energy-development/

mandates from Marine Scotland or voluntary developer action; local authorities can champion them, but not impose them.

5.1.8. National policy has sometimes appeared dismissive of local concerns, creating political friction. A telling episode emerged in 2025 when an FOI request revealed that officials advised Scotland's Deputy First Minister (now First Minister) John Swinney not to use the phrase "spatial squeeze" during his visit to Shetland.

5.1.9. In the briefing note (marked "Official – Sensitive"), civil servants warned Swinney that *"spatial squeeze"* was a narrative advanced by industry that the government did not share, preferring to speak about *"use of our shared marine space…in a way that delivers for the whole of Scotland"*.[100]

5.1.10. The SFA noted that such an approach *"is not constructive and does nothing to inspire faith in government processes".* The Scottish Fishermen's Federation called it *"disgraceful"* that officials essentially briefed the First Minister to ignore or downplay fishermen's *"deeply held concerns"* about their future. This incident became a minor political scandal, reinforcing the perception of a gap between national rhetoric and local reality. John Swinney assured Shetlanders that he did understand the issue and later publicly committed to *"ensuring the fishing industry and the offshore marine energy sector can exist together"*.[101]

5.1.11. Fishermen are keenly watching whether such commitments will influence how projects proceed. For example, will wind farm developers adjust plans to avoid key fishing areas? Will the government mandate compensation where displacement is unavoidable? These are the open questions.

5.1.12. The national government's balancing act (climate goals vs. fisheries impacts) has sometimes been controversial - as seen also in the now-shelved HPMA policy widely opposed by island politicians for its top-down approach[102].

5.2. Balancing Energy Ambitions with Fishing Livelihoods

5.2.1. The last five years has seen contentious negotiation. Many fishermen perceive that the political approach has not sufficiently prioritised their concerns. On one hand, locally, the SIC has formally recognised the primacy of fishing in its economy, embedded fishing considerations in its policy responses, and responded to government in ways that reflect this position. Councillors across the board have reminded decision-makers that a *"just transition"* in Shetland isn't just about cutting carbon - it's about fairness to established industries and communities[103].

5.2.2. Local media frequently report on fishermen's warnings and councillors' statements, reflecting a community actively debating how to reconcile these competing uses of the sea. The term *"spatial squeeze"* itself has entered common parlance in Shetland as shorthand for this core tension[104,105]. Shetland News and Shetland Times articles over the past five years are replete with fishermen's quotes and council pledges, indicating that politically, the fishermen's position is well profiled at the

[100] https://www.shetnews.co.uk/2025/03/06/fishing-leaders-anger-swinney-told/
[101] https://www.shetnews.co.uk/2024/10/07/swinney-gives-commitment-ensure-fishing/
[102] https://www.shetnews.co.uk/2023/05/13/councillors-remind-government-not-to-ignore-fishing-industry-in-energy-development/
[103] https://www.shetnews.co.uk/2023/05/12/energy-transition-should-not-be-hijacked-for-corporate-shareholder-gain-sic-says/
[104] https://www.shetnews.co.uk/2025/03/06/fishing-leaders-anger-swinney-told/
[105] https://www.shetnews.co.uk/2024/09/20/stoura-offshore-wind-developer-commits/

local level. This is partly due to the outsize importance of fishing to Shetland's economy, compared to other local authorities in Scotland.

5.2.3. On the other hand, from a national policy standpoint, fishermen often feel they are fighting an uphill battle. The quick pace of leasing and the magnitude of proposed projects have left many in the industry feeling that *"co-existence"* might end up meaning fishing activity can co-exist in principle, but get pushed out due to complex impacts.

5.2.4. The three ScotWind projects near Shetland are still in early planning (surveys and scoping stages). This represents a window of opportunity for fishermen's concerns to shape the outcome. Politically, the SIC has advocated that developers and Marine Scotland take a *"plan-led"* approach[106]. There are signs of progress: for instance, talk of coordinated cable corridors and new mooring technology has been taken seriously, and developers have openly acknowledged the fishing issue and say they are seeking solutions during dialogue with the SFA.

5.2.5. Crucially, compensation has become part of the conversation. Some in the industry remain skeptical – as one Shetland fisherman commented, *"it will never be considered just"* if the fishing itself is curtailed[107]. This reflects the deep (and widespread) protectiveness of the fishing profession and identity that was evident during the compilation of this report.

5.2.6. Shetland's approach to date can be described as mitigative rather than obstructive. Local politicians and fisheries stakeholders are not trying to halt new sectors outright; rather, they searching for a balance where renewable projects are done in a measured way (with robust long-term research and monitoring, environmental safeguards, spatial planning) and where the economic gains are shared.

5.2.7. This cooperative stance has arguably strengthened Shetland's case in political forums - it's harder for government to dismiss the community as simply NIMBY or anti-progress when local political and industry leaders are saying a cautious *"yes"* to offshore renewables, but with conditions of fairness for established sectors.

5.2.8. Indeed, the Shetland experience is shaping wider policy discussions. Holyrood has been urged to hold dedicated debates on the fishing implications of offshore wind[108], and the concept of spatial squeeze is now recognised (if contentiously) in political discourse. The Just Transition Commission's visit to Lerwick in 2024 - where it affirmed that a *"fair share of the value"* must accrue to communities for the transition to be truly just - shows that Shetland's messaging is influencing national narratives about equity in the energy transition.

[106] https://www.shetnews.co.uk/2023/05/12/energy-transition-should-not-be-hijacked-for-corporate-shareholder-gain-sic-says/
[107] https://www.shetlandtimes.co.uk/2024/09/24/shetland-has-statutory-right-to-fair-deal-on-just-transition-report-finds
[108] https://aberdeenbusinessnews.co.uk/scotland-urged-to-debate-fishing-during-wind-concerns/

SECTION 6: CONCLUSIONS

Individually, each development, whether a wind farm, cable, tidal array, or MPA, imposes a footprint of exclusion. However, it is the cumulative overlay of multiple developments and regulations that truly defines the challenge for Shetland's fishing grounds

6.0 CONCLUSIONS

6.1.1. Shetland's fishing industry faces a number of large-scale marine developments that could fundamentally alter the use of the region's sea space. This report highlights several findings and implications:

6.1.2. **Fishing grounds under unprecedented pressure.** The spatial analysis revealed that large areas of Shetland's EEZ, an area that yields roughly one-third of all fish caught in UK waters, is now in-scope for some form of development or protection initiative. If all proposed offshore wind farms, tidal sites, cables and MPAs proceed without careful coordination, the resulting loss of accessible fishing area could be severe. Demersal trawling grounds in particular, overlap significantly with planned wind farm zones and conservation areas, meaning those high-value areas could be partially or wholly closed to trawling. The cumulative effect, as detailed in this report, is a *"spatial squeeze"* that may reduce the fishable area to a level that diminishes catch yields and threatens the viability of segments of the fleet. A national study cited in the report projected that, under planned development scenarios, up to 50% of Scotland's EEZ could become restricted for trawling by mid-century. Absent intervention, this trajectory poses a significant risk to parts of the Shetland fleet.

6.1.3. **Socio-economic and cultural threats.** Beyond the economics of catch tonnage and percentages, there is a human and cultural dimension to these findings. Fishing is not simply one industry among many in Shetland, it is a foundation of the islands' identity. The report documents a palpable anxiety among fishermen that their communities could unravel if boats are forced to tie up for good. The loss of a few locally-owned vessels (whether due to lack of fishing opportunities or financial untenability) can have ripple effects. One recurrent theme in fishermen's testimonies is the fear that *"Shetland could lose a part of its soul"* if its fishing heritage is eroded. The analysis makes clear that the social licence for offshore renewable projects in Shetland will be fragile unless these community impacts are addressed head-on. Policymakers are urged to fully account for the long-term, knock-on effects on fishing families and settlements, not just the immediate spatial conflicts, when evaluating project consents.

6.1.4. **Policy and planning implications.** A strong implication of this study is that current marine planning frameworks need to evolve rapidly to balance the multi-use conflict. The traditional siloed approach where each wind farm or MPA is assessed in isolation is insufficient. Integrated, forward-looking spatial planning is required to ensure that fishing interests are a core factor in site selection, project design and timing. The report's findings support several concrete policy considerations.

- Firstly, there should be **stricter siting and phasing guidelines** that steer energy infrastructure away from the most critical fishing grounds (for example, known nursery areas, established scallop grounds or heavily-used trawl corridors) and deploy projects in phases with appropriate monitoring to support early identification and mitigation of impacts. The SFA has already proposed principles such as routing subsea cables along existing pipeline corridors and designing wind farms with transit routes for fishing vessels. Regulators ought to require developers to adopt such measures as conditions of approval.

- Secondly, **consultation processes must be strengthened**. Fishermen need a *"seat at the table"* from the earliest planning stages through to construction and operation, as genuine partners in figuring out coexistence solutions. The presence of Fisheries Liaison Officers and

local working groups, as now standard in the UK, is positive but this report suggests that consultation should have real teeth, meaning fishermen's input can materially alter project plans.

- Thirdly, **more formalised compensation and benefit-sharing regimes are necessary**. At present, compensating fishermen for loss of grounds is voluntary and negotiated ad hoc, which creates uncertainty and, ultimately, mistrust. The industry guidelines (e.g. FLOWW settlements) provide a starting point, but policymakers could explore mandating compensation funds or insurance schemes so that those bearing the brunt of spatial restrictions are not left economically worse off. Additionally, mechanisms to share the financial benefits of offshore development with local communities should be a baseline requirement. For instance, community ownership stakes or directing a portion of leasing revenues to local fishing fund initiatives would help ensure the economic utility of Shetland's seas is not one-sidedly apportioned to external companies.

6.1.5. **Mitigation and the way forward.** Where developers have engaged early and often with fishing communities, projects tend to face fewer conflicts and delays, and fishermen can secure adjustments that allow them to keep working safely. The SFA has explicitly called for developers to adopt such best practices including commitments to minimal exclusion zones, shared use of corridors, ongoing scientific monitoring, compensation and community benefit-sharing as non-negotiable principles for operating in these waters. If adhered to, these measures can greatly reduce the friction between the sectors.

6.1.6. In closing, Shetland's fishermen are justified in their concerns. The Shetland Fishermen's Association and local authorities will need to remain involved at every step, while developers and regulators must recognise that a failure to address fishing impacts could undermine the success of the energy projects themselves (through local opposition, delays, or reduced environmental credibility).

6.1.7. The future of Shetland's seas should not be a zero-sum game. With investment in mitigation, and respect for those who depend on the sea, Shetland's traditional industries and new energy ventures may find a balance. This report's findings are intended to help ensure that all of Shetland's fisheries remain an integral part of Shetland's marine future.

6.1.8. The onus now lies with policymakers to act on these insights, so that Shetland's waters can continue in its centuries-long tradition of support thriving fisheries, alongside the coming decades of energy development.

SECTION 7: APPENDICES

APPENDICES

7.0 APPENDIX 1: ADDITIONAL DETAIL ON EXISTING SHETLAND TRANSMISSION & DISTRIBUTION INFRASTRUCTURE

7.1. Shetland HVDC Link (Kergord to Mainland Scotland)

7.1.1. The Shetland HVDC Link is a 260 km high-voltage direct current subsea cable linking Shetland to the national grid in Caithness. Developed by SSEN Transmission, this £660 million project is the cornerstone for exporting Viking Wind Farm's output and integrating Shetland into Britain's electricity market[109]. The link consists of:

- An HVDC Converter Station at Kergord - converting between AC (for local network/wind farm connection) and DC for transmission.
- A 320 kV HVDC subsea cable (~600 MW capacity) running from Kergord to Noss Head in Caithness.
- On the mainland, a corresponding converter at Noss Head tying into the Scottish grid.

7.1.2. Timeline & Status

7.1.3. Construction began in 2020 and the cable was laid across the seabed by 2023. Onshore construction of the Kergord station completed in 2024[110].

7.1.4. Current Status

7.1.5. Operational. The HVDC link came online in late 2024, making Shetland net exporter of renewable electricity. It represents Shetland's first ever grid connection to mainland UK, although at the time of writing, the national grid connection had not yet been made into Shetland's local electricity distribution network.

7.1.6. Impacts & Considerations

7.1.7. A burial depth of at least 1.5 m[111] is used for protection. Post-lay monitoring is intended to ensure the cable is sufficiently covered to prevent gear snags

7.2. Gremista Grid Supply Point

7.2.1. To distribute power within Shetland and enable the HVDC link's benefits for local use, SSEN is building a new Grid Supply Point (GSP) in Lerwick, and associated infrastructure:

- **Gremista GSP Substation.** A 132/33 kV substation on Lerwick's outskirts (Gremista) that will be the point where the HVDC link (via Kergord) interfaces with Shetland's local grid. Essentially, it "brings the power into town," stepping down voltage for distribution across Shetland.
- **132 kV Connection Kergord to Gremista**. A 22 km double-circuit line linking the Kergord converter to Gremista. This uses a mix of overhead lines and underground cables to traverse central Mainland.

[109] https://www.vikingenergy.co.uk/construction
[110] https://www.shetnews.co.uk/2025/03/07/transformers-arrive-gremista-site-latest/
[111] https://marine.gov.scot/sites/default/files/00010610_-_cable_burial_and_protection_plan.pdf

- **Lerwick Battery Energy Storage System:** In conjunction, a 70 MW Battery Energy Storage System (BESS) is being installed near Lerwick Power Station by Zenobe Energy to provide fast backup in case the HVDC link trips. This battery system, granted planning in Feb 2024, will keep Shetland's lights on for the ~30 to 60 minutes needed to start up Lerwick's standby generators. The BESS is sited opposite the existing power station in Lerwick and is planned to be operational by 2026, in time for the HVDC go-live, and the power station moving into standby mode.

7.2.2. Timeline & Status

7.2.3. The Gremista substation and Kergord to Gremista line are in the construction phase (Stage 4 of 5 per SSEN). Major equipment, including two 60 tonne transformers, arrived in Lerwick in March 2025. The overhead line erection began in 2024. SSEN reports that the Gremista link will be completed by end of 2025, with testing and energisation in early 2026.

7.2.4. Once commissioned, this will connect Shetland's local network to the GB system for the first time, allowing bidirectional power flow. It also enables Lerwick Power Station to be relegated to emergency standby. The 72.8 MW oil-fired Lerwick station (from 1953) is due to cease normal operations by 2026.

7.2.5. Current Status (mid-2025)

7.2.6. Advanced stage of construction. Poles and wires are going up for the overhead sections, transformers are in place at Gremista, and by late 2025 the system will undergo live tests. SSEN expects full energisation in the first half of 2026 after final commissioning of protection systems and the Zenobe battery. SSEN's local project director updated in March 2025 that the project was on-schedule when the transformers were delivered.

7.3. North Mainland Reinforcement (aka Sullom Voe Grid Connection)

7.3.1. Another vital infrastructure project is connecting the Sullom Voe area (North Mainland) to the new Shetland grid. SSEN Distribution's North Shetland Reinforcement aims to supply power to Sullom Voe Terminal (SVT) and the northern isles and improve reliability for remote communities:

- **SVT 33 kV Grid Connection.** Two parallel 43 km underground 33 kV cables will be laid from Gremista (Lerwick) up to SVT in the north[112]. This is effectively a new power "trunk" northwards, supplementing the existing aging 33 kV overhead line. It will allow SVT's large gas-fired generators to wind down, as the terminal can import power from the grid. As of July 2025, the Sullom Voe Power Station was understood to have ceased provided power to the Shetland grid.

- Once SVT is able to receive power from the Shetland distribution grid, SVT's on-site power station, currently Shetland's single biggest emitter, will then be decommissioned.

- North Ness (Sullom) Substation: A new 33 kV switching station (substation) is planned near SVT to step down and distribute power at the terminal and to nearby settlements. Planning for this substation (on a former Gas Plant construction laydown area) was lodged in Nov 2024 and approved in early

[112] https://www.shetnews.co.uk/2024/11/21/plans-new-electrical-substation-near/

2025. The substation includes switchgear, two reactors for voltage control, and associated infrastructure. Construction is expected to take ~12 months once started.

7.3.2. Timeline

7.3.3. Trenching and cable laying commenced in 2023, with an 18-month construction schedule[113]. By mid-2025, SSEN had begun route preparations, including road closures for duct installation. The entire reinforcement is slated to be completed by late 2026 or early 2027, in sync with the HVDC link's bedding-in. Indeed, SSEN stated the SVT grid connection will be live by end of 2026 / start 2027.

7.3.4. Status

7.3.5. Underway. The project is well into execution, with onshore works visible (cable drums, excavation along verges). The new substation got planning consent, enabling its construction in 2025. By 2026, this will culminate in Sullom Voe Terminal being grid-powered for the first time.

7.3.6. Implications

7.3.7. This is transformative for SVT's operations. Currently, SVT burns gas from the terminal to generate electricity (up to ~22 MW exported to Shetland's old grid)[114]. With grid import, SVT can shut those turbines, cutting local emissions drastically. It also means any future hydrogen or electrification projects at SVT have a strong supply of renewable power. Additionally, the North Mainland communities gain reliability – the dual 33 kV circuits provide N-1 redundancy, meaning a single cable fault won't black out the area[115]. It adds resilience against the notoriously bad weather that has downed overhead lines in the past. Indeed, while the existing 33 kV overhead line will remain for now, the underground cables will augment capacity and reliability; they are also less vulnerable to storms.

7.3.8. From a fisheries perspective, this is largely onshore/underground, so negligible direct impact on fishing grounds. However, by enabling hydrogen fuel production at SVT, it indirectly supports decarbonising marine fuels which could benefit the fishing fleet long-term.

[113] https://www.shetnews.co.uk/2025/05/28/surprise-cable-laying-work-will/
[114] https://ssen-innovation.co.uk/nines/shetland-energy-challenge/
[115] https://www.ssen.co.uk/news-views/2025/update-on-our-North-Shetland-Reinforcement-Project/

7.3.9. Public and Regulatory

7.3.10. The project has been communicated as a needed “major infrastructure upgrade” to support low-carbon tech uptake and secure power supply. Scottish Government ministers highlighted that it allows SVT’s polluting generators to retire. The Islands Growth Deal provided funding (up to £9m) for this reinforcement as well[116]. Planning processes were smooth: Shetland Islands Council raised no objection, and local councillors welcomed the investment, noting it future-proofs the grid for electric vehicles and heating in the North Mainland.

7.3.11. To summarise, by 2027 Shetland’s north-south spine will consist of robust underground feeders and modern substations, finally treating SVT and surrounds as a first-class node on the grid. This dovetails with Shetland’s energy transition, ensuring the oil terminal’s twilight years and rebirth as a clean energy hub are backed by a reliable power supply.

[116] https://www.gov.scot/binaries/content/documents/govscot/publications/foi-eir-release/2025/01-e/foi-202400441690/documents/eir-202400441690---information-released---annex-a/eir-202400441690---information-released---annex-a/govscot%3Adocument/EIR%2B202400441690%2B-%2BInformation%2Breleased%2B-%2BAnnex%2BA.pdf

8.0 APPENDIX 2: ADDITIONAL DETAIL ON ONSHORE WINDFARMS

8.1. Viking Wind Farm (Central Mainland Shetland)

8.1.1. The Viking Wind Farm was developed by Viking Energy Wind Farm LLP (led by SSE Renewables), Viking consists of 103 turbines with a total capacity of 443 MW, making it one of the UK's largest onshore wind farms. Construction began in late 2020, and the final turbine was installed by August 2023. The wind farm achieved first power in summer 2024 and became fully operational in autumn 2024, coincident with the completion of a new grid connection to mainland Scotland.[117]

8.1.2. Timeline & Status

8.1.3. Viking secured planning consent after extensive consultation and judicial reviews in the 2010s. A final investment decision was made in 2020 once a transmission link was approved. Full commissioning was completed by late 2024. As of mid-2025, Viking is operational, exporting power via the Shetland HVDC subsea cable and expected to run for a 25-year lifespan. An Environmental Management Plan and community liaison groups were put in place during construction to address local environmental and social concerns.

8.2. Mossy Hill Wind Farm (near Lerwick)

8.2.1. Mossy Hill Wind Farm is a proposed onshore project on the outskirts of Lerwick, led by Statkraft UK (which acquired it from Peel Wind Farms in 2023). It was originally consented by Shetland Islands Council in 2019 for 12 turbines with a total capacity of ~48 MW. Statkraft now plans to optimise the design by reducing to 8 larger turbines (up to 155 m tip height) while maintaining similar capacity. The wind farm aims to generate enough power for 34,000 homes and will feed into the new Shetland grid via a dedicated 132 kV substation at Mossy Hill[118].

8.2.2. Timeline & Status

8.2.3. The project is at pre-construction phase. After consent in 2019, Statkraft initiated a redesign with site surveys and community consultations in 2024. A new planning application is expected in 2025 for the revised layout. Subject to approval, construction could commence by 2026 to 27 (a minimum of one year post-consent) and take ~12 to 18 months. Statkraft tentatively targets operations by autumn 2028[119]. As of mid-2025, the project is consented (original scheme) but undergoing modification; final turbine procurement and local benefit arrangements will follow the new consent.

8.2.4. Developer & Community Aspects

8.2.5. Statkraft has engaged local stakeholders through public exhibitions on the wind farm and substation plans. The company is coordinating with community councils on a potential shared ownership or community benefit fund[120]. The redesigned project includes an active travel route and educational features to integrate the site with the local community. Seemingly acknowledging local sentiment

[117] https://www.vikingenergy.co.uk/construction
[118] https://projects.statkraft.co.uk/mossy-hill/
[119] https://www.shetnews.co.uk/2025/06/10/final-planning-approval-wind-farm/
[120] https://www.shetlandtimes.co.uk/2025/04/16/mossy-hill-substation-set-for-approval-from-councillors

(the community had mixed views on the original plan[121]), Statkraft is aiming to respond to community feedback.

8.3. Yell Wind Farm Projects: Energy Isles and Beaw Field

8.3.1. Yell is set to host two large onshore wind farms, Energy Isles and Beaw Field, now both being developed by Statkraft following acquisitions. These projects are especially notable as they will require new grid links across Yell Sound and have timelines intertwined with major grid upgrades.

- **Energy Isles Wind Farm (North West Yell):** Originally a consortium of 50+ local businesses, now led by Statkraft, this project was consented in October 2023 for up to 18 turbines, 126 MW capacity. The design was scaled down from earlier plans (initially 63 turbines) through several rounds of environmental consultation. The wind farm will power 157,000 homes equivalent[122].

- **Beaw Field Wind Farm (Southwest Yell):** A 17-turbine, 72 MW project consented by the Scottish Government in November 2017. It was developed by Peel and likewise acquired by Statkraft in 2023. The design is for 17 turbines (originally 20 were proposed, reduced after environmental surveys) with an expected output for 60,000 homes. Beaw Field is fully permitted but was on hold pending grid availability[123].

8.3.2. **Timeline & Status**

8.3.3. Both Yell projects are consented but not yet constructed, awaiting grid connection and financing. As of July 2025, Statkraft has indicated that construction of Energy Isles and Beaw Field is expected to begin around 2029 to 2030, with a grid connection only available by late 2032. A formal grid connection date of October 2032 has been assigned for exporting power from Yell. The delay is due to the need for new transmission infrastructure (a planned HVDC link and on-island network reinforcements) to carry the combined ~198 MW output to mainland Scotland. Statkraft has confirmed it will synchronise construction with the grid schedule, so turbines may not be erected until late this decade. Detailed design, financing arrangements, and discharge of planning conditions will occur closer to 2028. Both projects remain active with Statkraft committing to their delivery once the export route is in place.

8.4. Community-Scale and Emerging Onshore Projects

8.4.1. In addition to the utility-scale wind farms above, there are proposals for smaller onshore developments led by local businesses.

- **Luggie's Knowe Wind Farm Extension (Lerwick).** Shetland Aerogenerators Ltd, a local operator (owner of the Burradale wind farm), is expanding its existing single-turbine site at Luggie's Knowe in Gremista, Lerwick. Phase 1 was a 3 MW Enercon turbine operational since 2016[124]. Phase 2, approved in Dec 2024, will add one new 150 m tip-height turbine and a 15 MW Battery Energy Storage System (BESS) on site. This will bring the total installed capacity to 19.9 MW (the original 3 MW plus ~4 to 5 MW from the new turbine, with the battery providing grid support). The BESS is intended to "keep the lights on" and smooth output, given Shetland's island grid needs. Construction

[121] https://www.shetland.gov.uk/downloads/file/8328/20-november-2024-twwcc-minutes
[122] https://projects.statkraft.co.uk/energy-isles/
[123] https://projects.statkraft.co.uk/beaw-field/
[124] https://www.shetnews.co.uk/2024/12/14/approval-given-second-turbine-battery-knowe/

is expected to start by 2026, taking 9 to 12 months, so the project could be operational in 2027. This expansion had its full Environmental Impact Assessment in 2023 and has been marketed as a community-conscious project.

- **Neshion Energy Park (Toft / Sullom Voe vicinity)** – A new initiative led by Neshion Ltd. (a joint venture involving Shetland Aerogenerators) aims to create an "energy park" immediately east of Sullom Voe Terminal (SVT) and the Shetland Gas Plant[125]. The Neshion Energy Park (NEP) would comprise of up to 10 wind turbines plus a large BESS and associated infrastructure for grid support and potentially hydrogen production. The project's scoping report was submitted in March 2025, indicating a combined capacity "over 50 MW" (thus requiring Scottish Government consent). The vision is to directly support Shetland's energy transition and provide power for industrial processes at SVT. If consented, construction could start by 2028 to 2030, with 24 to 36 months build duration.

[125] https://www.shetlandaero.co.uk/news/shetland-aerogenerators-ltd-leads-proposals-for-energy-park-located-next-to-one-of-europes-largest-oil-terminals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