Strategic Environmental Assessment

Environmental Report

Proposed Nephrops Fisheries Management Plans coordinated by the Marine Directorate of the Scottish Government

Including:

- **North Sea Nephrops Fisheries Management Plan**
- **West Coast of Scotland Nephrops Fisheries Management Plan**

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Department for Environment Food & Rural Affairs

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Non-technical Summary

The draft North Sea Nephrops FMP and West Coast of Scotland Nephrops FMP, hereafter jointly referred to as “Nephrops FMPs”, have been prepared to meet the requirements of the Fisheries Act 2020, by the relevant authorities for this FMP - the Department of Agriculture, Environment and Rural Affairs (DAERA), the Department for Environment, Food & Rural Affairs (Defra) and the Scottish Government - in collaboration with the Sea Fish Industry Authority (Seafish) with input from industry, scientists, non-governmental organisations (NGOs) and Statutory Nature Conservation Bodies (SNCB).. They set out the policies and proposed actions the fisheries policy authorities (Marine Directorate, Defra and DAERA) will use to manage Nephrops (*Nephrops norvegicus)* fishing activity, so stocks are harvested within sustainable levels. Alongside these measures, the draft Nephrops FMPs also set out policies and actions to help support wider social, economic and environmental aspects of the fishery.

This Environmental Report (ER) has been produced in accordance with the Environmental Assessment of Plans and Programmes Regulations 2004 (SEA Regulations 2004). The following issues (from Schedule 2, paragraph 6 of the SEA Regulations 2004) were scoped into the assessment:

- biodiversity
- fauna
- flora
- geology and sediments (soil)
- water
- climatic factors
- cultural heritage
- landscape and seascape

This assessment focuses on how the policies and actions in the draft Nephrops FMPs could give rise to both significant positive and negative environmental effects. The findings of this assessment have been used to inform the development of the FMPs.

The assessment was conducted against a baseline that primarily used existing evidence on the state of the marine environment set out in the updated Marine Strategy Part 1 published in 2019. Additional sources of evidence were used to establish the status of environment in relation to issues, such as climatic factors, not covered by the UK Marine Strategy (UK MS). The historical impact of fishing activity on the marine environment has been considered part of the baseline. Our assessment used the best available evidence to reach a suitable judgement on the environmental effects of the draft Nephrops FMPs.

This report sets out those plans, programmes and environmental protection objectives, both international and domestic that the fisheries policy authorities consider relevant to the draft Nephrops FMPs.

This report considers and acknowledges the existing environmental effects of fishing for Nephrops using towed gear and creels on those issues scoped into this

assessment, in relation to Marine Protected Areas (MPAs), the UK MS descriptors of good environmental status (GES) for the wider marine environment, Priority Marine Features (PMFs; Scottish waters only), and climatic factors. The potential positive and negative environmental effects of the draft Nephrops FMPs' policies and proposed actions alone and in-combination have also been assessed.

The Strategic Environmental Assessment (SEA) has concluded that beyond the direct impact on targeted stocks, the fishery has an impact on the wider marine environment primarily through seabed disturbance (from demersal trawls) and bycatch of unwanted / protected species (from creels and demersal trawls). Actions have been proposed to investigate these impacts and use this evidence to develop robust mitigation strategies. The contribution of Nephrops fishing to climate change related issues and cultural heritage through structural damage for example, was also identified as a potential impact.

The draft Nephrops FMPs have considered these impacts and set out proposals to monitor, and where required, introduce mitigation to address these impacts.

The assessment of the likely negative effects of the policies and actions did not identify any negative effects that posed a significant risk to the environment. The policies and actions, will, where appropriate, be developed to avoid any potential negative effects identified by the assessment process. The environmental effects of implementing the draft Nephrops FMPs' policies and actions will also be monitored to identify unforeseen adverse effects at an early stage, so appropriate remedial action can be undertaken.

This assessment recommends the draft Nephrops FMPs should consider the following additional points.

- Future iterations of the Nephrops FMPs should consider how they can develop the cultural heritage of each fishery and how fisheries management can contribute to reducing potential negative interactions with marine heritage assets.
- Future iterations of the Nephrops FMPs should consider how fisheries management can contribute to reducing potential negative interactions with submerged prehistoric landscapes or seascapes.
- The draft Nephrops FMPs would benefit from providing more specific detail on how the FMPs will interact with Marine Plans. Noting how the FMPs could positively or negatively interact with this programme would improve the in-combination assessment

1. Introduction

Fisheries Management Plans – context and background

Marine fish stocks are a public resource, a valuable natural asset and important components of marine ecosystems. Managing fishing activity so that we harvest our stocks within sustainable limits will ensure our fishing communities, the seafood supply chain and wider society continue to benefit from our natural assets, now and into the future.

The Joint Fisheries Statement (JFS) as amended, as required by the Fisheries Act 2020, sets out how the UK fisheries authorities (Defra, Scottish Government, Welsh Government and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland) will prepare and publish 43 Fisheries Management Plans (FMPs) by 2028, to manage fishing activity so the harvesting of fish stocks remains within sustainable levels. The Scottish Government is the coordinating authority for 21 FMPs with a delivery date of end of 2026. Of the 21 FMPs, two are for Nephrops stocks.

Sustainable fisheries protect stocks and the wider environment whilst delivering social and economic benefits for present and future generations. Delivering sustainable fisheries will involve balancing the environmental, social and economic aspects of fisheries. Both the short-term and the long-term impacts of decisions to manage fishing activity to protect stocks, the marine environment and on the fishing industry will be considered. Any short-term decisions to favour social or economic benefit should not significantly compromise the long-term health of the stocks and marine environment that underpin these societal and cultural benefits of fishing. These decisions should recognise the cultural importance of fishing through maintaining and, where possible, strengthening coastal communities and livelihoods alongside the requirement for fish stocks to reach and maintain sustainable levels.

UK fisheries policy authorities identified 43 FMPs in the JFS. A timetable for the preparation and publication of the FMPs can be found in Annex A of the JFS and summarised on Gov.UK: see the List of FMPs. Following consultation, an updated version of Annex A of the JFS was published in December 2024, introducing changes to the publication dates and technical details of several FMPs.

All FMPs must contain the information set out in section 6 of the Fisheries Act 2020. In summary, an FMP must specify the relevant authority; stock or stocks, type of fishing and geographical area to which the plan relates; the status of the stocks; policies to maintain or restore stocks at sustainable levels or contribute to this; and the indicators to be used to monitor the effectiveness of the plan.

FMPs must specify whether there is sufficient evidence to assess a stock's Maximum Sustainable Yield (MSY). Where there is insufficient evidence, the FMP must specify policies for maintaining or increasing levels of the stock, and the steps (if any) that the relevant authority or authorities propose to take to obtain the scientific evidence necessary to enable an assessment of a stock's MSY. If no steps are proposed, the FMP will explain the reasons for that, and how the precautionary approach to fisheries management will be applied so fish are harvested within sustainable limits.

Through managing fishing activity within sustainable limits, FMPs will contribute to the fisheries objectives set out in section 1 of the Fisheries Act 2020. The scope of an FMP may be extended to consider wider fisheries management issues related to environmental, social or economic matters. How FMPs consider wider fisheries management issues will be determined at the individual FMP level, appropriate to the stock(s), fishery and geographic area within the remit of the FMP.

The Fisheries Act 2020 requires the FMPs to be reported on every three years, as part of the statutory report on the JFS. FMP are also to be reviewed at least every six years. FMPs will evolve as our understanding and evidence base develops through their implementation. Some FMPs will progressively address a wider range of fisheries management issues as they evolve through an iterative approach over time.

FMPs will contain a range of policies and actions whose detail will vary depending on the evidence available to support their implementation. Some policies and measures may only indicate future action and will develop over time as the plan's evidence progresses through each iteration.

FMPs adopt an ecosystem-based approach to fisheries management to help deliver environmental, social and economic benefits beyond those accrued from just achieving the sustainable harvesting of stocks.

The policies and actions proposed by an FMP will apply to all vessels (UK and non-UK vessels) fishing relevant stocks in the area covered by the plan.

Delivering Sustainable Management of Fisheries and FMPs

Fisheries rely on the ecosystems in which they operate to support healthy stocks. These ecosystems can be compromised by human-induced pressures, including pollution, marine litter and unsustainable exploitation of marine resources. This pressure includes the impact of fish population levels on the processes and functioning of the wider ecosystem, for example the removal of prey species impacts the status of top predators.

Long-term, sustainable, and profitable fisheries require active management to avoid, reduce or mitigate any adverse impacts of fishing activity on ecosystem functioning, ecosystem resilience, or environmental threats such as climate change.

Available fishery data and advice will help determine the targets and catch limits applied to each stock. Where possible, these limits would include the MSY for data-rich stocks where biomass fluctuations can be tracked. Alternative proxies for harvest limits, the precautionary approach, or a combination of both are required for more data-limited stocks, where it is only possible to detect biomass fluctuations.

Not all stocks currently have sufficient evidence to establish MSY, or proxy, reference points and limits. It is not scientifically feasible or economically viable to collect such evidence for some species. In these cases, FMPs must include the steps, or reasons for not taking steps, national fisheries authorities will take to ensure stocks are harvested within sustainable limits.

FMPs will recognise the importance of the sustainable use and conservation of our marine natural assets and the ecosystem services they provide when setting out policies to manage fishing activity. FMPs will make use of the best available scientific advice, be subject to scientific evaluation, and consider the environmental risks associated with the fishing activity. The plans will use a risk-based approach to identifying appropriate and proportionate mitigation for its environmental impact.

FMPs will contribute to achieving Good Environmental Status (GES) under the UK Marine Strategy (UK MS). In addition to improving or maintaining the status of commercial stocks, plans can include actions focused on reducing the risks and/or pressures from fishing activity to other ecosystem components that may prevent achieving GES.

Managing fishing activity within sustainable limits through FMPs will directly contribute to securing the continued availability of seafood products as an important food source within the UK food supply chain.

Scope of the FMP

The draft Nephrops FMPs apply to fisheries for the species *Nephrops norvegicus* in the North Sea (ICES Subarea 4) and West Coast of Scotland (ICES Subarea 6). The

draft Nephrops FMPs will apply to all areas in Scottish waters[1], English waters[2] and Northern Irish waters[3] where fishing activity for the above given species takes place.

Draft Nephrops FMPs' Policies and Actions

The overall vision for the draft Nephrops FMPs is that Nephrops in UK waters of the North Sea and the West Coast of Scotland are managed to ensure long-term sustainability, which includes supporting the economic profitability of dependent fisheries, minimising environmental impact, and maintaining the social and cultural value this important resource contributes to the UK.

The policies and actions set out in the draft Nephrops FMPs suggest how this could be achieved in a way that is consistent with, and supportive of, the wider achievement of the fisheries objectives set out in the Fisheries Act 2020 (the 2020 Act), and the policies contained within the JFS.

To ensure effective management of the fisheries in UK waters, the draft Nephrops FMPs identify policies focussed on domestic and international management priorities. They were drafted to meet the requirements of section 6(3) of the 2020 Act (policy 1) and the broader policies set out in the Joint Fisheries Statement (policies 2, 3, 4, 5 and 6). These policies and actions may change following the public consultation. Any changes will be subject to assessment and reflected in the final Environmental Report. For each policy, the plan sets out:

- a rationale;
- ongoing, short- and longer-term actions; and
- how the actions support delivery of the fisheries objectives.

Table 1 in Annex 1 provides a summary of the policies and actions for the draft Nephrops FMPs.

The six policies for the draft Nephrops FMPs are to:

Policy 1: Harvest Nephrops stock sustainably, with biomass maintained above the level capable of producing MSY.

Policy 2: Understand and minimise the benthic impact of Nephrops fisheries.

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[1] Scottish waters refer to the Scottish inshore and Scottish offshore regions as set out in section 322 of the Marine and Coastal Access Act 2009.

[2] English waters refer to the English inshore and English offshore regions as set out in section 322 of the Marine and Coastal Access Act 2009.

[3] Northern Irish waters refer to the Northern Irish inshore and Northern Irish offshore regions as set out in section 322 of the Marine and Coastal Access Act 2009.

Policy 3: Minimise the impact of Nephrops fishing activities on sensitive marine species by reducing bycatch and entanglement of these species.

Policy 4: Address discarding issues in the Nephrops fisheries and ensure that where possible all catches of Nephrops are accounted for against quotas.

Policy 5: Support fishing businesses to continue to delivery socio-economic benefits to coastal communities and the wider UK economy.

Policy 6: Reduce the impact of Nephrops fishing to climate change and support the fishing industry to adapt to the impacts of climate change.

There is significant overlap in policies between the West Coast of Scotland (ICES Subarea 6) and North Sea (ICES Subarea 4) Nephrops FMPs. This is intentional to ensure that there is harmonisation in management approaches and delivery as far as practicable.

2. Approach to Strategic Environmental Assessment

Screening

SEA Regulations 2004 requires that qualifying public plans, programmes, and strategies undergo screening for SEA during their preparation and prior to adoption. Fisheries Management Plans are plans that fall within the definition in regulation 2.

Marine Directorate, Defra and DAERA consider that Regulation 3(2)(b) of the SEA Regulations 2004 applies to the draft Nephrops FMPs as the plans relate to Scotland, England, and Northern Ireland.

In accordance with the SEA Regulations 2004 the fisheries policy authorities carried out a screening exercise which determined that the proposed policies in the draft Nephrops FMPs may have a likely significant effect (either positive or negative) on a European site or a European offshore marine site and they are not directly connected with or necessary to the management of such sites.

The screening exercise used Defra's Magic Map Application to identify whether the geographical scope of the FMPs overlaps with any European sites or European offshore marine sites. Table 3, page 35 of the updated UK Marine Strategy Part 1 sets out the pressures on the marine environment resulting from anthropogenic activity, which includes fishing. This information was used to identify whether fishing activity for Nephrops has the potential to impact these sites and interest features. For example, use of bottom towed gear has the potential to result in the extraction of, or mortality/injury to, wild species and cause physical disturbance of benthic habitats.

The screening also judged that the proposed polices in the draft Nephrops FMPs have the potential to affect multiple European marine sites and the wider marine environment.

Based on the outcome of the screening, the fisheries policy authorities concluded the FMPs fall within the description of a plan in regulation 5(3) of the SEA Regulations 2004, and so as a result of regulation 5(1) must be subject to SEA in accordance with Part 3 of the SEA Regulations 2004 during its preparation and prior to its adoption (publication).

Completing this SEA does not remove any other statutory obligation on competent authorities to assess the possible environment impact of a policy or measure ahead of its implementation.

Scoping

Marine Directorate, Defra and DAERA carried out a scoping exercise to identify the scope and level of detail of the assessment that will be documented in the Environmental Report. Regulation 12(5) requires that when deciding on the scope and level of detail of the information in the Environmental Report, the responsible authority must seek the views of the Consultation Bodies.

A Scoping Report, identifying the scope and level of detail of the assessment of the draft Nephrops FMPs, was provided to the following Consultation Bodies:

- NatureScot
- Scottish Environment Protection Agency
- Historic Environment Scotland
- Joint Nature Conservation Committee (JNCC)
- Historic England
- Natural England
- Environment Agency
- DAERA

See Appendix F for Consultation Body responses on the Scoping Report and how consideration was given to the points raised in each response.

Regulation 12(3) of the SEA Regulations 2004 requires that the Environmental Report shall include the information referred to in Schedule 2, in so far as it is reasonably required. Table 2 in Annex 1 sets out which section of this report corresponds to the relevant paragraphs of Schedule 2.

Scope of the Assessment

Schedule 2 paragraph 6 to the SEA Regulations 2004 lists the issues that must be considered for an assessment of likely significant effect in relation to the proposed FMPs. Based on its initial evaluation of likely significant effects and taking into account the results of the scoping consultation carried out (see Scoping above and Appendix F), the following conclusions were reached regarding the content of the Environmental Report.

Marine Directorate, Defra and DAERA propose that the Environmental Report will address the effects on the following issues:

- Biodiversity, fauna and flora including the following sub-sections: cetaceans, seals, birds, fish, benthic habitats, commercially exploited fish and shellfish, food webs.

- Geology and sediments (soil) including the following sub-section: benthic habitats.
- Water including the following sub-sections: marine litter and underwater noise.
- Climatic factors including the following sub-sections: vessel emissions, blue carbon.
- Cultural Heritage including the following sub-section: interactions between fishing gear and marine heritage assets.
- Landscape/seascape including the following sub-section: interactions between fishing gear and seabed formations, benthic habitats.

Marine Directorate, Defra and DAERA scoped the following issues out of the assessment, and therefore they will not be covered in the Environmental Report:

- Population (Human)
- Human health
- Air
- Material assets

Fishing activity being managed through the FMPs has the potential to have some level of interaction with all the issues from Schedule 2 paragraph 6. However, the scoping exercise considered and scoped in those environmental issues that would be significantly affected by the draft Nephrops FMPs. Issues such as Population, Human Health, Air and Material Assets were scoped out of this assessment as it was considered that they would not be significantly affected by the draft FMPs. Table 3 in Annex 1 provides the justification behind this decision. Additional rationale behind why sub-sections were considered is set out below:

- To link the issues (from Schedule 2 paragraph 6) that will be addressed by this Environmental Report with the environmental baseline (see section 3), we have attributed a UK Marine Strategy (UK MS) descriptor of Good Environmental Status (GES) to the appropriate corresponding issue(s); see Appendix A for the list of the 11 UK MS descriptors. Achieving GES is about protecting the natural marine environment, preventing its deterioration and restoring it where practical, while allowing sustainable use of marine resources.
- Assessing the status of these descriptors identifies where improvements are required to achieve GES. Knowing the current status will help direct efforts to reduce the impacts of certain human activities. The UK Marine Strategy assessment tool provides further information.
- Under the UK MS, Descriptor 1 – Biodiversity has been split into the following sub-sections; cetaceans, seals, birds, fish, benthic habitats. These sub-sections are all relevant to the biodiversity issue from Schedule 2 paragraph 6 and therefore have been included in this assessment.

- Marine Litter and Underwater Noise have been included as the most relevant sub-sections assessed by the UK MS under the Water issue heading. Fishing activity was considered not to contribute on Eutrophication, Changes in Hydrographical Conditions and Contaminants; therefore, these sub-sections have not been included.
- Climatic factors are not considered under the UK MS assessment process; therefore, no predetermined sub-sections are available. Vessel emissions and blue carbon were identified as the two most relevant issues related to fishing activity that are associated with climate change.
- Cultural heritage is also not considered under the UK MS assessment process; therefore, no predetermined sub-sections are available. The interaction between fishing gear and marine heritage assets was identified as the most relevant impact related to fishing activity that is associated this issue heading.
- Landscapes and seascapes are not considered under the UK MS; therefore, no predetermined sub-sections are available. The interaction between fishing gear and seabed formations was identified as the most relevant impact related to fishing activity that is associated this issue heading. The assessment of benthic habitats will also be relevant when considering the impact of mobile demersal gear fishing on seabed formations. Where specific impacts are known they will also be considered.

Table 3 in Annex 1 shows the results of the scoping exercise on the draft Nephrops FMPs.

Assessment Methodology

This SEA reflects the geographical scope (section 1) and fishing activity covered by the proposed FMPs. It considers the policies and actions of the draft Nephrops FMPs (Table 1 in Annex 1). The assessment reviewed existing evidence on the current state of the marine environment, which included the impact of fishing within the baseline state (section 3).

It assessed the nature and extent of likely effects of the draft Nephrops FMPs (including their policies and actions) on those environmental issues scoped into the assessment and where applicable their associated UK MS descriptors identified in Table 3 (Annex 1). The SEA will assess the measures set out in the FMP to identify and mitigate any likely significant effects of the plan on the environmental issues scoped into the assessment. It is the draft FMPs, as a plan of management that have been assessed, rather than the fishing activities themselves.

As the FMPs are a strategic programme of work, the SEA will consider the potential positive and negative environmental effects of management options in the context of

the UK MS descriptors. This SEA will also consider the in-combination effects and interactions of these FMPs with other plans and projects, including other FMPs.

More detailed fisheries assessments which consider current activity are already in progress or have been completed. These assessments may be used to inform the FMPs' actions as they are delivered, and include:

- The Marine Directorate's ongoing offshore MPA fisheries assessments programme.
- Defra's Revised Approach to fisheries management programme (inside twelve nautical miles).
- The Marine Management Organisation's (MMO) ongoing Fishery Assessment programme (outside twelve nautical miles) in England.
- Assessments required to prepare the Marine Protected Areas (Prohibited Methods of Fishing) Regulations (Northern Ireland) 2022 which came into operation on 1 January 2023. Further fisheries measures are being drafted for 3 offshore MPAs and will be consulted on later this year.
- The annual Habitats Regulation Assessment (HRA) under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (CHSR) assessing demersal fishing.
- The wider marine environment (UK MS) assessments

Future delivery of the policies and actions specified in the FMPs may give rise to management changes such as new legislation to regulate Nephrops fishing. Such changes may have the potential to impact MPAs and their features and will be subject to more detailed Habitats Regulations Assessment before being implemented.

Nevertheless, this Environmental Report acknowledges the likely significant effects associated with fishing activity being managed through the draft Nephrops FMPs and sets out in broad terms how the proposed FMPs will seek to avoid, reduce, or mitigate significant negative effects.

During the development of the draft Nephrops FMPs, advice from Statutory Nature Conservation Bodies (SNCBs) (JNCC, Natural England, and NatureScot) on the impacts of fishing activity in relation to MPAs, PMFs (Scottish waters only), and UK MS descriptors was considered. This Environmental Report reviews how this advice has been reflected in the proposed FMPs, and how the proposed policies and actions could change the baseline.

It is important to note the draft Nephrops FMPs contain a range of policies and actions that vary in their stage of development, depending upon the evidence available to support their implementation. The level of detail possible for our environmental assessment depends upon the stage of development of the policies and actions of the FMPs at the present time.

This assessment acknowledges the draft Nephrops FMPs set out policies to develop the evidence base for the Nephrops fishery. Our assessment used the best available evidence at the present time to reach a judgement on the environmental effects of the draft Nephrops FMPs.

The detail of the environmental assessment is covered in section 5.

3. Environmental Baseline

Summary of the Current State of the UK Marine Environment

Section 3 provides a summary of the current state of the UK marine environment for each of the environmental issues screened into this SEA, and where applicable their associated UK MS descriptors (Table 3; Annex 1). The SEA has been conducted against the environmental baseline set out in these sources of existing information. We acknowledge that there are some uncertainties and evidence gaps in the environmental baseline. However, we consider that this environmental baseline provides a comprehensive level of information to undertake an effective assessment and provide informed evidence-based recommendations. Where required, further detailed assessments using additional evidence will be completed ahead of the implementation of FMP measures.

It is likely that without the proposed FMPs, those issues which are contributing to the current state of the marine environment will likely continue to have an influence. The proposed FMPs seek to promote the management of the fisheries in a more coherent and coordinated manner that considers wider environmental issues. The FMPs therefore have the potential to improve the current state of the environment set out below, both where no improvement has been observed, and where positive trends have been identified. Section 6 and 7 considers how the implementation of the FMPs' proposed policies and actions could change the baseline.

Biodiversity, Flora, Fauna and Geodiversity[4] (Geology and sediments)[5]

The primary source of information on the current state of the UK marine environment came from the UK MS descriptor status assessments, The updated UK Marine

4 Geodiversity is defined as the natural range of rocks, minerals, fossils, landforms, topography, sediments and soils together with the natural processes which form and alter them.

5 Geodiversity (Geology and sediments) issue has been combined with the Biodiversity, Flora, and Fauna section as benthic habitats is relevant to these issues.

Strategy Part 1, published in 2019. The impact of fishing has been considered as part of the assessment on the UK MS descriptors, therefore information on the impact of fishing activity on the marine environment has been included in the sections below as part of the baseline. For further information on the baseline related to UK MS descriptors see Appendix B.

D1 and D4 – Cetaceans

Cetaceans (whales and dolphins) are an important marine ecosystem component that contributes to overall levels of biodiversity (D1). In addition, as top predators, the abundance of cetaceans can also provide some understanding on how the food web is functioning (D4).

The current status of cetaceans for both the North Sea and Celtic Sea is mixed. While there are some aspects that are in line with the achievement of GES, much of the picture is unclear. The impact of various net fisheries is leading to bycatch that, in places, might be impacting long term population viability of harbour porpoise.

Other than for a limited number of coastal bottlenose dolphin populations, it is unclear whether the abundance and range of most cetacean species can be considered in line with GES. Fisheries and the removal of prey species is one of several activities/pressures that have the potential to result in changes to cetacean abundance and distribution.

D1 and D4 – Seals

Seals are an important marine ecosystem component that contributes to overall levels of biodiversity (D1). In addition, as top predators, seal productivity can also provide some understanding and insight as to how the food web is functioning (D4).

The grey seal population and productivity continue to increase, and targets are being met. Bycatch (largely in tangle/ trammel nets) is occurring but not at levels that threaten population viability. For harbour seals, the status is not in line with GES. Population declines have occurred in some areas, but the cause is unknown. It is not thought to be linked to bycatch as occurrences are rare and there is no indication that it is linked to other pressures associated with fishing.

D1 and D4 – Birds

Seabirds are well monitored species that are an important marine ecosystem component that contributes to overall biodiversity (D1). In addition, as top predators, the abundance of birds can also provide some understanding and insight as to how the wider food web is functioning (D4).

Seabird populations are currently below the level that is considered to meet GES and the situation is deteriorating. Some declines in breeding success have been

linked to prey availability caused by climate change and/or past and present fisheries. Invasive predatory mammals are also known to impact breeding success on island colonies. The impact of bycatch will be included in future assessments and current evidence suggests that some longline and static net fisheries could be having possible population level impacts on certain species.

D1 and D4 – Fish and D3 – Commercially exploited fish and shellfish

Fish are an important ecosystem component that contributes to overall levels of biodiversity (D1). In addition, fish of different species have a significant role in marine food webs (D4), acting as both predators and prey. Some fish species are commercially exploited, and only a proportion of these have managed quotas. Over exploitation can lead to a decline in stocks (D3) which can reduce both future commercial opportunities and have wider ecological impacts.

The current status of fish communities in the UK is primarily shaped by historical over-exploitation by fisheries, while ongoing over-exploitation continues to be a notable contributing factor. Improved fisheries management since the 1990s has resulted in more stocks being fished at or below MSY levels, so although the target is not yet met there is a positive trend. Improved fisheries management has also resulted in some positive trends in fish communities beyond the targeted stocks.

D1 & D6 – Benthic Habitats

Benthic habitats are an important ecosystem component that contributes to overall levels of biodiversity (D1). It is also important to ensure the structure and function of benthic ecosystems are adequately safeguarded by considering seafloor integrity (D6).

There is widespread disturbance of seabed habitats by demersal towed gear and other marine activities, and this is preventing the achievement of GES. Other impacts from non-fisheries activities may also be having an influence, but to a lesser degree.

D4 – Food webs

Food webs (D4) are the network of predator-prey relationships that occur in the marine environment, from phytoplankton to top predators such as birds or seals. Fish communities are a key component of food webs. Knowledge of food webs allows understanding of how changes at one trophic level can impact those above and below it.

Historic fishing activity which has contributed to the current environmental baseline has had a large impact on fish community structure which is a key component of marine food webs. With improved fisheries management focusing on stocks, some recovery is occurring. However, the management of fish stocks solely to safeguard

future fisheries will not necessarily lead to all food web targets being met. Changes in plankton are likely driven by prevailing environmental conditions, but other impacts cannot be ruled out.

Water Quality

D10 – Marine Litter

Marine litter, including from fishing activities, is a significant pressure on marine ecosystems and water quality. The UK has not yet achieved its aim of GES for litter. Beach litter levels in the Celtic Seas have remained largely stable since the assessment in 2012, whilst beach litter levels in the Greater North Sea have slightly increased. Waste fishing material is a component of beach litter. Both floating litter and seafloor litter remain an issue, with plastic the predominant material. Achieving GES for marine litter requires improved waste management practices, the reduction of lost or discarded fishing gear and increased awareness and monitoring of the issue.

D11 – Underwater noise

Underwater noise from fisheries, while not the primary source, can still contribute to the overall noise pollution in the marine environment. Fishing vessels will contribute to underwater noise through sonar, engine noise, gear interacting with seabed and deploying and retrieving gear.

The achievement of GES for underwater noise in the UK is uncertain. Research and monitoring programmes established since 2012 have provided an improved understanding of the impacts of sound on marine ecosystems. However, achieving GES for underwater noise will require better understanding and monitoring of the issue, as well as the development and implementation of strategies to manage noise pollution from various sources.

Climatic factors

Climate change impacts are not part of the UK MS, therefore evidence from other sources was used to provide baseline information in relation to this issue. Statistics from the Department for Energy Security and Net Zero (DESNZ) (formally known as Department for Business, Energy & Industrial Strategy (BEIS)), Department for Transport (DFT) and Engelhard et al (2022) report on Carbon emissions in UK fisheries, were used to identify the contribution UK fishing fleets have to the total carbon emissions at sea each year.

Vessel Emissions

For 2023[6], estimated fuel use emissions from fishing within UK's territorial emissions (491 kt CO2e) would have represented 0.12% of the UK's total territorial emissions (424 Mt CO2e), or 0.44% of the UK's domestic transport emissions (112 Mt CO2e). To put this into context, estimated emissions from fishing would have been equivalent to 1.1% of total agricultural emissions in 2023 (46.6 Mt CO2e).

Estimated fuel use emissions from fishing within Scotland's emissions (467 kt CO2e) would have represented 0.85% of the UK's total territorial emissions (55 Mt CO2e), or 2.66% of the Scotland's domestic transport emissions (17.5 Mt CO2e) in 2023. Estimated emissions from fishing would have been equivalent to 4.6% of total agricultural emissions in Scotland in 2023 (10 Mt CO2e).

Recent analysis has shown that the total UK fishing fleet segment using demersal trawls and seines, which comprises of 402 vessels, produced approximately 30% (249kt CO_2e) of the total carbon emissions at sea each year across the UK's fishing fleets. Drift and fixed net fisheries (237 vessels) produced approximately <2% (13kt CO_2e), and beam trawls (73 vessels) produced approximately 13% (107kt CO_2e). Whilst passive gears are generally less emission-intensive than mobile gears, quantification of carbon emissions across the fishing fleet supply chain (for example, preharvest through to postharvest) is required to truly understand the fisheries carbon footprint.

Blue Carbon

Photoautotrophic marine ecosystems, such as seagrasses and saltmarshes, are able to capture and store carbon and are known as blue carbon ecosystems. Currently there is no comprehensive assessment of the impact of fishing using mobile demersal gear on organic carbon stocks. A new cross-Administration UK Blue Carbon Evidence Partnership has been formed to improve the evidence base on blue carbon habitats in UK waters, advancing our commitment to protecting and restoring blue carbon habitats as a nature-based solution. Through the partnership, announced at Conference of the Parties 26 (COP26), UK Administrations will work together to address key research questions related to blue carbon.

Climate change impacts on Nephrops' stocks and fisheries

Climate change and warming oceans are changing the distribution and fish assemblages of commercially important species[7]. While Nephrops populations in the

[6] Weblink to the UK Greenhouse Gas Inventory 1990-2023

[7] Perry, A.L., Low, P.J., Ellis, J.R. & Reynolds, J.D., 2005. Climate change and distribution shifts in marine fishes. Science, 308, pp.1912-1915, https://www.science.org/doi/10.1126/science.1111322

UK are considered eurythermal and unlikely to experience major temperature driven changes [8], ocean acidification associated with rising sea temperatures has been shown to affect the physiology of Nephrops, causing a stress response[9]. Nephrops have strong habitat preferences which is likely to act as a barrier, limiting any northward shift in response to ocean warming[10]. Reductions in suitable muddy burrow habitats could pose a significant long-term risk to populations, even if the species remains physiologically resilient. Climate change is considered as one of the biggest uncertainties for the Nephrops fishery due to increasing temperatures and ocean acidification in the North Sea and West of Scotland waters.

Cultural Heritage

The definition of the 'marine and aquatic environment' in the Fisheries Act 2020 (section 52) includes features of 'archaeological or historic interest' in marine or coastal areas. These features should be regarded as part of the wider marine environment.

Cultural heritage impacts are not part of the UK MS, therefore evidence from other sources were used to provide baseline information in relation to this issue.

The Fishing and the Historic Environment report produced by Historic England was used as the primary source of information on the interactions between commercial fishing and the marine historic environment.

The report identifies several potential and evidenced interactions between commercial fishing and marine heritage assets. Both positive and negative interactions can arise when archaeological material present on the foreshore and seabed is encountered during commercial fishing. Of relevance to the Nephrops fishery, the report finds that demersal trawls are widely used and therefore most likely to interact with marine heritage assets. These interactions may cause significant damage, but some archaeological resources are only discovered through fishing interactions. The impact of Nephrops fishing on marine historic features is therefore likely to be moderate because of both positive and negative effects.

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[8] Serpetti, N., Baudron, A.R., Burrows, N.T., Payne, B.L., Helaouet, P., Fernandes, P.G. and Heymans, J.J., 2017. Impact of ocean warming on sustainable fisheries management informs the Ecosystem Approach to Fisheries. Scientific Reports, 7(1), p.134-138.

[9] Hernroth, B., Sköld, H.N., Wiklander, K., Jutfelt, F. and Baden, S., 2012. Simulated climate change causes immune suppression and protein damage in the crustacean Nephrops norvegicus. Fish & Shellfish Immunology, 33(5), pp.1095-1101.

[10] Letschert, J., Stollberg, N., Rambo, H., Kempf, A., Berkenhagen, J. and Stelzenmüller, V., 2021. The uncertain future of the Norway lobster fisheries in the North Sea calls for new management strategies. ICES Journal of Marine Science, 78(10), pp.3639-3649.

However, a comprehensive assessment of the extent of interactions and their impacts is currently not available for Scottish, English and Northern Irish waters.

In Scotland, Historic Marine Protected Areas (HMPAs) are marine historic assets of national importance which survive in Scottish inshore waters (out to 12 nautical miles) that are protected by law. Further information and datasets on Scotland's Marine historic environment and cultural heritage can be found at Historic environment and cultural heritage | Scotland's Marine Assessment 2020.

The historic environment map viewer for Northern Ireland provides an overview of historic sites and landscapes.

Landscape and Seascape

There is no legal definition for seascape in the UK, but the European Landscape Convention (ELC) defines landscape as "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" and includes land, inland water and marine areas. In the context of the Marine Policy Statement (MPS) a seascape has been set out to mean landscapes with views of the coast or seas, and coasts and the adjacent marine environment, (including the underwater environment), with cultural, historical and archaeological links with each other.

The 'value' of many of the UK's seascapes is reflected in the range of designations which relate in whole or in part to the scenic character of a particular area, (e.g. Area of Outstanding Beauty (AONB), Heritage Coast, National Scenic Area), however the ELC and MPS (and most recently seascape assessments covering the English Marine Plan regions) define landscape and how they are to be considered in more general terms, acknowledging the value of all landscapes whether or not they are subject to designation[11].

The seascape constitutes of a suite of different characteristics that include natural factors, cultural and social factors and cultural associations. Under these character headings exists a number of subheadings that include Geology, Seabed, Tides and Coastal processes (natural factors), Surface water features, Sunken and Buried Features and Use of Coast and Sea (cultural and social factors) Media, People and Writers (cultural associations)[12].

Fishing and commercial fishing vessels are considered as seascape features and activities. Fishing ports and related fishing infrastructure are considered as

11 UK Offshore Energy Strategic Environmental Assessment - scoping (publishing.service.gov.uk)

12 Figure 1, Page 9. seascape-character-assessment.pdf (publishing.service.gov.uk)

landscape features[13]. Fishing therefore is an important component of the overall landscape and seascape character.

Fishing activity using demersal towed gear has been identified as causing damage to submerged peaty deposits known as moorlog[14]. However, a comprehensive assessment of the extent of interactions and their impacts is currently not available. Conserving moorlog as potential blue carbon habitats might contribute to climate change mitigation and adaptation.

Existing Environmental Effects of Nephrops Fishing

The draft Nephrops FMPs focus on achieving the sustainable harvesting of stocks. This focus seeks to reduce the environmental risks linked to over-fishing these stocks, thereby giving positive benefit to environmental status.

Nevertheless, fishing within sustainable limits for the target stocks (MSY) may reduce but will not eliminate some of the negative impacts of that fishing activity on the wider marine environment. These impacts are identified in the sections below.

As described in Section 2, this Environmental Report focuses on assessing how the policies and actions in the draft Nephrops FMPs are likely to give rise to both significant positive and negative environmental effects. More detailed fisheries assessments which consider current activity are already in progress or have been completed. These assessments may be used to inform the FMPs' actions as they are delivered, and include:

- The Marine Directorate's ongoing offshore MPA fisheries assessments programme.
- Defra's Revised Approach to fisheries management programme (inside twelve nautical miles).
- The Marine Management Organisation's (MMO) ongoing Fishery Assessment programme (outside twelve nautical miles) in England.
- Assessments required to prepare the Marine Protected Areas (Prohibited Methods of Fishing) Regulations (Northern Ireland) 2022 which came into operation on 1 January 2023. Further fisheries measures are being drafted for 3 offshore MPAs and will be consulted on later this year.

13 Figure 2, Page 10. seascape-character-assessment.pdf (publishing.service.gov.uk)

14 Ward, Ingrid, and Piers Larcombe. "Determining the preservation rating of submerged archaeology in the post-glacial southern North Sea: a first-order geomorphological approach." Environmental Archaeology 13.1 (2008): 59-83.

- The annual Habitats Regulation Assessment (HRA) under Regulation 63 of the Conservation of Habitats and Species Regulations 2017(CHSR) assessing demersal fishing.
- The wider marine environment (UK MS) assessments

Nevertheless, this ER acknowledges the likely significant effects associated with fishing activity being managed through the draft Nephrops FMPs and sets out in broad terms how the FMPs will seek to avoid, reduce, or at least mitigate significant negative effects.

Environmental Effects Associated with MPAs

Advice provided to fisheries policy authorities by Statutory Nature conservation Bodies (SNCBs) gives more detail on the risks associated with fishing for Nephrops in the North Sea (ICES Subarea 4) and West Coast of Scotland (ICES Subarea 6) in relation to the designated features of MPAs, UK Marine Strategy Descriptors (UK MS), Priority Marine Features (PMFs) for Scotland. Joint advice from JNCC and NatureScot, commissioned by the Scottish Government's Marine Directorate and covering Scottish waters, was received for both draft Nephrops FMPs in Scottish waters as part of a single assessment. Additional joint advice from Natural England and JNCC, commissioned by Defra and covering English waters, was received for the draft North Sea Nephrops FMP.

Inside the boundaries of Scottish MPAs, the Marine Directorate assess human activities that could interact with the designated features of MPAs, seek the advice of SNCBs and introduce management where required. Stakeholders have worked closely with regulators to help develop measures to mitigate impacts within inshore and offshore MPAs. Therefore, appropriate management is either in place already (for offshore MPAs) or will be introduced soon to ensure any fishing within MPAs is compatible with the MPA's conservation objectives. Current management measures already in place related to the use of bottom towed gear is detailed at MPA monitoring strategy - Marine environment.

In England the assessments of the impact of fishing activities inside MPAs are undertaken by the IFCAs within 6nm and the MMO outside 6nm. Stakeholders have worked/will work closely with regulators to help develop measures to mitigate impacts within inshore and offshore MPAs. Appropriate management is or will be in place to ensure any fishing within MPAs is compatible with the MPA's conservation objectives. Current management measures already in place are detailed on the MMO and Association of IFCAs websites.

In Northern Ireland, current fisheries management measures exist for nine inshore MPAs through The Marine Protected Areas (Prohibited Methods of Fishing) Regulations (Northern Ireland) 2022. Further fisheries measures are being drafted

for three offshore MPAs (South Rigg MCZ, Queenie Corner MCZ and Pisces Reef SAC) and will be consulted on later this year.

Whilst existing MPA site management considers fishing activity that occurs within the site's boundaries, there remains the potential for fishing activity outside MPAs to have impacts on the features protected within the MPA. These impacts can occur when either the pressure exerted by the fishery impacts protected features beyond the spatial footprint of a particular fishing activity, (such as noise), or when the feature of an MPA is mobile and travels outside the site.

Environmental effects associated with designated features of MPAs in Scottish waters

The key risks of fisheries contained within the draft Nephrops FMPs relating to the designated features of MPAs in Scottish and English Waters are summarised below.

Fisheries contained in the draft Nephrops FMPs have the potential to impact the designated features of MPAs in three primary ways;

(i) through the **bycatch and entanglement** of species that are designated features of MPAs
(ii) the direct (targeted) and indirect (bycatch) **removal of prey species** on which designated species depend, and
(iii) **physical impacts to seafloor** resulting in alterations to habitat feature or supporting habitat condition.

While the risk to the conservation status of MPA designated mobile species through bycatch from Nephrops trawls is generally considered low, certain fish species, such as the flapper skate, may be at greater risk owing to their life histories.

Several protected marine mammal and fish species have been identified as a bycatch risk in creel fisheries, including basking shark, minke whale, and to a lesser extent, Risso's dolphin. Humpback whales, though not an MPA feature, are also at risk of entanglement. In the case of minke whale, there is considerable evidence of entanglement risk in creel ropes. However, it is unclear if the scale of this impact is likely to impede the achievement of MPA conservation objectives for these species and to what extent Nephrops creeling contributes to this risk.

Owing to significant gaps in the available evidence, **the risk rating for bycatch in Nephrops fisheries is considered moderate.** Additional evidence collected to fill these gaps could enable a reassessment of this risk.

Although they contribute to the diet of several MPA designated species, Nephrops are not considered a key prey species, and bycatch of key prey species is not thought to be at a level of concern. Bycatch, consisting primarily of gadoids such as juvenile cod and whiting, has historically been high, but mitigation measures adopted

by the fishery have reduced this[15]. Although several relevant marine mammal species utilise these fish as part of their diet, these species are considered generalist feeders. This feeding strategy has weak association with the availability of particular prey species; generalist feeders tend to feed on whichever species happen to be abundant[16]. **Therefore, the risk of removal of important prey species that designated species depend on is considered low.** If routine monitoring (or improved evidence via REM) indicates that bycatch levels of gadoids or other key forage fish species increase significantly then this risk will need to be reassessed.

Risks relating to the designated features of MPAs in English waters

- While the risk to the conservation status of designated mobile species through bycatch from nephrops trawls is generally considered low, there are still significant gaps in the available evidence. As a result, **the FMP risk rating has been upgraded to moderate**, taking a precautionary approach into account. Gathering additional evidence has the potential to downgrade this risk in the future.

Environmental effects associated with UK MS Descriptors (Scottish waters)

Advice provided to fisheries policy authorities by SNCBs gives more detail on the key risks to UK MS descriptors arising from Nephrops fishing and their likely impact on achieving Good Environmental Status (GES) (Appendix A). The following potential issues and their associated risk level[17] have been identified for Nephrops fishing on UK MS descriptors:

There is a moderate risk to achieving GES for the biological diversity of cetaceans, seals and birds, due to impacts from Nephrops fishing activities. Although the risks caused by Nephrops fishing in terms of bycatch and reduced prey

[15] Ungfors, A., Bell, E., Johnson, M., Cowing, D., Dobson, N., Bublitz, R. & Sandell, J. (2013). Nephrops fisheries in European waters. Advances in Marine Biology, 64, 247-314. https://doi.org/10.1016/B978-0-12-410466-2.00007-8.

[16] Dickey-Collas, M., Nash, R.D.M., Brunel, T., van Damme, C.J.G., Marshall, C.T., Payne, M.R., Corten, A., Geffen, A.J., Peck, M.A., Hatfield, E.M.C., Hintzen, N.T., Enberg, K., Kell, L.T. & Simmonds, E.J. (2014). Ecosystem-based management objectives for the North Sea: Riding the forage fish rollercoaster. ICES Journal of Marine Science, 71(1), 128-142. https://doi.org/10.1093/icesjms/fst075

[17] **Draft GES rapid risk assessment categories:** Low risk = some risk does exist but impact may not be of a scale to impact upon GES descriptors. Moderate risk = clear link between fishing activity and GES indicator but other activities also significantly contribute to current indicator status. Or where high-risk activity only makes up a small proportion of fishery. High risk = recognised link between fishing activity within FMP and failure of GES indicator. 'Risk unclear' used where situation is complex, and more work is required to understand true nature of risk.

are likely to be low for these species, there are still significant gaps in the available evidence. As a result, the FMP risk rating has been upgraded to moderate.

There is a high risk to seafloor integrity due to benthic disturbance caused by mobile demersal fishing activities. However, this indicator looks at impacts across the >12m UK mobile demersal fishing fleet. It does not include impacts from the Nephrops creel fishery – while these are likely to be lower risk, these gears may impact seafloor integrity if operating at a high intensity. Further work is needed to disentangle and quantify impacts from individual fisheries. Strategic work at a broad geographic scale is required to understand the relative impact from this fishery and identify opportunities to reduce/remove risk and understand trade-offs across the UK fishing fleet.

There is a moderate risk to marine litter. More robust estimates of abandoned, lost, or discarded fishing gear in the fishery are required.

Risks relating to UK Marine Strategy descriptors (English waters)

Previous work by Natural England investigating the impact of the pressures associated with the fishing industry across all 11 descriptors of Good Environmental Status (GES)[18] in the UK marine environment has highlighted 6 key issues[19]. Of these issues, only a subset will be relevant to any particular fishery / sector.

The main interactions between the draft Nephrops FMPs and UK MS Descriptors that have been identified are summarised below. The high-level assessments flag the potential risk based on the predominant gear types used across a range of fisheries.

- There is a high risk to seafloor integrity (D6 & D1) due to benthic disturbance caused by demersal trawls and the contribution to current failure to meet targets. Strategic work at a broad geographic scale is required to identify opportunities to mitigate risk and understand trade-offs.
- While the risk from Nephrops trawls to achieving GES for marine mammals and seabirds (D1 & D4) is generally considered low, there are still significant gaps in the available evidence. As a result, the FMP risk rating has been

[18] The 11 descriptors include: biodiversity; non-indigenous species; commercial fish; food webs; eutrophication; sea-floor integrity; hydrographical conditions; contaminants; contaminants in seafood; marine litter and underwater noise. For more information, see Introduction to UK Marine Strategy (cefas.co.uk)

[19] Key issues are: impact of the removal of targeted species on the status of fish stocks; benthic disturbance related pressures associated with towed demersal gear; impact of the removal of targeted fish stocks on other species / wider environment; impact of bycatch (bird / mammal / fish) on biodiversity, food webs or stocks; fishing related sources contributing to marine litter; noise from pingers / acoustic deterrents contributing to marine noise.

upgraded to moderate, taking a precautionary approach into account. Gathering additional evidence has the potential to downgrade this risk in the future.
- There is a moderate risk to marine litter (D10) due to abandoned, lost or discarded fishing gear.

Environmental effects associated with Scottish Priority Marine Features (Scottish waters only)

Priority Marine Features (PMFs) in Scotland represent a selection of habitats and species identified for their conservation importance. These eighty-one features are acknowledged for their national significance and the role they play in supporting marine biodiversity. The purpose behind identifying PMFs is to focus conservation efforts, guide management actions, and ensure the protection and enhancement of marine biodiversity within Scottish waters. Scotland National Marine Plan policy GEN 9 states that development and use of the marine environment must not result in significant impact on the national status of PMFs.

The primary impact pathways for PMFs are the same as those listed above for MPA features: (i) bycatch and entanglement, (ii) prey reduction, and (iii) physical impacts to the seafloor.

In addition to the bycatch risks outlined for MPA designated species above, creeling may present a risk of entanglement for other large cetaceans such as fin whales, sperm whales, and humpback whales (although this latter species is not listed as a PMF). While the risks of bycatch of most PMF fish species in Nephrops trawl fisheries may be mitigated through their own stock management processes, significant gaps in the available evidence remain, and there may be instances where localised depletion can have a wider impact on PMF fish stocks. **The risk rating for bycatch of PMFs in Nephrops fisheries is therefore considered to be moderate.** Additional evidence collected to fill these gaps could enable us to revisit this risk assessment.

Although they contribute to the diet of several PMF listed species, Nephrops are not considered a key prey species, and bycatch of key prey species is not thought to be at a level of concern for PMFs. Historically high bycatch rates have been reduced through mitigation efforts in recent years[15] and PMF species that utilise these fish as part of their diet are considered generalist feeders and not significantly affected by the availability of particular prey species[16]. **Therefore, the risk of removal of important prey species that PMFs depend on is considered low.** If routine monitoring (or improved evidence via REM) indicates that bycatch levels of gadoids or other key forage fish species increase significantly then this risk will need to be reassessed.

Nephrops fishing, in particular trawling, has the capacity to impact the benthic habitats over which they occur, primarily through physical penetration, abrasion, and disturbance of the seabed. Nephrops fishing activities are highly habitat specific as the target species only occurs within burrowed mud. As such, physical impacts from Nephrops fishing are only considered for mud habitats.

As the burrowed mud PMF is also represented across the Scottish MPA network, this habitat will be offered some protection through the MPA management process. As some of these impacts will be mitigated, **the risk rating for physical impacts to benthic and habitat PMFs is considered moderate**. This rating is primarily driven by the trawl fishery, but creeling also contributes to this risk, with the relative impact linked to the intensity of creel fishing in an area. Recommendations for further work with respect to physical impacts of the Nephrops fisheries are highlighted above under the assessment of risk for GES descriptor D6 “seafloor integrity”.

Climatic Factors

Vessels fishing for Nephrops contribute to the total carbon emissions at sea each year by the UK’s fishing fleets. While the estimated emissions by the UK fishing fleet represents a small proportion of overall emissions in the UK, decarbonising the fleet and moving towards net zero will help reduce the contribution of fisheries activities to climate change.

No conclusive evidence is currently available on the impact of fishing activity for Nephrops on organic carbon stocks. However, the impact of towed demersal gear on blue carbon is of concern. Improved recording of the intensity of fishing using this gear on the seabed more broadly will help any future assessment of any effects on organic carbon stocks when the evidence base on blue carbon habitats in UK waters improves.

Cultural Heritage

Fishing activity can have both positive and negative effects on marine heritage assets. The positive effects relate to the discovery of marine heritage assets during fishing activity, with both past and future discoveries of findspots often reliant on fishing gear interactions. Negative effects can be caused by physical disturbance to cultural heritage assets on and within the seabed. Specific effects include: impeded access and interpretation of assets caused by fishing gear (e.g. nets, lines and ropes) collecting around physical structures; direct damage of assets by gear, usually towed gear, causing irreparable alteration to physical structures; burial of archaeological material by sediment during fishing practices; removal of the archaeological material from the seabed during fishing practices; and transferal of archaeological material from its original place on the seabed during fishing practices.

Avoiding negative interactions with marine heritage assets will help to conserve them for their enjoyment by future generations.

Benthic towed gear has been identified to cause damage to marine heritage assets. Historic England have evidence of two recent examples of damage from fishing activity to designated heritage assets, the Klein Hollandia (aka Eastbourne Wreck, LEN 1464317) and the Rooswijk (LEN 1000085).

The marine historic environment also plays an important role in providing ecosystem services in relation to nature conservation, sea angling, recreational diving and commercial fishing. Marine heritage assets, particularly ship and plane wrecks, can provide habitats for marine life, with fish often aggregating around them for refuge or to feed. Avoiding negative interactions with marine heritage assets that act as habitats can positively contribute to the conservation of the wider marine environment.

Landscape and Seascape

Fishing activity above the surface is considered a feature of the marine seascape, therefore the presence of trawling vessels is not considered to have a negative effect on this aspect of the seascape character.

Fishing activity using demersal towed gear has the potential to cause physical disturbance of the seabed and could impact deposits associated with prehistoric landscapes that are now submerged by sea-level rise. These former landscapes, referred to as moorlog, are often represented by peaty and other fine-grained deposits. Examples of these prehistoric landscapes and deposits can be found in the Dogger Bank region[20].

The impact of demersal towed gear on the seabed is also considered as part of the GES Descriptor D6 – Seabed Integrity.

4. Relevant Plans, Programmes and Environmental Protection Objectives

The draft Nephrops FMPs have broad application since they cover an activity that occurs across Scottish, English and Northern Irish waters. Consequently, the plans will interact with a range of established national legislation, plans and programmes, and international agreements and declarations signed by the UK.

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20 Coles, Bryony J. "Doggerland: a speculative survey." Proceedings of the Prehistoric Society. Vol. 64. Cambridge University Press, 1998.

The draft Nephrops FMPs apply to Scottish, English and Northern Irish waters, therefore when preparing FMPs the relevant fisheries policy authorities are required to have regard to this existing regulatory structure.

The sections below set out those plans, programmes and environmental protection objectives that the fisheries policy authorities consider relevant to the implementation of the draft Nephrops FMPs. The draft Nephrops FMPs could interact with other relevant plans and projects. Any cumulative impacts will also be considered in any future assessments ahead of implementing measures.

International

The draft Nephrops FMPs have had regard to the commitments the UK has made under the following international agreements and declarations during its preparation:

- Trade and Cooperation Agreement (TCA) between the EU and the UK
- UN Fish Stocks Agreement 1995
- UN Convention on the Law of the Sea (UNCLOS)
- UN Sustainable Development Goals
- UN Convention on Biological Diversity (CBD)
- Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- RAMSAR Convention
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention for the Protection of the Marine Environment of the Northeast Atlantic (OSPAR)
    - The OSPAR Quality Status Report is a key resource when looking at the environmental impact of fisheries in the Northeast Atlantic.
- Regional Fisheries Management Organisations (RFMOs): The UK is an independent Contracting Party to NEAFC – Northeast Atlantic Fisheries Commission relevant to stocks being managed through the FMP:
- Convention for the Protection of the Archaeological Heritage of Europe
- Council of Europe Landscape Convention

Domestic

The draft Nephrops FMPs have had regard to the following national legislation, plans and programmes during its preparation:

Marine Protected Areas

FMPs are required by law to consider the implications of the fishing activities they manage for designated Marine Protected Areas (MPAs). In Scotland, Special Areas

of Conservation (SACs) and Special Protection Areas (SPAs) are protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Scotland also designates Nature Conservation Marine Protected Areas (NCMPAs) in inshore waters under the Marine (Scotland) Act 2010, and for offshore Scottish waters under the Marine and Coastal Access Act 2009. In England, SACs and SPAs are protected under the Conservation of Habitats and Species Regulations 2017, and Marine Conservation Zones (MCZs) are designated under the Marine and Coastal Access Act 2009. Northern Ireland protects SACs and SPAs through the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 and designates MCZs under the Marine Act (Northern Ireland) 2013. Offshore SACs and SPAs (beyond 12 nautical miles) are designated and protected under the Conservation of Offshore Marine Habitats and Species Regulations 2017. Collectively, these frameworks require FMPs to assess potential impacts on MPA conservation objectives and ensure that proposed management measures do not adversely affect the integrity of protected sites.

The MPA network covers 38% of UK waters. Relevant or public authorities, (including fisheries regulators), assess human activities that could interact with the designated features of MPAs, seek the advice of the Statutory Nature Conservation Bodies (SNCBs) and introduce management where required. The draft Nephrops FMPs will support the management of fishing activity in MPAs. When implementing any actions arising from the FMPs that overlap with European Marine Sites and MCZs or their designated features, an assessment will be undertaken prior to implementation, to assess the likely effects of the action on the conservation objectives of the site.

Marine regulators also have responsibilities relating to Sites of Special Scientific Interest (SSSIs) under the Wildlife & Countryside Act 1981 and Natural Environment & Rural Communities Act 2006. Ramsar sites, (wetlands of international importance), designated under the Ramsar Convention, are often underpinned by SSSIs but are afforded the same protection at a policy level as Special Areas of Conservation and Special Protection Areas. Appendix C lists the different types of MPA and relevant designations in the UK.

Highly Protected Marine Areas - England

Highly Protected Marine Areas (HPMAs) are areas of the sea (including the shoreline) that allow the protection and full recovery of marine ecosystems. By setting aside some areas of sea with high levels of protection, HPMAs will allow nature to fully recover to a more natural state, allowing the ecosystem to thrive.

HPMAs will protect all species and habitats and associated ecosystem processes within the site boundary, including the seabed and water column. For large HPMAs, resultant displacement may lead to the intensification of fisheries pressure that will

require assessing and potentially addressing if unduly exacerbating existing pressures.

The first three Highly Protected Marine Areas (HPMAs) designations in English waters came into force on 5 July 2023.

The three sites are:

- Allonby Bay
- North East of Farnes Deep
- Dolphin Head

Any actions arising from the FMPs that overlap with HPMAs will comply with the conservation objectives for designated features.

Conservation (Natural Habitats, &c.) Regulations 1994, Conservation of Habitats and Species Regulations 2017 and Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

The Conservation (Natural Habitats, &c.) Regulations 1994 and the Conservation of Habitats and Species Regulations 2017 include provisions for: protecting sites that are internationally important for threatened habitats and species (European marine sites) and provide a legal framework for species requiring protection (European protected species). The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 sets out changes to made to the 2017 Regulations to ensure the regulations operate effectively in English waters. The draft Nephrops FMPs will support the protection of protected sites and species.

The Conservation of Offshore Marine Habitats and Species Regulations 2017

The Conservation of Offshore Marine Habitats and Species Regulations 2017 include provisions for the designation and protection of areas that host important habitats and species in the offshore marine area. The draft Nephrops FMPs will seek to support the protection of offshore marine habitats and species.

Marine Strategy Regulations 2010 – UK wide

The Marine Strategy Regulations 2010 requires Administrations in the UK to take action to achieve or maintain GES in UK waters. The UK Marine Strategy (UK MS) is a key pillar of marine policy in the UK. There is a clear link between the UK MS and the ‘ecosystem objective’ of the Fisheries Act 2020, sections 1(4) and 1(10).

The Marine strategy part three: 2025 UK programme of measures - GOV.UK identifies FMPs as a tool to support the delivery of Good Environmental Status (GES) for commercial fisheries (Descriptor 3). It also recognises FMPs could, where appropriate include 'measures to mitigate the impact of fishing activity on the wider environment, including the seabed' to support the delivery of GES for other descriptors.

Marine Plans – UK wide

The Marine and Coastal Access Act 2009 (MCAA) makes provision for the UK Marine Policy Statement (MPS), published 2011, and sets requirements, (together with the Marine Act (Northern Ireland) 2013 (the 2013), The Marine (Scotland) Act 2010 (the 2010 Act)), for the production of marine plans. The MPS provides the framework for marine plans around the UK and sets the high-level policy context for marine planning, including setting high-level marine objectives. Requirements for how decisions relating to the marine area should take account of marine plans are specified in section 58 of MCAA, section 8 of the 2013 Act and section 15 of the 2010 Act. The draft Nephrops FMPs consider the relationship between marine spatial planning and fishing activity being managed through FMPs, and how these policies can work in a joined-up way to ensure more effective use of the marine space and resources. Further information on the marine plans in Scotland, England and Northern Ireland is provided in Appendix D.

The Environment Act 2021

The Environment Act 2021 sets out England's commitment to protect and enhance our environment for future generations. The act seeks to improve air and water quality, protect wildlife, increase recycling and reduce plastic waste. A central pillar is an obligation for policy makers to have due regard to five environmental principles, (integration principle, prevention principle, rectification at source principle, polluter pays principle, precautionary principle), during the development of policy. Policies developed through the draft Nephrops FMPs will have due regard to these principles. Further details of the environmental principles can be found at Environmental Principles Gov.uk page.

The Environment Act 2021 also requires the government to publish an Environmental Improvement Plan (EIP) for England. The EIP published in 2023 builds on the 25 Year Environment Plan by setting out how the government in England will work with landowners, communities and businesses to deliver goals for improving the environment. FMP policy supports the EIP by enabling the development of fisheries management tools that will contribute to securing clean, healthy, productive and biologically diverse oceans and seas. Through implementing a sustainable domestic fisheries policy, the draft Nephrops FMPs will deliver

measures to secure healthy stocks that will be fished in an environmentally sustainable manner.

The Environment Act 2021 also makes provision for legally binding targets of which the targets for biodiversity and Marine Protected Areas will relate to FMPs. In addition, public authorities who operate in England must consider what actions they can take to conserve and enhance biodiversity in England. This obligation is the strengthened 'biodiversity duty' that the Environment Act 2021 introduced. The draft Nephrops FMPs will comply with the biodiversity duty.

The Environmental Targets (Biodiversity) (England) Regulations 2023

The Environmental Targets (Biodiversity) Regulations 2023 set long-term targets in respect of three matters within the priority area of biodiversity under section 1 of the Environment Act 2021 (c. 30). These Regulations also set a target in relation to the abundance of species in accordance with section 3 of the Environment Act 2021. The Regulations specify the standard to be achieved in respect of each target and the date by which it must be achieved. The draft Nephrops FMPs will support achieving the targets set out in the regulations as appropriate.

The Environmental Targets (Marine Protected Areas) Regulations 2023 – England

The Environmental Targets (Marine Protected Areas) Regulations 2023 set a long-term environmental target under section 1 of the Environment Act 2021 (c. 30). The target set by regulation 3 is in respect of the condition of protected features in MPAs. These Regulations specify the standard to be achieved in respect of the target and the date by which it must be achieved. The draft Nephrops FMPs will support achieving the targets set out in the regulations.

Climate Change Act 2008 – UK Wide

The Climate Change Act 2008 is the basis for the UK's approach to tackling and responding to climate change. It requires that emissions of carbon dioxide and other greenhouse gases are reduced and that climate change risks are adapted to. The Act also establishes the framework to deliver on these requirements. The draft Nephrops FMPs will support policies to meet targets to achieve net zero by 2050 as set out in the legislation.

Marine wildlife bycatch mitigation initiative – UK Wide

The Marine wildlife bycatch mitigation initiative outlines how the UK will achieve its ambitions to minimise and, where possible, eliminate the bycatch of sensitive marine species. This initiative brings together, and builds on, existing work such as the UK Bycatch Monitoring Programme and Clean Catch UK, recognising that further actions need to be taken if we are to achieve our objectives. The draft Nephrops FMPs will support this initiative by contributing to mitigating the negative impacts of fishing activity as appropriate.

Water Environment Regulations (Water Framework Directive)

The Water Environment, (Water Framework Directive) (England & Wales), Regulations 2017 (referred to as the WFD Regulations) provide a framework for assessing and managing the water environment, which includes estuaries and coastal waters in England. The draft Nephrops FMPs will support achieving the targets for water quality set out in the regulations.

River Basin Management Plans (RBMPs) produced under the Water Environment Regulations, provide the overarching framework for water management to help protect and improve our water environment. RBMPs extend out to 1 nautical mile from the baseline into the marine environment and seek to maintain or restore Good Ecological Status[21] within the area they cover. The draft Nephrops FMPs will support the objectives in the relevant RBMPs to meet Good Ecological Status.

Biodiversity Strategy - Scotland

By managing fishing activity so our stocks are harvested within sustainable limits, FMPs will have a positive impact on fish stocks and consequently a positive impact on biodiversity and the wider ecosystem. Fisheries Management Plans will contribute to achieving the aims of the Biodiversity Strategy by supporting a healthy marine environment; connecting people with the natural world; involving stakeholders more in the decision-making process; and maximising the benefits of a diverse natural environment and the services it provides, whilst contributing to sustainable economic growth for Scotland.

[21] Good ecological status (GES) is a metric for assessing the health of the water environment. It is assigned using various water flow, habitat and biological quality tests. Failure to meet any one individual test means that the whole water body fails to achieve good ecological status. Source: Department for Environment, Food and Rural Affairs (DEFRA) (WQR0028)

Future fisheries: management strategy - 2020 to 2030 - Scotland

Scotland's Fisheries Management Strategy sets the overall strategic framework for fisheries management in Scotland. It contains a 12-point action plan intended to deliver a range of policies and improvements to support responsible and sustainable fisheries management in Scotland. These actions will be delivered over the course of the ten-year timeframe for the Strategy. Supporting policies such as the Future Catching Policy (FCP) and introduction of Remote Electronic Monitoring (REM) to key parts of the fishing fleet, will deliver the outcomes contained within the Strategy. The FMPs will be another element in delivering the Strategy in Scotland.

UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021

The UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021 ('the Continuity Act') provides Scottish Ministers with a power to help meet the Scottish Government's commitment to align with future developments in EU law, where appropriate.

It introduces new duties on Ministers and other public authorities to have due regard to five guiding principles on the environment. These principles are set out at section 13(1) of the Continuity Act, and are the principle of integration, the precautionary principle, the preventative principle, the rectification at source principle and the polluter pays principle. These duties will ensure that consideration of protection and improvement of our environment is embedded in decision-making across different policies and sectors. In effect, this will keep Scotland aligned with the environmental principles that guide policy development in the EU and will contribute to sustainable development.

Climate Change (Scotland) Act 2009 – Scotland

The Climate Change (Scotland) Act 2009 creates a legally binding framework to reduce greenhouse gas emissions, originally setting a 42% reduction target by 2020 and 80% by 2050 against a 1990 baseline. It mandates annual emissions targets, requires adaptation plans, and imposes climate duties on public bodies to ensure sustainable, low-carbon action. The 2009 Act was significantly strengthened by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, which amended the 2050 target to a net-zero emissions target by 2045. The 2019 Act also introduced 75% reduction targets by 2030 and 90% by 2040. The draft Nephrops FMPs will support policies to meet targets to achieve net zero by 2045 as set out in the legislation.

Climate Change Act (Northern Ireland) 2022 – Northern Ireland

The Climate Change Act (Northern Ireland) 2022 sets the targets for the reduction of greenhouse gas emissions in Northern Ireland. Sectoral plans must be developed and published by Northern Ireland departments, setting out how greenhouse gas emission reduction targets will be achieved. This includes sectoral plans for fisheries, which must include plans for the fisheries sector, including proposals and policies for sea fisheries and the inland fisheries industry.

The draft Nephrops FMPs will support policies to meet targets to achieve net zero by 2050 as set out in the legislation.

Wildlife and Natural Environment Act (NI) 2011 – Northern Ireland

This Act amends the Wildlife (Northern Ireland) Order 1985 and the Environment (Northern Ireland) Order 2002, introducing new provisions to protect a broader range of plants, animals, and birds, as well as enhancing protection for Areas of Special Scientific Interest.

By managing fishing activities to ensure that stocks are harvested within sustainable limits, the FMPs will positively impact fish stocks, which in turn will benefit biodiversity and the wider ecosystem. This aligns with the Fisheries Act 2020's ecosystem and sustainability objectives.

The Environment (NI) Order 2002 – Northern Ireland

The Environment (Northern Ireland) Order 2002 is the primary environmental legislation in Northern Ireland, encompassing provisions for pollution prevention, conservation, waste management, and other environmental matters.

By managing fishing activities to ensure that stocks are harvested within sustainable limits, the FMPs will positively impact fish stocks, which in turn will benefit biodiversity and the wider ecosystem. This aligns with the Fisheries Act 2020's ecosystem and sustainability objectives.

Biodiversity Strategy for NI to 2020 – Northern Ireland

By managing fishing activity so our stocks are harvested within sustainable limits, FMPs will have a positive impact on fish stocks and consequently a positive impact on biodiversity and the wider ecosystem. Fisheries Management Plans will contribute to achieving the aims of the Biodiversity Strategy for NI by supporting a healthy marine environment; connecting people with the natural world; involving stakeholders more in the decision-making process; and maximising the benefits of a

diverse natural environment and the services it provides, whilst contributing to sustainable economic growth for Northern Ireland.

The Marine Wildlife Bycatch Mitigation Initiative

The Marine Wildlife Bycatch Mitigation Initiative outlines how the UK will achieve its ambitions to minimise and, where possible, eliminate the bycatch of sensitive marine species. This initiative brings together, and builds on, existing work such as the UK Bycatch Monitoring Programme and Clean Catch UK, recognising that further action needed to achieve our objectives. The draft FMPs will support this initiative by contributing to mitigating the negative impacts of fishing activity as appropriate.

The Northern Ireland Marine The Northern Ireland Marine Protected Areas Strategy

The Northern Ireland Marine Protected Areas Strategy (2014) outlines the Department of Agriculture, Environment and Rural Affairs' (DAERA) approach to conserving marine biodiversity within the inshore region. It aims to establish an ecologically coherent network of well-managed MPAs that contributes to both national and international conservation goals. The strategy emphasises the importance of protecting designated features, restoring degraded habitats, and ensuring sustainable use of marine resources through effective management and stakeholder engagement. The draft FMPs will support this initiative by aligning fisheries practices with conservation objectives.

Seabird Bycatch Plan of Action

The Seabird Plan of Action (PoA) develops an approach to understand and where necessary reduce seabird bycatch in UK fisheries, through engagement and dialogue with all interested parties and the implementation of subsequent recommendation. The draft Nephrops FMPs will support this initiative by contributing to mitigating the negative impacts of fishing activity as appropriate.

Other FMPs

The fisheries policy authorities considered the interaction between the published FMPs and this tranche of plans whilst drafting the FMPs. The draft Nephrops FMPs are expected to interact with the following FMPs covering demersal species; Northern Shelf Cod FMP, North Sea Whiting FMP, Northern Shelf Haddock FMP, Northern Shelf Saithe FMP, Northern Shelf Hake FMP, Northern Shelf Monk/Angler FMP, Northern Shelf Megrim FMP, Northern Shelf Ling FMP, West Coast of Scotland Whiting FMP, Atlantic Cod FMP, Atlantic Haddock FMP, King Scallop FMP, Crabs & Lobsters FMP, Bass FMP, Southern NS and Eastern Channel Mixed

Flatfish FMP, Queen Scallop FMP, Southern North Sea Non-Quota Demersal FMP, Southern North Sea and Channel Skates and Rays FMP, Irish Sea Demersal FMP, Northern Ireland Non-Quota Shellfish FMP, Seabream FMP and Wrasses complex FMP.

The draft Nephrops FMPs propose management for Nephrops in the North Sea (ICES Subarea 4) and West Coast of Scotland (ICES Subarea 6) whereby interconnectivity of demersal stocks will likely mean management in one FMP will influence the other.

The interaction between other FMPs will be further considered when monitoring the effectiveness of plans. Any necessary adaptations would be built into the plan's ongoing implementation and adjusted in future revisions of the FMPs.

Other Localised Plans

Explore Marine Plans (EMP) is an online interactive tool developed by the Marine Management Organisation (MMO) to allow a user find and view spatial marine activity data for the English marine area, information on marine planning licences relating to a specific area, and marine plan policy information.

The draft Nephrops FMPs will use this tool to identify where the plan could interact with other relevant marine activities, plans or projects. Any necessary adaptations would be built into the plan's ongoing implementation and contribute to future revisions of the FMPs.

5. Assessment of Environmental Effects

The environmental baseline information (section 3) shows that the marine environment is subject to a range of pressures from human activities. Fishing-related activities form only part of the contribution of these pressures to the current state of our marine environment.

The present assessment acknowledges the evidence that shows those pressures that are largely derived from fishing activity and can impact the marine environment directly. Fishing can also contribute to other environmental effects when considered in-combination with other processes and activities.

Section 5 assesses the environmental effects of the policies and actions of the draft Nephrops FMPs in relation to the environmental issues screened into this SEA, and where applicable their associated UK MS descriptors (Table 3).

Overview of the Potential Positive and Negative Environmental Effects of the Policies and Actions of the draft Nephrops FMPs

The potential positive and negative environmental effects of implementing the policies and actions set out in section 5 and 11 of the draft Nephrops FMPs have been identified in Table 4 (Annex 1).

Overview of Potential Positive Environmental Effects of the FMPs

Biodiversity, Flora, Fauna, Geology and Sediments (soil), Water quality

The draft Nephrops FMPs seek to effectively manage the harvesting of Nephrops stocks within sustainable limits while focussing on improving the sustainability of the fisheries over the long-term.

The draft Nephrops FMPs cover Nephrops stocks which are shared with Coastal State partners. Fishing opportunities are managed by total allowable catches (TACs). These, and other joint management measures, are set through international negotiations guided by the best available scientific advice, balancing environmental, social, and economic factors.

There is sufficient available scientific evidence for the relevant fisheries policy authorities to make annual MSY assessments for Nephrops stocks covered by these FMPs in UK waters, and these stocks are currently being fished within an MSY approach. Therefore, the draft Nephrops FMPs describe a vision with policies and proposed actions which set out how management can continue to maintain an MSY approach for nephrops fisheries and highlight research areas that could lead to refinements to management approaches in the future. In particular, there is potential for management to be undertaken at a FU level in order to deliver a more responsive and tailored approach, and this forms the focus of several actions under policy 1.

The overall vision for the draft Nephrops FMPs is that Nephrops in UK waters of the North Sea and the West Coast of Scotland are managed to ensure long-term sustainability, which includes supporting the economic profitability of dependent fisheries, minimising environmental impact, and maintaining the social and cultural value this important resource contributes to the UK.

The policies and actions set out in the FMPs suggest how this could be achieved in a way that is consistent with, and supportive of, the wider achievement of the fisheries objectives set out in the 2020 Act and the policies contained within the JFS.

Policy 1 and associated actions relate to sustainable stock management with regard to maintaining stocks at levels that can consistently produce Maximum Sustainable Yield (MSY).

Improving data gaps and ensuring the availability of high-quality data for stock assessments will allow for more informed management decisions in the future that could result in improvements across a range of receptors and ultimately contribute to the sustainable management of targeted stocks. This may have indirect benefits for wider environment, for example food webs and biodiversity.

As well as improving the status of the stocks themselves and contributing to improvements against UK MS commercial fish descriptor targets (D3), the benefits of these actions to fish biodiversity and food webs will contribute to improvements in UK MS targets under D1 and D4.

Similarly, Policy 4 outlines a suite of actions to address discarding, proposing actions to improve selectivity and data collection. Improved understanding and accounting of discards will support management and the development of appropriate technical measures to reduce unwanted catch. Such measures are likely to have a positive effect on biodiversity and food webs, contributing to improvements in UK MS targets under D1 and D4.

Actions under policy 2 and 3 address benthic impacts and bycatch of sensitive marine species in the fisheries. Improved understanding of benthic disturbance and bycatch will allow for appropriate mitigation measures to be designed where required. Actions under these policies also champion best practice and support existing programmes of work to reduce bycatch and benthic impacts. If implemented, mitigation measures would be expected to have a positive effect on sea floor integrity and biodiversity.

Supporting management measures with regard to the MPA network and PMFs in Scottish inshore waters is likely to have a wider positive effect on biodiversity, food webs and seabed integrity. The proposed support for “collaboration across the UK to implement the UK Marine Strategy Programme of Measures (POM) which includes the creation of a cross-UK benthic impacts working group” is expected to allow for appropriate mitigation measures to be designed where required. If then implemented, these will have a positive effect on sea floor integrity and biodiversity.

The FMPs “support actions under the UK Bycatch Mitigation Initiative to reduce the risk, frequency and impact of fisheries on sensitive marine species” which is expected to deliver broader environmental benefits, for example for food webs and biodiversity. Implementing appropriate bycatch mitigation measures in the fishery is expected to contribute to the recruitment of sensitive marine species. If then implemented, this will have a positive effect on biodiversity and, in some cases, MPA condition. Continued and improved monitoring through REM will build the evidence base on bycatch of sensitive species, allowing for more refined assessments of risk and development of appropriate mitigations which, if adopted, should deliver benefits with respect to foodwebs and biodiversity.

The draft Nephrops FMPs do not include specific actions on water quality issues such as marine litter at this time. The draft FMPs acknowledge the ongoing work with regard to the OSPAR convention to implement the second Regional Action Plan on Marine Litter. This includes action to tackle marine litter from land and sea-based sources, including fishing. In

Scotland a range of actions are underway to address issues with marine litter, as set out in the Marine Litter Strategy for Scotland[22] and these actions will continue to be delivered as part of a separate programme of work.

Climatic factors

The draft Nephrops FMPs acknowledge that the UK seafood sector will need to consider how it will reduce emissions to contribute to meeting the Net Zero target. The draft FMPs have not proposed any actions to reduce emissions at this stage. However, where applicable the FMPs will support actions to transition to low carbon fishing.

Policy 6 and associated actions relating to supporting research and collaboration to assess climate change impacts, ecosystem connections, and environmental effects of Nephrops fisheries, including CO_2 emissions, are not expected to have immediate positive effects on the environment or contributing to the net zero target. However, the increased understanding and enhanced collaboration can lead to more coordinated efforts and foster the development and implementation of innovative solutions which will help achieve sustainability goals.

The draft Nephrops FMPs acknowledge that the UK continues to build the evidence base on blue carbon habitats, including marine sediments. The Blue Carbon Evidence Partnership is looking to progress the evidence base to address some of the uncertainties in this area. This evidence could be used in future FMP iterations.

Cultural Heritage

While the FMPs are not intended to focus on mitigating the impacts of fishing on marine heritage assets, fisheries management could contribute to safeguarding these assets and their locations.

Measures to reduce adverse effects on the environment, for example through gear design, spatial management or reducing fishing related marine litter, could indirectly help to conserve both known and unknown marine heritage assets. Policy 2 outlines actions to build the current understanding of the benthic impact of Nephrops fishing. Any subsequent measures to reduce benthic disturbance may help to protect marine heritage assets by reducing the frequency of encounters with damaging gears or reducing the impact of those gears.

Policy 5 and associated actions are intended to support fishing businesses to deliver socio-economic and cultural benefits. Managing stocks so they are harvested in a sustainable way can have environmental, social, and economic benefits. Ensuring a fishery is environmentally, socially, and economically sustainable over the long term could help promote the cultural

[22] Marine litter strategy - gov.scot

importance of fishing and preserve the cultural heritage of fishing itself including wrecks of fishing vessels, historic harbours and infrastructure, and fishing communities.

The SEA process will highlight to fisheries policy authorities how fisheries management policies and measures could support measures that protect the historic marine environment and improve early reporting of previously unknown sites.

Landscapes and Seascapes

While the FMPs are not intended to focus on mitigating the impacts of fishing on submerged prehistoric landscapes or seascapes, fisheries management could contribute to safeguarding these assets and their locations.

Fisheries management that reduces adverse effects on habitats and seabed features, for example through gear design and spatial closures, could indirectly help to conserve submerged prehistoric landscapes or seascapes. However, further consideration of mitigating any impacts on these features may need to be considered.

The SEA process will highlight to fisheries policy authorities how fisheries management policies and measures could support measures that protect submerged prehistoric landscapes or seascapes.

Overview of Potential Negative Environmental Effects of the FMPs

Biodiversity, Flora, Fauna, Geology and Sediments, Water quality, Climatic factors, Cultural heritage

Acknowledging that the proposed policies and actions are at the beginning stages of their development, the assessment of likely negative effects identified a low risk of significant adverse effects on the environment from implementing individual policies and actions. However, we do not yet know the potential environmental effects of implementing the actions set out in the draft Nephrops FMPs.

Nevertheless, the policies and actions should deliver improved environmental protection, so although it is difficult at this stage to anticipate all the potential significant negative effects on the environment in the short term, the overall ambition is to have a positive effect on the environment over the long term through the implementation of the ecosystem-based approach to fisheries management. From an MPA perspective, any changes in management will be subject to MPA assessments which will ensure MPA features are protected inside and outside sites.

There is the potential for factors such as the spatial footprint, intensity, type of gear and fishing methods of the Nephrops fishery to alter through publishing the Nephrops FMPs and

implementing their policies and actions. We recognise that management interventions brought in through FMPs may solve one issue, but unintended and unpredictable issues could arise because of the measures being implemented. For example, it is acknowledged that some of the proposed actions to support the FMPs' policies may, through interventions intended to have a positive effect, lead to displacement of fishing activities to other locations or into fisheries. This may result in negative environmental effects that fall outside the scope (area or species) of these FMPs. Where an FMP cannot solve an issue, it may be appropriate for other FMPs to consider this issue. Or, if areas beyond UK waters are affected, it may be appropriate for this issue to be considered through wider UK or international fisheries management fora.

This section has identified potential negative effects that could arise from the implementation of the FMP's policies and actions. Due to the policies and actions being at an early stage of development it is difficult to systematically set out their magnitude and significance, without further detail on the nature, timing, duration, scale or location of the proposed actions or measures. Changes to fishing activity resulting from the implementation of the FMP policies and actions should be monitored as part of the process of evaluating the effectiveness of FMPs. Tools such as inshore Vessel Monitoring Systems (iVMS) and VMS greatly improve, or could improve, our ability to monitor spatial and temporal changes in fishing effort. Such monitoring would help identify any unintended consequences on the environment and indicate whether the implementation of these actions could lead to any significant environmental effects if unmanaged. Mitigating action could then be considered where any significant negative effects are identified, that are related to those issues scoped into this assessment.

In-combination Effects

The draft Nephrops FMPs could potentially have positive (or negative) in-combination effects with other programmes to deliver sustainable fisheries (see section 4). Whilst these other programmes focus on different topics, there are common themes that positively link them together. For example, FMPs and the Marine Plans share the common principles of managing marine resources sustainably and reducing the impact of anthropogenic pressure on the marine environment. Having due regard to the Environmental Principles and Biodiversity Strategy (for Scotland), the Environmental Principles (for England) and the Northern Ireland Biodiversity Strategy during the development of policy will further ensure that the environment will be appropriately considered throughout the FMP process. More broadly, we anticipate the cumulative positive effect of these programmes will result in helping to meet sustainability objectives and achieving long-term improvements to the marine environment.

Conducting the in-combination assessment at this stage in the production cycle of the FMPs proved difficult due to the high-level nature of the policies and actions at this early stage of development. From the analysis of the potential environmental effects (section 5) of the policies and actions set out in the draft Nephrops FMPs, the potential negative effects are not considered significant enough at this stage to require the policies and actions to be amended. When considering other potential policies, we are not aware at this stage that any other regimes/activities are going to change that position.

The FMPs could facilitate the in-combination assessment with Marine Plans by providing more specific detail on how the FMP could positively or negatively interact with them. However, a Marine Plan assessment will be undertaken on the finalised FMPs' policies and actions prior to publication, to assess how they will interact with Marine Plan policies. The assessment will identify whether an FMP policy will be compliant, potentially conflict, or not be compliant with Marine Plan policies. The interaction between FMPs and Marine Plans will be further considered when monitoring the effectiveness of plans. Any necessary adaptations, to ensure FMPs and Marine Plans interact positively, would be built into the plan's ongoing implementation and adjusted in future revisions of the FMPs as required.

Before there are any changes to fisheries management as a result of the draft Nephrops FMPs, where necessary, all new measures will be subject to Habitats Regulations Assessments, Marine Conservation Zone assessments, National Marine Plan assessments and MPAs impact assessments. Such assessments will consider the potential in-combination effects with other plans and projects that are occurring or will occur within in an MPA. These assessments will also identify where any specific interactions exist.

The combined effect of implementing the polices and actions of all FMPs will be considered through the mandatory FMP monitoring process once the plan is published and could form part of the longer-term JFS or FMP review cycles (section 8).

Conclusions

Fishing for Nephrops is an ongoing activity that poses some risks to the quality status of the marine environment. The draft Nephrops FMPs focus on achieving the sustainable harvesting of stocks and therefore will reduce the risks to the future status of stocks in the long term thus giving positive benefit to the environment.

Together, these actions will have the positive benefit of ensuring stock sustainability and contributing to improving the status of UK MS commercial fish stocks (D3) in the UK. In doing this there may also be improvements in overall fish biodiversity (D1) and the marine food webs (D4).

Nevertheless, we acknowledge that fishing for Nephrops within sustainable limits may not remove all the associated negative effects of that fishing on the wider marine environment.

The Fisheries Objectives (in the Fisheries Act 2020) require FMPs to integrate environmental, social, and economic aspects of a fishery when introducing interventions to control fishing activity within sustainable levels. Achieving the balance between these three elements will be a central component of making a contribution to the sustainability objective.

The draft Nephrops FMPs takes a precautionary approach to fisheries management and adopts a balanced and proportionate approach towards delivering the fisheries objectives. The policies and actions set out in the draft Nephrops FMPs may result in positive and negative effects on the environment in the short term, with the overall ambition to have a positive effect on the

environment over the long term through the implementation of the ecosystem-based approach to fisheries management.

As well as impacting the commercial fish stocks themselves, the fishery is likely to be impacting the wider environment. Bycatch/entanglement of certain species, and the impact mobile demersal gear is having on seafloor integrity, have been highlighted as a risk.

Actions have been proposed to investigate the impact of both unwanted / protected species bycatch and demersal gear and seafloor interactions. While these will not result in immediate positive environmental benefits or environmental improvements, they should help determine what mitigation may be required. The FMP recommends using additional evidence to develop robust mitigation strategies and be used to support the national bycatch strategies.

Before there are any changes to fisheries management as a result of the draft Nephrops FMPs, where necessary, all new measures will be subject to Habitats Regulations Assessments and Marine Conservation Zone assessments. Such assessments will consider the potential in-combination effects with other plans and projects that are occurring or will occur within in an MPA. These assessments will also identify where any specific interactions exist.

The draft Nephrops FMPs do not specifically consider the impacts of fishing on marine heritage assets. However, any future fisheries management aimed at reducing wider environmental effects could indirectly help to conserve both known and unknown marine heritage assets. This iteration of the FMP focuses on setting out measures to achieve sustainable harvesting of targeted stocks but there is scope for future iterations of the FMP to address this wider issue.

The draft Nephrops FMPs do not specifically consider the impacts of fishing on submerged prehistoric landscapes or seascapes. However, fisheries management aimed at reducing the impact on seabed integrity could indirectly help to conserve submerged prehistoric landscapes or seascapes. This iteration of the FMP focuses on setting out measures to achieve sustainable harvesting of demersal stocks but there is scope for future iterations of the FMP to address this wider issue.

6. Proposed Measures to Reduce Significant Negative Effects

Existing Negative Effects Nephrops Fishing

This ER has acknowledged the existing negative environmental effects associated with the fishing activity which will be managed through the FMPs. The actions proposed by the FMPs to reduce negative effects are set out below.

Biodiversity, Flora, Fauna, Geology and Sediments (soil), Water quality

The stocks covered by the draft Nephrops FMPs are shared with Coastal State partners. Fishing opportunities are managed by total allowable catches (TACs). These, and other joint management measures, are set through international negotiations guided by the best available scientific advice, balancing environmental, social, and economic factors. There is sufficient available scientific evidence for the relevant fisheries policy authorities to make annual maximum sustainable yield (MSY) assessments in UK waters. The policies and actions listed in the draft Nephrops FMPs will be part of the overall stock management strategy and are expected to contribute to the conservation of stocks and the wider environment.

The draft Nephrops FMPs have considered advice from Statutory Nature Conservation Bodies (SNCBs) with respect to the impacts from Nephrops fishing activity on MPA features, the wider marine environment in relation to UK MS descriptors, as well as PMFs (Scottish waters). The draft Nephrops FMPs have set out the following proposed measures to reduce those known negative effects as follows:

Impacts within MPAs

The MPA network (Appendix C) is protected through the existing MPA management process by managing human activities such as fishing, to avoid likely significant effects on the environment. These activities are mainly controlled through the powers vested in the Scottish Ministers, IFCAs, the MMO and DAERA.

The Scottish Government, Defra, the MMO and DAERA were involved in the development of the FMPs to ensure measures proposed through the FMPs are compatible with existing MPA management.

Before the Scottish Government/the Scottish Ministers, Defra and DAERA implement any new management interventions proposed in the draft Nephrops FMPs, those interventions will be screened for likely significant effects on any European sites or European offshore marine sites that overlap with the geographical scope of the measure and, where necessary, a further appropriate assessment will be completed in accordance with the Conservation (Natural Habitats, & c.) Regulations 1994, the Conservation of Habitats and Species Regulations 2017 or the Conservation of Offshore Habitats and Species Regulations 2017. In accordance with the Marine and Coastal Access Act 2009 (MaCAA), a Marine Conservation Zone (MCZ) Assessment, National Marine Plan assessment and MPAs impact assessments will also be completed before any new management measure is implemented that may significantly hinder the conservation objectives of an MCZ.

Additionally, Nature Conservation Marine Protected Areas (NCMPAs) are designated and protected by the Marine (Scotland) Act 2010 and Marine and Coastal Access Act 2009. An MPA assessment will be completed as required, to ensure any actions or measures before being implemented.

The points above will make sure the impacts of Nephrops fishing activity, and the FMP's policies and actions, do not prevent our ability to meet the conservation objectives for MPA features. Thereby enabling us to achieve the legally binding target for MPA condition in England set out in the Environmental Targets (Marine Protected Areas) Regulations 2023.

Environmental effects associated with designated features of MPAs

The marine environment outside of MPAs but within the spatial boundaries of these FMPs may potentially be negatively impacted by fishing activities. SNCB advice commissioned by the Scottish Government's Marine Directorate covering Scottish waters highlighted the risk of bycatch of mobile species (e.g. birds and mammals) that are designated features of MPAs where they occur out with sites. This bycatch was classified as moderate risk to marine mammals, and a low risk to fish and seabird features and important prey species, primarily due to bycatch in bottom towed gear and entanglement in creels.

SNCB advice covering English waters also identified moderate risk to the conservation status of designated mobile species from demersal trawls owing to significant evidence gaps.

The advice acknowledged the lack of high-quality bycatch data. This severely restricts both the ability to draw firm conclusions on mobile bycatch risks on MPA features beyond site boundaries, and the ability to identify specific mitigation. Policy 3 specifically addresses bycatch of sensitive marine species in the fisheries. The actions set out as part of this policy aim to build our understanding whilst also taking appropriate action. Actions focus on improving fisheries data accuracy, continuing and improving current programs for mitigation and best practice, supporting management measures for MPAs and PMFs (Scottish waters), and supporting ongoing research and innovation to minimise bycatch of sensitive species. Improving understanding of bycatch will allow for appropriate mitigation measures to be designed where required. If then implemented, these measures would be expected to have a positive effect on biodiversity and food webs.

The draft Nephrops FMPs links specific data collection initiatives to wider bycatch monitoring and mitigation programmes such as the Bycatch Mitigation Initiative and Clean Catch UK, which has the potential to appropriately mitigate risks associated with highly mobile MPA features.

UK MS descriptor impacts

The draft Nephrops FMPs focus on achieving sustainable harvesting of Nephrops *norvegicus*. This will support the achievement of GES for UK MS Descriptor 3 – Commercial fish and shellfish stocks. This will also benefit the wider marine environment and support improvements in the status of fish biodiversity (Descriptor 1) and marine food webs (Descriptor 4).

The risks identified in the SNCB advice largely mirror the risks associated with designated features of MPAs. While the risk from Nephrops fishing to achieving GES for marine mammals, seals and seabirds (D1 & D4) is generally considered low, there are still significant gaps in the available evidence. As a result, the FMP risk rating is moderate, taking a precautionary approach into account. The advice also identify a high risk to seafloor integrity (D1 & D6) due to

benthic disturbance caused by mobile demersal fishing activities and a moderate risk of impacts from marine litter (D10).

The draft Nephrops FMPs propose to investigate the impact of both unwanted and protected species bycatch, and demersal gear and seafloor interactions Policies 2 and 3, respectively). The FMPs recommend using additional evidence to develop robust mitigation strategies and to support the national bycatch strategies, such as the Bycatch Mitigation Initiative and Clean Catch UK.

The draft Nephrops FMPs includes an action to support the creation of a “cross-UK benthic impacts working group”. In the update to UK Marine Strategy Part 1 (2019) Defra made a commitment to assess the feasibility of setting up a partnership working group, referred to here as the Benthic Impact Working Group. The UK Administrations and Government agencies are in the process of developing this Group which will be tasked with providing evidence-based advice to reduce the impacts of fishing activity on benthic habitats to achieve Good Environmental Status. Once convened, this group should provide strategic oversight and direction for delivering future advice. This includes identifying, developing, and trialling possible mitigation or management options, in partnership.

As detailed under policy 2, the draft Nephrops FMPs outlines 5 actions aimed at addressing benthic impact. These actions focus on enhancing data collection, improving our understanding of impacts, supporting fisheries management as part of ongoing programs, and strengthening cross-UK collaboration.

Priority Marine features (PMFs) impacts (Scottish waters)

The risk rating for PMF bycatch in Nephrops fisheries is considered moderate. The risk rating for physical impacts to the ‘burrowed mud’ habitat PMFs from Nephrops fishing is considered moderate. As the benthic species and habitat PMFs are also represented across the Scottish MPA network, it is assumed that these features will be offered some protection through the MPA management process. Therefore, some of the impacts on national status of PMFs (including burrowed mud) will be mitigated.

The draft Nephrops FMPs, under policies 2 and 3, proposes actions in support of introducing fisheries management measures to existing Marine Protected Areas (MPAs), where these are not already in place, as well as the most vulnerable Priority Marine Features (PMFs) in Scottish inshore waters (0-12 nautical miles). These policies also contain actions aimed at improving data collection and understanding of bycatch and benthic impact. These policies are expected to support management measures that will reduce the impact of fisheries on Priority Marine Features (PMFs).

Climate Change

Vessel Emissions

The draft Nephrops FMPs acknowledge that more work is needed to fully understand how carbon emissions can be reduced in a sustainable way. The FMPs propose 4 actions as part of policy 6 aimed at collaboration for reducing environmental impacts of the fisheries (including CO_2 emissions) and improving the evidence base. This will be done by collaborating across Government, with industry and academic organisations to understand the current evidence gaps and latest innovations, to support the development of pathways towards Net Zero for the UK fishing fleet. The FMPs will support the fishery through national transition to low carbon fishing, contributing to UK Government commitments to Net Zero.

Blue Carbon

The draft Nephrops FMPs acknowledges that the UK continues to build the evidence base on blue carbon habitats, including marine sediments. This evolving evidence could support future consideration of measures to reduce impacts of demersal fishing on blue carbon (e.g. through spatial or technical fisheries management measures). The Blue Carbon Evidence Partnership is looking to progress the evidence base to address some of the uncertainties in this area.

Climate change impacts on Nephrops stocks and fisheries

The draft Nephrops FMPs acknowledge that climate change has potential implications for the Nephrops stocks, but the overall impacts are not yet fully understood. Policy 6 specifically looks at how the fishing industry can be supported to adapt to the impact of climate change. This includes actions on wider research to identify impacts of climate change on Nephrops stocks, as well as identifying the routes to reduce carbon emissions throughout the supply chain. Further research will be required to predict the scale of impacts to the environment and over what timeframe this will be applicable to the draft Nephrops FMPs. Climate mitigation and adaptation measures can then be proposed and developed. Direction on climate research and adaptation may be set at a national level, should this occur, the relevant chapter in the FMP will be reviewed and amended.

Cultural Heritage

The draft Nephrops FMPs do not explicitly consider the potential impacts of fishing activity on marine cultural heritage.

Historic England have developed a range of options designed to manage negative interactions between commercial fishing and the historic marine environment. Marine Directorate, Defra and DAERA should work with agencies such as Historic Environment Scotland, Historic England and DfC Historic Environment Division to consider how measures that could protect the marine historic environment could be incorporated into fisheries management for future iterations. Considering appropriate measures to reduce negative interactions with marine heritage assets could strengthen the positive interactions between FMPs and cultural heritage and has the

potential for the FMPs to contribute to having a positive effect on the current baseline. In addition, by working with Historic Environment Scotland, Historic England and DfC Historic Environment Division to better understand the extent of prehistoric deposits like moorlog and how they are changing, efforts to conserve them from the impacts of fishing them might contribute to climate change mitigation and adaptation.

Landscapes and Seascapes

The draft Nephrops FMPs do not explicitly consider the potential impacts of fishing activity on submerged prehistoric landscapes or seascapes.

The FMPs will investigate the impact of fishing activity has on the wider environment. Any future management intervention could indirectly help to conserve submerged prehistoric landscapes or seascapes.

Marine Directorate, Defra and DAERA should work with agencies such as Historic Environment Scotland, Historic England, DfC Historic Environment Division, JNCC, NatureScot and DAERA to consider how measures that could protect the marine historic environment could be incorporated into fisheries management for future iterations. Considering appropriate measures to reduce negative interactions with submerged prehistoric landscapes or seascapes could strengthen the positive interactions between the FMPs and the wider marine environment that fishing for Nephrops in the North Sea and West of Scotland operates in. This has the potential for the FMPs to contribute to having a positive effect on the current baseline.

Effects identified by this assessment

The assessment of the likely negative effects of the individual policies, measures and actions in section 5 identified a low risk of significant adverse effects on the environment from implementing individual policies and actions. Therefore, no changes to the proposed policies and actions are needed ahead of publishing the FMP. Where appropriate, the policies and actions will be developed and implemented to mitigate any potential negative effects identified by the current assessment.

The likely negative effects will also be considered when developing monitoring activities as part of the implementation process (see section 8), to ensure that any negative effects of the FMP's policies and actions individually or combined can be further reduced. Given the uncertainty as to the negative effects of implementing the individual policies and actions, monitoring changes to fishing activity resulting from the implementation of the FMPs will help identify any unintended consequences on the environment that could lead to significant negative environmental effects. Where likely unintended environmental consequences are identified, appropriate changes to management or mitigation can be implemented to reduce to any negative environmental effects developing.

General

The UK is committed to using marine resources sustainably and reducing the impacts of fishing on the marine environment to comply with its international and domestic obligations. The draft Nephrops FMPs seek to support these commitments by providing the tools (FMP policies and actions) to deliver the sustainable harvesting of stocks.

The range of environmental issues identified through this assessment have been considered by the draft Nephrops FMPs. The FMPs acknowledge that the evidence base is not sufficiently comprehensive at present to fully address many of the issues and therefore proposes a multi-step, iterative approach to deliver long-term sustainability through improving the evidence base. The FMPs should remain flexible to adapt their policies and actions as new evidence on potential impacts of Nephrops fishing emerge, particular in relation to climate change.

This ER considers that the FMPs have proposed all necessary actions to address existing issues and have appropriately considered how they will address potential issues arising from the implementation of the FMPs' policies and actions. This ER has therefore not proposed any mitigations in addition to those already set out in the FMPs.

7. Reasonable Alternatives

Regulation 12(2)(b) of the SEA Regulations 2004 requires the fisheries policy authorities to consider reasonable alternatives to the draft Nephrops FMPs. A reasonable alternative has been defined as 'an activity that could feasibly attain or approximate the FMP's goals at a lower environmental cost or decreased level of environmental degradation'[23].

Section 2 of the Fisheries Act 2020 requires the fisheries policy authorities to publish a JFS setting out how they will use FMPs to achieve, or contribute to achieving, the fisheries objectives. Annex A of the JFS lists the planned FMPs, including the draft North Sea Nephrops FMP and draft West Coast of Scotland Nephrops FMP. Section 6 of the Fisheries Act 2020 requires the fisheries policy authorities to prepare and publish listed FMPs, including the two specified Nephrops FMPs.

The draft North Sea Nephrops FMP and draft West Coast of Scotland Nephrops FMP, alongside the other 41 FMPs were agreed by the fisheries policy authorities through the JFS publication. Engagement across administrations took place via the processes outlined in the Fisheries Framework. Regular scrutiny of the emerging list of FMPs was built into every step of the JFS policy formation, and through this process credible alternatives to managing stocks without a FMP were considered. The draft list of proposed FMPs, that included the draft North

23 Reasonable alternatives definition

Sea Nephrops FMP and draft West Coast of Scotland Nephrops FMP, was part of the public consultation on the draft Joint Fisheries Statement in early 2022.

Fishing for Nephrops in the North Sea and West Coast of Scotland is an ongoing activity and management already exists which is considered broadly appropriate. The draft Nephrops FMPs cover Nephrops stocks which are shared with Coastal State partners. Fishing opportunities are managed by total allowable catches (TACs). These, and other joint management measures, are set through international negotiations guided by the best available scientific advice, balancing environmental, social, and economic factors.

Nephrops fisheries in both the West of Scotland and the North Sea are managed on the basis of Functional Units (FUs), each corresponding to distinct mud habitats which they inhabit, and their distribution directly correlates to these mud patches.

In the West of Scotland, three predominantly inshore FUs - North Minch, South Minch, and the Firth of Clyde - support the majority of fishing activity, however some very small volumes are caught within the area outside FUs. Presently, the Nephrops stocks size of all FUs in the West of Scotland are above their biological reference points. However, these stocks and fisheries are still vulnerable to over-exploitation because of the high dependency on Nephrops as high-value stocks of remote coastal communities/economies. West Coast of Scotland stocks have a high level of available data, providing sufficient scientific evidence for the relevant fisheries policy authorities to make annual MSY assessments covering all West of Scotland stocks.

A similar management approach operates in the North Sea, where there are seven FUs that are targeted by fishers, although it should be noted that for these stocks, management takes place at an overarching North Sea level.

The seven FUs include the Farn Deeps, Firth of Forth, Moray Firth, Fladen Ground and, to a lesser extent, the Noup, Devil's Hole and Botney Cut-Silver Pit. Some FUs such as the Fladen grounds are found offshore, unlike the FUs on the West Coast which are generally inshore fisheries. Ports in northeast Scotland and northeast England are economically dependent on these fisheries, which contribute substantially to the value of landings.

North Sea Nephrops generally have a high level of data available, although some individual Nephrops stocks in the North Sea are data limited. On the whole, the North Sea Nephrops fisheries covered by the North Sea FMP are currently being fished sustainably, with assessed FUs showing stock health above MSY biomass reference points and fishing pressure mostly below MSY fishing mortality reference points.

Although there is sufficient available evidence to assess MSY for economically and socially critical FUs in the North Sea, it should be noted that for some FUs, and Nephrops outside of FUs in the North Sea, data is limited and MSY cannot be estimated. For these areas the 2020 Act requires the Fisheries Policy Authorities to specify policies for maintaining or increasing levels of the stock, and to specify steps to improve the scientific evidence (or provide reasons why no steps are proposed)

The Fisheries Policy Authorities manage North Sea Nephrops on an overarching basis, and actions to ensure overall sustainable management across the North Sea are in place. This is generally achieved through the setting of a TAC alongside appropriate technical management measures. There are no current plans in place to improve the evidence base for those areas where current evidence is poor, rather scientific resources are concentrated on those Nephrops FUs of most importance commercially and socially.

These FMPs therefore describe a vision with policies and actions which set out how management can continue to support an MSY approach[24] for the North Sea and the West Coast of Scotland Nephrops fisheries, and highlights areas that could lead to refinements to management approaches in the future. Areas for action include those which support the wider delivery of policies within the JFS, and which contribute to the delivery of the fisheries objectives in the 2020 Act. These FMPs also set out actions to consider options around FU management.

On that basis, the FMPs will likely deliver greater environmental gain and will have a more significant positive impact on improving the current environmental baseline, compared to a 'business as usual' approach that only continues with existing fisheries management.

A range of environmental issues (e.g., through SNCB advice, evidence relating to climate change impacts, etc.) have been considered during the development of the current proposed policies and actions to ensure they have minimal negative environmental effects and where applicable maximum positive environmental gain. Stakeholder input, including that from the environmental sector has been considered during the development of policies and actions. These processes have been employed to ensure the most appropriate actions have been proposed for this stage in the life cycle of the FMPs. An assessment of the potential alternatives is provided in Table 5 (Annex 1).

The proposed policies and actions set out in the FMPs are therefore considered to be the most appropriate for this stage in the FMPs' development.

The draft Nephrops FMPs will develop through future iterations as the evidence base improves. Policies and actions will be adapted to ensure the most appropriate and effective management interventions are used to address contemporary issues. Where appropriate, additional measures will be developed as options for more targeted management become available to tackle a wider range of fisheries management issues over the longer-term.

The public will be consulted on the draft Nephrops FMPs, alongside the consultation of this ER. These consultations will provide stakeholders with the opportunity to review proposed policies and actions and present alternatives if available.

[24] An explanation of a MSY approach to fishing is provided in Advice published by ICES

8. Monitoring and Review

Monitoring

Regulation 17 of the SEA Regulations 2004 requires the responsible authorities to monitor the significant environmental effects of the implementation of the draft Nephrops FMPs' policies and actions to identify unforeseen adverse effects at an early stage, ensuring appropriate remedial action can be undertaken. Paragraph 9 of Schedule 2 to the 2004 Regulations requires the Environmental Report to include a description of the measures envisaged concerning monitoring in accordance with regulation 17.

The types of relevant monitoring already undertaken or proposed by the FMPs fall into the following categories:

- Monitoring the effectiveness of FMP policies and actions
- Environmental impacts monitoring
- Monitoring changes in fishing activity

Monitoring effectiveness of the FMPs

Section 6 of the Fisheries Act 2020 requires the FMPs to specify indicators to be used for monitoring the effectiveness of the draft Nephrops FMPs.

The draft Nephrops FMPs' policies and actions are intended to ensure that the fisheries covered by these FMPs are fished sustainably with respect to an MSY approach and also to support improvements in the overall management approach.

The section on Implementation and Monitoring (section 12) of the FMPs provides details on the indicators to be used for monitoring the effectiveness of the plans. This includes:

- ICES stock assessments assess how fish populations have changed over time and the effect that fishing pressure is having on stocks. Key biological indicators are provided as reference points, which give indication towards their MSY, fishing pressure and spawning stock biomass. Fisheries policy authorities undertake a review of ICES stock assessments on an annual basis, to

determine how stocks are performing against these reference points, and any other reference points provided within the advice[25].

- The health of the stock will continue to be reviewed in this way as part of the ongoing negotiations cycle, utilising the ICES stock assessment process, and will also be reviewed on a more in-depth basis as part of the ICES benchmark process (which varies from stock to stock).

Individual policies and actions will be monitored and reported on. As part of the three-year review cycle for the JFS, as set out under section 11 of the Fisheries Act (2020), each policy and action contained within the FMPs will be considered and reported on in relation to a) whether it has been implemented and b) any known interactions between the actions and health of the stock. The responsible authorities will report on levels of biomass, primarily using ICES reference points, to provide an indication of the overall health of the stock.

Environmental Impacts

MPAs

The conservation status of conservation sites, including SACs, SPAs, MPAs and MCZs is monitored by the SNCBs, and is reported under the Habitats Regulations, the Marine and Coastal Access Act 2009 and the Marine (Scotland) Act 2010. Findings from these monitoring activities could be used to help indicate where potential risks or impacts associated with fishing activity being managed through the FMP are occurring. FMPs could act on this evidence to amend their policies and measures to reduce or avoid these risks or impacts. Findings from these monitoring activities could also be used to indicate where FMP policies and actions are having a positive effect. The draft Nephrops FMPs include an action on supporting fisheries management measures being introduced to existing Marine Protected Areas (MPAs), where these are not already in place.

UK Marine Strategy

The UK MS monitors and assesses the state of the marine environment against 11 descriptors. See section above for details on how monitoring the FMPs will link into future assessments under the UK MS.

PMFs (Scottish waters)

[25] Sustainability of Fish Stocks | National Performance Framework

In July 2014, Scottish Ministers adopted a list of 81 Priority Marine Features (PMFs), which may also be protected under various legislations or other designations. As many benthic species and habitat PMFs are represented within the Scottish MPA network, it is assumed these features will receive protection through the MPA management process. The draft Nephrops FMPs include an action to support the introduction of fisheries management measures for the most vulnerable Priority Marine Features (PMFs) in Scottish inshore waters (0-12 nautical miles).

Atmospheric emissions

The Climate Change Committee (CCC) was set up under the Climate Change Act 2008 to support the strategic aims of Defra and the devolved administrations and to independently assess how the UK can optimally achieve its emissions reductions goals. The Committee advises on the level of carbon budgets and submits annual reports to Parliament on the UK's progress towards targets and budgets. Evidence on the contribution of the UK Nephrops fishing fleet has been considered in this SEA and would continue to be reviewed against the FMPs' goals as part of monitoring.

Review

The Fisheries Act 2020 requires the Nephrops FMPs to be reviewed at least every six years; the 2020 Act requires a report on the FMP's progress to be included in the report on the JFS every three years. The formal review will assess how the FMPs have contributed to the Nephrops fishery harvesting within sustainable limits and the Fisheries Act objectives. An earlier review may be triggered in light of a change to relevant evidence, international obligations, or wider events. The decision to review earlier will be taken by the fisheries policy authorities.

The results of monitoring the effectiveness of the Nephrops FMPs will also contribute to the legally required process to review the JFS. The JFS report will set out the extent to which each FMP has been implemented and has affected stock levels in the UK.

Additional reviews can be conducted at any point within these time scales if relevant evidence, international obligations, or wider events require a change in the policies set out in the FMPs.

The findings of these reviews will inform the development of subsequent iterations of the Nephrops FMPs. As part of the reporting and wider review processes, alternatives to management can be identified to ensure the Nephrops FMPs deliver on their policies and wider environmental obligations.

The SEA Environmental Report will be periodically updated to reflect how the implementation of proposed FMPs' policies and actions affect the environment. Such

updating will ensure that the SEA remains up to date throughout the ongoing FMP process into the future.

Annex 1

Table 1. Summary of policies, actions, and relevant Fisheries Act objectives for the draft Nephrops FMPs.

Policies and actions are applicable to both the West Coast of Scotland Nephrops FMP and the North Sea Nephrops FMP; Exceptions to this are specified following the relevant actions text.

Policy	Action	Timeframe	Relevant Fisheries Act Objectives
Policy 1: Harvest the [West Coast of Scotland/North Sea] Nephrops stocks sustainably, with biomass maintained above the level capable of producing MSY.	Continue to take an approach to TAC setting informed by the best available scientific advice and in line with an MSY approach [for those functional units with MSY advice – for North Sea Nephrops FMPs only].	Ongoing	Sustainability Objective Precautionary Objective Scientific Evidence Objective Ecosystem Objective
	Continue to work with Coastal State partners with the aim of maintaining sustainable harvesting through international negotiations.		
	Undertake an in-depth options appraisal for potential FU management of Nephrops, exploring available options, opportunities, impacts, consequences and cost / benefit analysis.	Short Term (1-2 years)	
	Consider options around setting limits and MSY reference points at a stock level (for FUs and areas outside of FUs).		
	As part of the options appraisal, consider development of an		

Policy	Action	Timeframe	Relevant Fisheries Act Objectives
	appropriate harvest strategy for each FU, alongside the development of suitable measures which could be adapted to each FU, and which may be available for use in a stock depletion / collapse scenario should this occur in the future.		
	Consider the circumstances under which quota management measures should be applied, how they should be appraised and what the measures should be.		
	Consult on options for management.		
	Continue to develop the Scottish Inshore Fisheries Management Improvement (IFMI) programme in consultation with stakeholders, to deliver a more agile, regional approach to inshore fisheries management.		
	Work with the fishing industry and other stakeholders to implement changes if required following the FU options appraisal process.	Long Term (3-5 years)	
Policy 2: Understand and minimise the benthic impact of Nephrops fisheries.	Continue to implement fisheries management measures for existing MPAs where these are not already in place, as well as the most sensitive PMFs in Scottish inshore waters.	Short Term (1-2 years)	Ecosystem Objective Sustainability Objective Scientific Evidence Objective
	Collaborate across the UK to implement the UK Marine		

Policy	Action	Timeframe	Relevant Fisheries Act Objectives
	Strategy Programme of Measures (POM).		
	Support and enable the fishing industry to explore alternative gear options that can help reduce benthic impacts, through the provision of funding or licence derogations, building on the positive work already carried out in this area.		
	Develop understanding of where Nephrops fishing activity is taking place by gathering data at suitable spatial resolution and across all parts of the fleet. This will be supported by the rollout of inshore vessel tracking to the under 12m fishing fleet that is already underway.	Medium to Long Term (3-5 years)	
	Support research on benthic habitats aiming at informing future management actions, including: a) research to better understand the spatial extent of benthic habitats and the overlap with Nephrops fishing activity; b) investigating the direct impacts caused by Nephrops fishing gear on benthic habitats and; c) research to understand the resilience of benthic habitats to Nephrops fishing activity and their ability to recover.		
Policy 3: Minimise the impact of Nephrops	Introduce additional voluntary and mandatory bycatch avoidance measures where these are needed. In Scotland, this will	Short Term (1-2 years)	Ecosystem Objective Sustainability Objective

Policy	Action	Timeframe	Relevant Fisheries Act Objectives
fishing activities on sensitive marine species by reducing bycatch and entanglement of these species.	be taken forward as part of the Future Catching Policy programme of work.		Bycatch Objective
	Continue to support the fishing industry to take action to reduce instances of entanglement and bycatch of sensitive marine species, particularly focussed on entanglements in creel fisheries.		
	Support and expand existing initiatives that are shown to be effective at reducing or minimising the risk posed to sensitive marine species specific to Nephrops fisheries. This could include gear modifications such as negatively buoyant ropes between creels, ropeless creel gears, selectivity devices in trawls, or could focus on remedial action such as best practice handling guidance for when interactions do occur.		
	Continue to collect data under the UK Marine Wildlife Bycatch Mitigation Initiative to improve understanding of risk and frequency of sensitive species interactions.	Medium to Long Term (3-5 years)	
	Continue to deliver actions under the UK Marine Wildlife Bycatch Mitigation Initiative to reduce the risk, frequency and impact of fisheries on sensitive marine species including seabirds.		
	Collaborate across the UK to develop policy to reduce/eliminate sensitive marine		

Policy	Action	Timeframe	Relevant Fisheries Act Objectives
	species bycatch in the UK through regular information sharing across administrations, and collaborative working on projects.		
	Continue to collect data in the Scottish whitefish and prawn trawler fleets through the Scottish Demersal Observer Programme to improve understanding of risk and frequency of sensitive species interactions, and the effectiveness of existing mitigation and avoidance measures, where applicable.		
Policy 4: Address discarding issues in the Nephrops fisheries and ensure that where possible all catches are accounted for against quotas.	Subject to appropriate consultation and assessment, introduce new technical measures to minimise discarding by supporting a reduction in unwanted catches through improvements to gear selectivity or fishing techniques where appropriate.	Short Term (1-2 years)	Bycatch Objective Scientific Evidence Objective Sustainability Objective
	Deliver improvements to the current management and rules to ensure that, wherever possible, all catches are accounted for against quotas. In Scotland this will take place as part of the Future Catching Policy programme of work.		
	Develop a roadmap for rollout of REM in priority fisheries around the UK, with clear prioritisation criteria and implementation timetable.	Medium to Long Term (3-5 years)	

Policy	Action	Timeframe	Relevant Fisheries Act Objectives
	Fisheries policy authorities will continue to work with industry and other stakeholders to promote the use of selective fishing gear and fishing techniques that have a reduced impact on the environment.		
Policy 5: Support fishing businesses to continue to deliver socio-economic benefits to coastal communities and the wider UK economy.	Continue to take account of socio-economic considerations as part of international negotiations and as part of the process to determine fishing opportunities.	Ongoing	Sustainability Objective Equal Access Objective National Benefit Objective
	Continue to gather and use evidence on economic aspects of the fisheries to ensure management decisions are informed by the best available evidence.		
	Support the fishing industry to explore and utilise accreditation schemes where these will help to drive improvements in management.		
	Encourage and support industry-led initiatives to: improve the operational effectiveness of fishing vessels while maintaining a commitment to sustainability; identify circular economy benefits; encourage diversification into additional fisheries; and support proposals that create sustainable employment in coastal communities.		

Policy	Action	Timeframe	Relevant Fisheries Act Objectives
	Consider enhancing social and economic data.	Medium to Long Term (3-5 years)	
Policy 6: Reduce the impact of Nephrops fishing on climate change and support the fishing industry to adapt to the impacts of climate change.	Collaborate with partners across government, industry, and academic sectors on initiatives to reduce environmental impacts of the Nephrops fisheries (including reduction of carbon emissions), whilst also taking into account the socio-economic importance of fisheries as well as food security.	Medium to Long Term (3-5 years)	Sustainability objective Climate Change Objective
	Commission research into the assessment of the carbon footprint of the different components of Nephrops fisheries.		
	Collaborate with partners across government, industry, and academic sectors in identifying and exploring alternative ways to reduce carbon footprint within the Nephrops supply chain.		
	Collaborate across the UK and internationally on further evidence and analysis to understand the impact of climate change on Nephrops and develop options for how the Nephrops fisheries may adapt to climate change impacts in the future.		

Table 2. Sections of this report and the corresponding paragraph of Schedule 2 of the SEA Regulations 2004

Section(s) of this Report	Corresponding Paragraph in Schedule 2
Sections: 1 and 4	Paragraph 1: An outline of the contents and main goals of the plan or programme, and of its relationship with other relevant plans and programmes.
Sections: 3 and 7	Paragraph 2: The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.
Section: 3	Paragraph 3: The environmental characteristics of areas likely to be significantly affected.
Section: 3	Paragraph 4: Any existing environmental problems which are relevant to the plan or programme including those relating to any areas of a particular environmental importance, [such as a European site (within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2017)].
Section: 4	Paragraph 5: The environmental protection objectives, established at international, [European Union] or national level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation.
Section: 5	Paragraph 6: The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects and secondary, cumulative and synergistic effects, on issues such as (a) biodiversity; (b) population; (c) human health; (d) fauna; (e) flora; (f) soil; (g) water; (h) air; (i) climatic factors; (j) material assets; (k) cultural heritage, including architectural and archaeological heritage; (l) landscape; and

Section(s) of this Report	Corresponding Paragraph in Schedule 2
	(m) the inter-relationship between the issues referred to in sub-paragraphs (a) to (l).
Section: 6	Paragraph 7: The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.
Section: 7	Paragraph 8: An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information.
Sections: 8	Paragraph 9: A description of the measures envisaged concerning monitoring in accordance with regulation 17.
Non-technical summary	Paragraph 10: A non-technical summary of the information provided under paragraphs 1 to 9.

Table 3. Results of the scoping exercise to determine those environmental issues likely to be significantly affected by the draft Nephrops FMPs and thus scoped into the SEA[26]

Issue	Potential to cause impacts	Justification
Biodiversity, fauna and flora, **geology and sediments** (UK MS descriptors D1, D3, D4, D6)	Yes	Fishing activity for Nephrops has the potential to result in physical disturbance to the seabed and the extraction of, or mortality of/injury to/disturbance to, both target and non-target wild species. These issues are within the scope of this SEA.
Population (Human)	No	The proposed FMPs are not likely to result in significant increases or decreases in human population numbers, or changes to in-migration or out-migration. This issue is beyond the scope of this SEA.
Human health	No	The proposed FMPs would not result in any significant human health issues. Whilst fishing remains a dangerous vocation and the proposed FMPs will promote safe operations, the regulation of the safety of fishing operations falls elsewhere.

26 Where relevant, the relationship between the issue and the UK MS descriptor of GES is shown as 'D#' where # represents the number of the descriptor, as shown in Appendix A.

Issue	Potential to cause impacts	Justification
		This issue is beyond the scope of this SEA.
Geology and sediments (soil) (UK MS descriptor D6)	Yes	Fishing activity for Nephrops has the potential to result in physical disturbance to the seabed and substrates. This issue is within the scope of this SEA.
Water **(UK MS descriptors D10, D11)**	Yes	The proposed FMPs aim to make fishing practices more environmentally sustainable so there is scope to reduce the impact of fisheries on water quality. However, the measures proposed are unlikely to affect eutrophication, hydrographical conditions or contaminant levels (descriptors 7-9). This issue is within the scope of this SEA.
Air	No	The proposed FMPs are unlikely to result in significant additional vessel emissions and associated air pollution. Reducing vessel emissions from a carbon footprint perspective will be considered by the Climatic factors issue. This issue is beyond the scope of this SEA.
Climatic factors	Yes	The proposed FMPs will make an appropriate contribution to the climate change objective of the Fisheries Act 2020, seeking to ensure it develops relevant policies to both mitigate impact on and adapt to climate change.

Issue	Potential to cause impacts	Justification
		This issue is within the scope of this SEA.
Material assets	No	The proposed FMPs will not impact material assets related to; ports and shipping; fisheries and aquaculture; leisure or recreation; tourism; marine manufacturing; defence; aggregate extraction; energy generation and infrastructure development; seabed assets. This issue is beyond the scope of this SEA.
Cultural heritage	Yes	Fishing activity for Nephrops has the potential to interact with marine heritage assets. While the proposed FMPs are not intended to focus on mitigating the impacts of fishing on the marine historic environment, there is potential for fisheries management to have a positive effect on safeguarding cultural heritage features. This issue is within the scope of this SEA.
Landscape and Seascape	Yes	Nephrops fishing, through physical disturbance of the seabed, has the potential to affect seascape features. This issue is within the scope of this SEA.

Table 4. High-level assessment of the positive and negative environmental effects of the draft Nephrops FMPs' policies and actions

Action	Time frame	Positive effects	Negative effects
Policy 1: Harvest the [West Coast of Scotland/North Sea] Nephrops stock sustainably, with biomass maintained above the level capable of producing MSY			
Continue to take an approach to TAC setting informed by the best available scientific advice and in line with an MSY approach [for those functional units with MSY advice].	Ongoing	This action is expected to contribute towards the sustainability of targeted stocks. This may also have indirect benefits for the wider environment, for example food webs and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape	If this leads to management that reduces opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the relevant FMP (area and/or species). If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape
Continue to work with Coastal State	Ongoing	This action is expected to contribute towards the sustainability of targeted	If this leads to management that reduces opportunities, that may

Action	Time frame	Positive effects	Negative effects
partners with the aim of maintaining sustainable harvesting through international negotiations.		stocks. This may also have indirect benefits for the wider environment, for example food webs and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the relevant FMP (area and/or species). If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Undertake an in-depth options appraisal for potential FU management of Nephrops, exploring all options, opportunities, impacts, consequences and cost / benefit analysis.	Short Term (1-2 years)	This action, while important, will not by itself have a positive effect on the environment. However, it will allow for more informed management decisions in the future that could result in improvements across a range of receptors and ultimately contribute to the sustainable management of targeted stocks. This may have indirect benefits for wider environment, for	This action, while important, will not by itself have an effect on the environment. However, it will allow for more informed management decisions. The intention of these would be to have a positive impact, but there could be unintended negative effects, resulting from spatial changes in fishing effort.

Action	Time frame	Positive effects	Negative effects
		example food webs and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	Data collection and processing needs to be considered alongside proposed management actions as in isolation it will not prevent the associated fisheries from declining further if overfishing is taking place or reduce environmental impacts associated with fishing activity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Consider options around setting limits and MSY reference points at a stock level (for FUs and areas outside of FUs).	Short Term (1-2 years)	This action is expected to contribute towards the sustainability of targeted stocks. This may also have indirect benefits for the wider environment, for example food webs and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6)	If this leads to management that reduces opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the relevant FMP (area and/or species). If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment.

Action	Time frame	Positive effects	Negative effects
		- Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
As part of the options appraisal, consider development of an appropriate harvest strategy for each FU, alongside the development of suitable measures which could be adapted to each FU, and which may be available for use in a stock depletion / collapse scenario should this occur in the future.	Short Term (1-2 years)	This action is expected to contribute towards the sustainability of targeted stocks. This may also have indirect benefits for the wider environment, for example food webs and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	If this leads to management that reduces opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the relevant FMP (area and/or species). If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape

Action	Time frame	Positive effects	Negative effects
			- Water (UK MS descriptors D10, D11) - Climatic factors
Consider the circumstances under which quota management measures should be applied, how they should be appraised and what the measures should be.	Short Term (1-2 years)	This action is expected to contribute towards the sustainability of targeted stocks. This may also have indirect benefits for the wider environment, for example food webs and biodiversity. - Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	If this leads to management that reduces opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the relevant FMP (area and/or species). If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Consult on options for management.	Short Term (1-2 years)	This action, while important, will not by itself have a positive effect on the environment. However, it will allow for more informed management	This action, while important, will not by itself have an effect on the environment. However, it will allow for more informed management

Action	Time frame	Positive effects	Negative effects
		decisions in the future that could result in improvements across a range of receptors and ultimately contribute to the sustainable management of targeted stocks. This may have indirect benefits for wider environment, for example food webs and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	decisions. The intention of these would be to have a positive impact, but there could be unintended negative effects, resulting from spatial changes in fishing effort. Data collection and processing needs to be considered alongside proposed management actions as in isolation it will not prevent the associated fisheries from declining further if overfishing is taking place or reduce environmental impacts associated with fishing activity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Continue to develop the Scottish Inshore Fisheries Management Improvement (IFMI) programme in	Short Term (1-2 years)	This action is expected to contribute towards the sustainability of targeted stocks. This may also have indirect benefits for the wider environment, for example food webs and biodiversity.	If this leads to management that reduces opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the relevant FMP (area and/or species). If this

Action	Time frame	Positive effects	Negative effects
consultation with stakeholders, to deliver a more agile, regional approach to inshore fisheries management.		Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Work with the fishing industry and other stakeholders to implement changes if required following the FU consultation.	Medium to Long Term (3-5 years)	This action is expected to contribute towards the sustainability of targeted stocks. This may also have indirect benefits for the wider environment, for example food webs and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11)	If this leads to management that reduces opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the relevant FMP (area and/or species). If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6)

Action	Time frame	Positive effects	Negative effects
		• Climatic factors	- Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Policy 2: Understand and minimise the benthic impact of Nephrops fisheries.			
Continue to implement fisheries management measures for existing MPAs where these are not already in place, as well as the most sensitive PMFs in Scottish inshore waters.	Short Term (1-2 years)	With protection in place, this should support the sustainability of the stock by protecting key habitats and improving recruitment success. It is also likely to have a wider positive effect on biodiversity, food webs and seabed integrity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	This may lead to spatial changes in fishing effort, potentially increasing the fishing pressure in other places within the FMP area or beyond. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape
Collaborate across the UK to implement the UK Marine Strategy Programme of Measures (POM).	Short Term (1-2 years)	A better understanding of benthic impact will allow for appropriate mitigation measures to be designed where required. If then implemented, this will have a positive effect on sea	No immediate negative effects are anticipated. If this eventually leads to management that reduces opportunities, this action may result in spatial changes in fishing effort that increases the fishing pressure elsewhere or

Action	Time frame	Positive effects	Negative effects
		floor integrity and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	technical alterations (such as gear switching) that may change the risk profile of the fishery with respect to bycatch and benthic impacts. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS – D1, D3, D4, D6) - Geology/sediments (UK MS – D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Support and enable the fishing industry to explore alternative gear options that can help reduce benthic impacts, through the provision of funding or licence derogations, building on the positive work already carried out in this area.	Short Term (1-2 years)	This action has the potential to reduce environmental impacts, but the scale and likelihood is not currently assessable. A better understanding of the impacts from specific gears on seafloor integrity would support low impact gear design, informing future management decisions, which may have a positive effect on sea floor integrity and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6)	No immediate negative effects are anticipated. If this eventually leads to management that reduces opportunities, or mandates alternative gears, this action may result in spatial changes in fishing effort that increases the fishing pressure elsewhere or technical alterations (such as gear switching) that may change the risk profile of the fishery with respect to bycatch and benthic impacts. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6)

Action	Time frame	Positive effects	Negative effects
		- Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	- Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Develop understanding of where Nephrops fishing activity is taking place by gathering data at suitable spatial resolution and across all parts of the fleet. This will be supported by the rollout of inshore vessel tracking to the under 12m fishing fleet that is already underway.	Medium to Long Term (3-5 years)	A better understanding of benthic impact will allow for appropriate mitigation measures to be designed where required. If then implemented, this will have a positive effect on sea floor integrity and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	No immediate negative effects are anticipated. If this eventually leads to management that reduces opportunities, this action may result in spatial changes in fishing effort that increases the fishing pressure elsewhere or technical alterations (such as gear switching) that may change the risk profile of the fishery with respect to bycatch and benthic impacts. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS – D1, D3, D4, D6) - Geology/sediments (UK MS – D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Support research on benthic habitats aiming at	Medium to Long Term	A better understanding of the distribution of vulnerable habitats, their overlap with Nephrops	No immediate negative effects are anticipated. If this eventually leads to management that reduces

Action	Time frame	Positive effects	Negative effects
informing future management actions, including a) research to better understand the spatial extent of benthic habitats and the overlap with Nephrops fishing activity; b) investigating the direct impacts caused by Nephrops fishing gear on benthic habitats and c) research to understand the resilience of benthic habitats to Nephrops fishing activity and their ability to recover.	(3-5 years)	fisheries, the resilience of burrowed mud to fishing pressure, and the resulting benthic impacts will support the development of appropriate mitigation measures where needed. If then implemented, these will have a positive effect on seafloor integrity and enhance biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	opportunities, this action may result in spatial changes in fishing effort that increases the fishing pressure elsewhere or technical alterations (such as gear switching) that may change the risk profile of the fishery with respect to bycatch and benthic impacts. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS – D1, D3, D4, D6) - Geology/sediments (UK MS – D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Policy 3: Minimise the impact of Nephrops fishing activities on sensitive marine species by reducing bycatch and entanglement of these species.			
Introduce additional voluntary and mandatory bycatch avoidance measures where these are needed. In Scotland, this will taken forward as part of the Future	Short Term (1-2 years)	This action is expected to deliver broader environmental benefits, for example for food webs and biodiversity. Supporting appropriate good practices in relation to handling of sensitive marine species within the fishery is expected to contribute to the recruitment of sensitive marine species. If then implemented, this will have a positive effect on	No negative effects are anticipated, therefore this goal is considered to pose a low risk.

Action	Time frame	Positive effects	Negative effects
Catching Policy programme of work.		biodiversity and, in some cases, MPA condition. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6)	
Continue to support the fishing industry to take action to reduce instances of entanglement and bycatch of sensitive marine species, particularly focussed on entanglements in creel fisheries.	Short Term (1-2 years)	This action is expected to deliver broader environmental benefits, for example for food webs and biodiversity. Implementing appropriate bycatch mitigation measures in the fishery is expected to contribute to the recruitment of sensitive marine species. If then implemented, this will have a positive effect on biodiversity and, in some cases, MPA condition. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape	No immediate negative effects are anticipated. If this eventually leads to management that reduces opportunities, this action may result in spatial changes in fishing effort that increases the fishing pressure elsewhere or technical alterations (such as gear switching) that may change the risk profile of the fishery with respect to bycatch and benthic impacts. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape
Support and expand existing initiatives that are shown to be effective at reducing or minimising the risk posed to	Short Term (1-2 years)	This action is expected to deliver broader environmental benefits, for example for food webs and biodiversity. Implementing appropriate bycatch mitigation measures in the fishery is expected to contribute to the recruitment of sensitive	No immediate negative effects are anticipated. If this eventually leads to management that reduces opportunities, this action may result in spatial changes in fishing effort that increases the fishing pressure elsewhere or technical alterations (such

Action	Time frame	Positive effects	Negative effects
sensitive marine species specific to Nephrops fisheries, including introducing mandatory use where required. This could include gear modifications such as negatively buoyant ropes between creels, ropeless creel gears, selectivity devices in trawls, or could focus on remedial action such as best practice handling guidance for when interactions do occur.		marine species If then implemented, this will have a positive effect on biodiversity and, in some cases, MPA condition. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape	as gear switching) that may change the risk profile of the fishery with respect to bycatch and benthic impacts. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape
Continue to collect data under the UK Marine Wildlife Bycatch Mitigation Initiative to improve understanding of risk and	Medium to Long Term (3-5 years)	A better understanding of bycatch will allow for appropriate mitigation measures to be designed where required. If then implemented, this will have a positive effect on biodiversity and, in some cases, MPA condition. Relevant SEA Issues:	No immediate negative effects are anticipated. If this eventually leads to management that reduces opportunities, this action may result in spatial changes in fishing effort that increases the fishing pressure elsewhere or technical alterations (such as gear switching) that

Action	Time frame	Positive effects	Negative effects
frequency of sensitive species interactions, and the effectiveness of existing mitigation and avoidance measures.		- Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape	may change the risk profile of the fishery with respect to bycatch and benthic impacts. Data collection needs to be considered alongside proposed management actions as it will not stop the associated fisheries from declining further if overfishing is taking place. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape
Continue to deliver actions under the UK Marine Wildlife Bycatch Mitigation Initiative to reduce the risk, frequency and impact of fisheries on sensitive marine species including seabirds.	Medium to Long Term (3-5 years)	This action is expected to deliver broader environmental benefits, for example for food webs and biodiversity. Implementing appropriate bycatch mitigation measures in the fishery is expected to contribute to the recruitment of sensitive marine species If then implemented, this will have a positive effect on biodiversity and, in some cases, MPA condition. Relevant SEA Issues:	No immediate negative effects are anticipated. If this eventually leads to management that reduces opportunities, this action may result in spatial changes in fishing effort that increases the fishing pressure elsewhere or technical alterations (such as gear switching) that may change the risk profile of the fishery with respect to bycatch and benthic impacts. Relevant SEA Issues:

Action	Time frame	Positive effects	Negative effects
		- Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape	- Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape
Collaborate across the UK to develop policy to reduce/eliminate sensitive marine species bycatch in the UK through regular information sharing across administrations, and collaborative working on projects.	Medium to Long Term (3-5 years)	This action, while important, will not by itself have a positive effect on the environment. However, it will allow for more informed management decisions in the future that could result in improvements across a range of receptors and ultimately contribute to reducing bycatch/entanglement of sensitive species. This may have indirect benefits for wider environment, for example food webs and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	This action, while important, will not by itself have an effect on the environment. However, it will allow for more informed management decisions. The intention of these would be to have a positive impact, but there could be unintended negative effects, resulting in spatial changes in fishing effort that increases the fishing pressure elsewhere or technical alterations (such as gear switching) that may change the risk profile of the fishery with respect to bycatch and benthic impacts. Data collection and processing needs to be considered alongside proposed management actions as in isolation it will not prevent the associated fisheries from declining further if overfishing is taking place or reduce environmental impacts associated with fishing activity. Relevant SEA Issues:

Action	Time frame	Positive effects	Negative effects
			- Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Continue to collect data in the Scottish whitefish and prawn trawler fleets through the Scottish Demersal Observer Programme to improve understanding of risk and frequency of sensitive species interactions, and the effectiveness of existing mitigation and avoidance measures, where applicable.	Medium to Long Term (3-5 years)	This action, while important, will not by itself have a positive effect on the environment. However, it will allow for more informed management decisions in the future that could result in improvements across a range of receptors. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Climatic factors	Field surveys could result in negative effects on the environment if impacts are not adequately considered during the planning stage. Data collection needs to be considered alongside proposed management actions as it will not prevent the associated fisheries from declining further if overfishing is taking place. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors

Action	Time frame	Positive effects	Negative effects
Policy 4: Address discarding issues in the Nephrops fisheries and ensure that where possible all catches are accounted for against quotas.			
Subject to appropriate consultation and assessment, introduce new technical measures to minimise discarding by supporting a reduction in unwanted catches through improvements to gear selectivity or fishing techniques where appropriate.	Short Term (1-2 years)	This should ultimately support the move towards harvest control rules that contribute to the sustainability of targeted stocks and reducing unwanted catches. This also is expected to have benefits for wider environment, for example food webs and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape	No immediate negative effects are anticipated. If this leads to management that reduces opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the FMPs (area and/or species). If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape
Deliver improvements to the current management and rules to ensure that, wherever possible, all catches are accounted for against quotas.	Short Term (1-2 years)	Although this action will have no immediate positive effects on the environment, it should ultimately support the move towards harvest control rules that contribute to the sustainability of targeted stocks and reducing unwanted catches. Additionally, by reducing discards, the action may have indirect	No immediate negative effects are anticipated. If this leads to management that reduces opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the FMPs (area and/or species). If this leads to management that increases opportunities

Action	Time frame	Positive effects	Negative effects
In Scotland this will take place as part of the Future Catching Policy programme of work.		benefits for the broader marine environment, such as supporting food webs and preserving biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6)	within the plan area, the increase in pressure could have a negative impact on the wider environment. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6)Climatic factors
Develop a roadmap for rollout of REM in priority fisheries around the UK, with clear prioritisation criteria and implementation timetable.	Medium to Long Term (3-5 years)	This action, while important, will not by itself have a positive effect on the environment. However, it will allow for more informed management decisions in the future that could result in improvements across a range of receptors and ultimately contribute to the sustainable management of the targeted stock. This may have indirect benefits for wider environment, for example food webs and biodiversity. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11)	This action, while important, will not by itself have an effect on the environment. However, it will allow for more informed management decisions. The intention of these would be to have a positive impact, but there could be unintended negative effects, resulting from spatial changes in fishing effort. REM technologies need to be considered alongside proposed management actions as in isolation it will not prevent the associated fisheries from declining further if overfishing is taking place or reduce environmental impacts associated with fishing activity. No negative effects are anticipated, therefore this action is considered to pose a low risk.

Action	Time frame	Positive effects	Negative effects
		- Climatic factors	Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Fisheries policy authorities will continue to work with industry and other stakeholders to promote the use of selective fishing gear and fishing techniques that have a reduced impact on the environment.	Medium to Long Term (3-5 years)	This action is expected to deliver broader environmental benefits, for example for food webs and biodiversity. Supporting the use of more selective types of fishing gear and innovative practices is expected to have positive effects on sea floor integrity and biodiversity, potentially increasing the proportion of the fishery adopting sustainable practices. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11)	No immediate negative effects are anticipated. If this eventually leads to management that reduces opportunities, this action may lead to spatial changes in fishing effort that increases fishing pressure elsewhere. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors

Action	Time frame	Positive effects	Negative effects
		- Climatic factors	
Policy 5: Support fishing businesses to continue to deliver socio-economic benefits to coastal communities and the wider UK economy.			
Continue to take account of socio-economic considerations as part of international negotiations and as part of the process to determine fishing opportunities.	Ongoing	Including social, economic and cultural importance in fisheries management is consistent with ecosystem-based approaches and can lead to improved governance and environmental outcomes. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	If stock negotiations lead to agreed management or quotas that reduce opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the relevant FMP (area and/or species). If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment. If social, economic and cultural importance are considered in isolation, fisheries management approaches may have negative environmental consequences. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors

Action	Time frame	Positive effects	Negative effects
Continue to gather and use evidence on economic aspects of the fishery to ensure management decisions are informed by the best available evidence.	Ongoing	Including social, economic and cultural importance in fisheries management is consistent with ecosystem-based approaches and can lead to improved governance and environmental outcomes. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	If social, economic and cultural importance are considered in isolation, fisheries management approaches may have negative environmental consequences. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Support the fishing industry to explore and utilise accreditation schemes where these will help to drive improvements in management.	Ongoing	Including social, economic and cultural importance in fisheries management is consistent with ecosystem-based approaches and can lead to improved governance and environmental outcomes. Accreditation could lead to improved practices that reduce bycatch, benthic disturbance and carbon emissions. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6)	If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment. If social, economic and cultural importance are considered in isolation, fisheries management approaches may have negative environmental consequences. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6)

Action	Time frame	Positive effects	Negative effects
		- Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	- Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Encourage and support industry-led initiatives to: improve the operational effectiveness of fishing vessels while maintaining a commitment to sustainability; identify circular economy benefits; encourage diversification into additional fisheries; and support proposals that create sustainable employment in coastal communities.	Ongoing	Including social, economic and cultural importance in fisheries management is consistent with ecosystem-based approaches and can lead to improved governance and environmental outcomes. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment. If social, economic and cultural importance are considered in isolation, fisheries management approaches may have negative environmental consequences. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Consider enhancing social and economic data.	Medium to Long Term	Including social, economic and cultural importance in fisheries management is consistent with ecosystem-	If this leads to management that increases opportunities within the plan area, the

Action	Time frame	Positive effects	Negative effects
	(3-5 years)	based approaches and can lead to improved governance and environmental outcomes. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors	increase in pressure could have a negative impact on the wider environment. If social, economic and cultural importance are considered in isolation, fisheries management approaches may have negative environmental consequences. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Water (UK MS descriptors D10, D11) - Climatic factors
Policy 6: Reduce the impact of Nephrops fishing on climate change and support the fishing industry to adapt to the impacts of climate change			
Collaborate with partners across government, industry, and academic sectors on initiatives to reduce environmental impacts of the West of Scotland Nephrops Fisheries	Medium to Long Term (3-5 years)	Although this action will have no immediate positive effects on the environment, developing practical options to reduce carbon emissions will support the development of climate change mitigation and adaptation measures for the nephrops fisheries. This should ultimately reduce the impact that nephrops fisheries have on the marine environment.	Any unintended reduction in fishing opportunities could lead to spatial changes in fishing effort and increased fishing pressure elsewhere. Any change in fishing practices through mitigation could introduce a different set of pressures that may have negative effects. Relevant SEA Issues:

Action	Time frame	Positive effects	Negative effects
(including reduction of carbon emissions), whilst also taking into account the socio-economic importance of fisheries as well as food security.		Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Climatic factors	- Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Climatic factors
Commission research into the assessment of the carbon footprint of the different components of Nephrops fisheries.	Medium to Long Term (3-5 years)	Although this action will have no immediate positive effects on the environment, the increased understanding will ultimately support better management which will help achieve sustainability goals. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Climatic factors	No negative effects are anticipated; therefore, this goal is considered to pose a low risk.
Collaborate with partners across government, industry, and academic sectors in identifying and exploring alternative ways	Medium to Long Term (3-5 years)	Although this action will have no immediate positive effects on the environment, the increased understanding will ultimately support better management which will help achieve sustainability goals.	No negative effects are anticipated; therefore, this goal is considered to pose a low risk.

Action	Time frame	Positive effects	Negative effects
to reduce carbon footprint within the Nephrops supply chain.		Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Climatic factors	
Collaborate across the UK and internationally on further evidence and analysis to understand the impact of climate change on Nephrops and develop options for how the Nephrops Fisheries may adapt to climate change impacts in the future.	Medium to Long Term (3-5 years)	Although this action will have no immediate positive effects on the environment, the increased understanding will ultimately support better management which will help achieve sustainability goals. Relevant SEA Issues: - Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) - Geology/sediments (UK MS - D6) - Landscape and Seascape - Climatic factors	No negative effects are anticipated; therefore, this goal is considered to pose a low risk.

Table 5. Assessment of alternatives to proposed policies and actions

Policy	Actions	Alternative to proposed measures
Policy 1: Harvest Nephrops stock sustainably, with biomass maintained above the level capable of producing MSY	Continue to take an approach to TAC setting informed by the best available scientific advice and in line with an MSY approach [for those functional units with MSY advice] Continue to work with Coastal State partners with the aim of maintaining sustainable harvesting through international negotiations. Undertake an in-depth options appraisal for potential FU management of Nephrops, exploring all options, opportunities, impacts, consequences and cost / benefit analysis. Consider options around setting limits and MSY reference points at a stock level (for FUs and areas outside of FUs). As part of the options appraisal, consider development of an appropriate harvest strategy for each FU, alongside the development of suitable measures which could be adapted to each FU, and which may be available for use in a stock depletion / collapse	This group of actions sets out how management can maintain an MSY approach for the fisheries, and highlights areas that could lead to refined management approaches in the future. No reasonable alternatives have been identified at this stage.

Policy	Actions	Alternative to proposed measures
	scenario should this occur in the future. Consider the circumstances under which quota management measures should be applied, how they should be appraised and what the measures should be. Consult on options for management. Continue to develop the Scottish Inshore Fisheries Management Improvement (IFMI) programme in consultation with stakeholders, to deliver a more agile, regional approach to inshore fisheries management. Work with the fishing industry and other stakeholders to implement changes if required following the FU consultation.	
Policy 2: Understand and minimise the benthic impact of Nephrops fisheries.	Continue to implement fisheries management measures for existing MPAs where these are not already in place, as well as the most vulnerable PMFs in Scottish inshore waters Collaborate across the UK to implement the UK Marine Strategy Programme of Measures (POM). Support and enable the fishing industry to explore alternative	Understanding and minimising the impacts fisheries have on the marine environment and marine ecosystems is an important part of delivering an ecosystem-based approach. Better information is required to understand how Nephrops fisheries affect seafloor integrity to adequately mitigate impacts.

Policy	Actions	Alternative to proposed measures
	gear options that can help reduce benthic impacts, through the provision of funding or licence derogations, building on the positive work already carried out in this area. Develop understanding of where Nephrops fishing activity is taking place by gathering data at suitable spatial resolution and across all parts of the fleet. This will be supported by the rollout of inshore vessel tracking to the under 12m fishing fleet that is already underway. Support research on benthic habitats aiming at informing future management actions, including a) research to better understand the spatial extent of benthic habitats and the overlap with Nephrops fishing activity; b) investigating the direct impacts caused by Nephrops fishing gear on benthic habitats and c) research to understand the resilience of benthic habitats to Nephrops fishing activity and their ability to recover.	Without this, it is not possible to design effective mitigation measures. No reasonable alternatives have been identified at this stage.
Policy 3: Minimise the impact of Nephrops fishing activities on sensitive	Introduce additional voluntary and mandatory bycatch avoidance measures where these are needed. In Scotland, this will be taken forward as part	Understanding and minimising the impacts fisheries have on the marine environment and marine ecosystems is an important part of delivering an ecosystem-based approach.

Policy	Actions	Alternative to proposed measures
marine species by reducing bycatch and entanglement.	of the Future Catching Policy programme of work. Continue to support the fishing industry to take action to reduce instances of entanglement and bycatch of sensitive marine species, particularly focussed on entanglements in creel fisheries. Support and expand existing initiatives that are shown to be effective at reducing or minimising the risk posed to sensitive marine species specific to Nephrops fisheries, including introducing mandatory use where required. This could include gear modifications such as negatively buoyant ropes between creels, ropeless creel gears, selectivity devices in trawls, or could focus on remedial action such as best practice handling guidance for when interactions do occur. Continue to collect data under the UK Marine Wildlife Bycatch Mitigation Initiative to improve understanding of risk and frequency of sensitive species interactions. Continue to deliver actions under the UK Marine Wildlife Bycatch Mitigation Initiative to reduce the risk, frequency and impact of fisheries on sensitive	Better information is required to understand the detailed nature of bycatch to adequately mitigate impacts. Without this, it is not possible to design effective mitigation measures. No reasonable alternatives have been identified at this stage.

Policy	Actions	Alternative to proposed measures
	marine species including seabirds. Collaborate across the UK to develop policy to reduce/eliminate sensitive marine species bycatch in the UK through regular information sharing across administrations, and collaborative working on projects. Continue to collect data in the Scottish whitefish and prawn trawler fleets through the Scottish Demersal Observer Programme to improve understanding of risk and frequency of sensitive species interactions, and the effectiveness of existing mitigation and avoidance measures, where applicable.	
Policy 4: Address discarding issues in the Nephrops fishery and ensure that where possible all catches of Nephrops are accounted for against quotas.	Subject to appropriate consultation and assessment, introduce new technical measures minimize discarding by supporting a reduction in unwanted catches through improvements to gear selectivity or fishing techniques where appropriate. Deliver improvements to the current management and rules to ensure that, wherever possible, all catches are accounted for against quotas. In	Reducing unwanted catches through technical and other measures and supporting gear innovation to minimise environmental impact is crucial for making informed, evidence-based management decisions. No reasonable alternatives have been identified at this stage. Alternative options can be considered as detailed measures are drafted.

Policy	Actions	Alternative to proposed measures
	Scotland this will take place as part of the Future Catching Policy programme of work. Develop a roadmap for rollout of REM in priority fisheries around the UK, with clear prioritisation criteria and implementation timetable. Fisheries policy authorities will continue to work with industry and other stakeholders to promote the use of selective fishing gear and fishing techniques that have a reduced impact on the environment.	
Policy 5: Maximise socio-economic contribution of Nephrops fisheries to coastal communities and the wider UK economy.	Continue to take account of socio-economic considerations as part of international negotiations and as part of the process to determine fishing opportunities. Continue to gather and use evidence on economic aspects of the fishery to ensure management decisions are informed by the best available evidence. Support the fishing industry to explore and utilise accreditation schemes where these will help to drive improvements in management. Encourage and support industry-led initiatives to:	This is considered a requirement for making appropriate management decisions. It allows management measures to be developed in partnership by those that will be impacted. This will allow for alternative management measures to be discussed and agreed upon in the future.

Policy	Actions	Alternative to proposed measures
	improve the operational effectiveness of fishing vessels while maintaining a commitment to sustainability; identify circular economy benefits; encourage diversification into additional fisheries; and support proposals that create sustainable employment in coastal communities. Consider enhancing social and economic data.	
Policy 6: Reduce the contribution of Nephrops fishing to climate change and support the fishing industry to adapt to the impacts of climate change	Collaborate with partners across government, industry, and academic sectors on initiatives to reduce environmental impacts of the West of Scotland Nephrops Fisheries (including reduction of carbon emissions), whilst also taking into account the socio-economic importance of fisheries as well as food security. Commission research into the assessment of the carbon footprint of the different components of Nephrops fisheries. Collaborate with partners across government, industry, and academic sectors in identifying and exploring alternative ways to reduce carbon footprint within the Nephrops supply chain.	Improving the evidence base on the impact of fishing on climate change, along with maintaining and enhancing cross-sector collaboration, is crucial for making informed, evidence-based management decisions. No reasonable alternatives have been identified at this stage. Alternative options can be considered as detailed measures are drafted.

Policy	Actions	Alternative to proposed measures
	Collaborate across the UK and internationally on further evidence and analysis to understand the impact of climate change on Nephrops and develop options for how Nephrops fisheries may adapt to climate change impacts in the future.	

Appendix A: Eleven Descriptors of the UK MS

D1 - Biological diversity (cetaceans, seals, birds, fish, and benthic habitats)

D2 - Non-indigenous species

D3 - Commercially exploited fish and shellfish

D4 - Food webs (cetaceans, seals, birds, and fish)

D5 - Eutrophication

D6 - Sea-floor integrity (benthic habitats)

D7 - Hydrographical conditions

D8 - Contaminants

D9 - Contaminants in fish and other seafood for human consumption

D10 - Litter

D11 - Introduction of energy, including underwater noise

Appendix B: Additional Baseline Information

D1 and D4 – Cetaceans

Cetaceans (whales and dolphins) are an important marine ecosystem component that contributes to overall levels of biodiversity (D1). In addition, as top predators, the abundance of cetaceans can also provide some understanding on how the food web is functioning (D4).

To meet Good Environmental Status, the high-level objective is that 'the population abundance of cetaceans indicates health populations that are not significantly affected by human activities'. However, according to the 2019 UK MS updated part 1 assessment (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf), the overall status of cetaceans in the North Sea and Celtic Seas is currently uncertain. The baseline environmental condition with respect to cetaceans is therefore one where some degree of recovery is potentially required to meet GES. For more information, see Biodiversity, food webs and marine protected areas - Marine online assessment tool.

A summary of the status is shown in Table A1. When considering the detailed targets and indicators used to make the assessment, the data suggests some are in line with GES in some geographic areas. But for many others, the results are either unclear or insufficient data is available to make an assessment. It should be noted that the indicators used do not always cover the entire breadth of what is set out in the target. For instance, the bycatch assessment is currently primarily driven by looking at harbour porpoise. The indicators can be developed in the future as more evidence is available.

Table A1. Detail from the 2019 UK MS assessment on descriptor D1; D4: Cetaceans. Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UK MS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/).

Target	Indicator	North Sea	Celtic Seas
The long-term viability of cetacean populations is not threatened by incidental bycatch	Harbour porpoise bycatch	GES achieved	GES status uncertain
There should be no significant decrease in abundance caused by human activities	Abundance and distribution of coastal bottlenose dolphins	GES achieved	GES status uncertain
There should be no significant decrease in abundance caused by human activities	Abundance and distribution of cetaceans other than coastal bottlenose dolphins	GES partially achieved	GES status uncertain
Population range is not significantly lower than the favourable reference value for the species	Abundance and distribution of coastal bottlenose dolphins	GES achieved	GES status uncertain
Population range is not significantly lower than the favourable reference value for the species	Abundance and distribution of cetaceans other than coastal bottlenose dolphins	GES partially achieved	GES status uncertain

Current impact of fisheries on the baseline condition

Fishing is one of several anthropogenic activities that are considered relevant to this ecosystem component. Other pressures include noise impacts from offshore infrastructure such as renewable energy and pollution from a range of sources. More information on relevant pressures is provided in section 2.6.1 of the Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status).

Cetacean bycatch

There is a specific target associated with the impact of bycatch from fisheries on the viability of cetacean populations. In the 2019 UK MS assessment, only data on the bycatch of Harbour Porpoise was used. This estimated that bycatch in the North Sea was below the precautionary threshold of 1% of the population estimate (and therefore

meeting the indicator target), but above this threshold for the Celtic Seas. It was, however, below the less precautionary 1.7% of population estimate. Whether the target was being met in the Celtic Seas was therefore uncertain. For more detail on the assessment, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/cetaceans/harbour-porpoise-bycatch/.

More recent analysis for the 2023 OSPAR quality status report (which uses the same indicator as the UK MS) shows that bycatch of harbour porpoise in the Greater North Sea and Irish & Celtic seas are exceeding the threshold. Bycatch of common dolphin is also exceeding the threshold. For more details, see https://oap.ospar.org/en/ospar-assessments/quality-status-reports/qsr-2023/indicator-assessments/marine-mammal-bycatch/. As this is a common indicator for both OSPAR and UK MS, that suggests that an updated UK MS assessment would no longer be seen as meeting this target.

Using the latest evidence from the UK Bycatch Monitoring Programme by Kingston et al (2021)[27], it is specifically net fisheries (for example, gill nets, tangle nets etc) that are largely responsible for both harbour porpoise and common dolphin bycatch.

Cetacean abundance and range targets

For coastal bottlenose dolphins, the indicator target of 'no statistically significant decrease in abundance' was met in the Greater North Sea and for the largest group in the Celtic Seas (in the Coastal Wales assessment unit). No assessment has been possible for the other two smaller Celtic Seas Groups (in the West Coast assessment unit and Coastal Southwest assessment unit). For more information, see Biodiversity, food webs and marine protected areas - Marine online assessment tool

For species other than coastal bottlenose dolphins, the indicator target of 'no significant decline' was met for some species in some areas (minke whale in the Greater North Sea), but for most species and all of the Celtic Seas, there was insufficient evidence to make an assessment. For more information, see Abundance and distribution of cetaceans other than coastal bottlenose dolphins - Marine online assessment tool.

Without this information, it is difficult to understand the potential impact fisheries could currently be having (alongside impacts from other industries or factors such as pollution) and if fisheries impacts are a scale of concern. Aside from bycatch (which is considered separately), the mechanism by which certain fisheries could theoretically

27 Kingston, A., Thomas, I. and Northridge, S. (2021) UK Bycatch Monitoring Programme Report for 2019. Sea Mammal Research Unit. Available at Science Search (defra.gov.uk)

be impacting on abundance and distribution would be through the removal of prey species important to cetacean species. At high levels, this could potentially lead to population-level impacts.

Cetacean summary

The status of cetaceans with both the North Sea and Celtic Sea is mixed. While there are some aspects that are in line with the achievement of GES, much of the picture is unclear. The impact of various net fisheries is leading to bycatch that, in places, might be impacting long term population viability of harbour porpoise.

Other than for a limited number of coastal bottlenose dolphin populations, it is unclear whether the abundance and range of most cetacean species can be considered in line with GES. Fisheries and the removal of prey species is one of several activities / pressures that have the potential to result in changes in cetacean abundance and distribution.

D1 and D4 – Seals

The UK has achieved its aim of GES for grey seals in the Greater North Sea and Celtic Seas. There was a significant increase in the abundance of harbour seals in West Scotland where most harbour seals are located, but their status in other parts of the Celtic Seas is uncertain. Harbour seals in the Greater North Sea have not yet achieved GES.

Seals are an important marine ecosystem component that contributes to overall levels of biodiversity (D1). In addition, as top predators, seal productivity can also provide some understanding and insight as to how the food web is functioning (D4).

To meet Good Environmental Status, the high-level objective is that 'the population abundance and demography of seals indicate healthy populations that are not significantly affected by human activities'. According to the 2019 UK MS updated part 1 assessment (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf), the UK has achieved its aim for GES for grey seals in the Greater North Sea and Celtic Seas. For harbour seals, there has been a significant increase in abundance in West Scotland where most harbour seals are located but their status is uncertain in other parts of the Celtic Seas and below what is required for GES in the Greater North Seas. For more information, see Biodiversity, food webs and marine protected areas - Marine online assessment tool.

A summary of the current status is shown in Table A2. It should be noted that the current indicators used do not always cover the entire breadth of what is set out in the targets. For instance, there was no indicator developed or used as part of the 2019 assessment for bycatch.

Table A2. Detail from the 2019 UK MS assessment on descriptor D1; D4: Seals Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UK MS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/). *For this indicator, an assessment of seal bycatch be found on the OSPAR 2023 quality status report website at https://oap.ospar.org/en/ospar-assessments/quality-status-reports/qsr-2023/indicator-assessments/marine-mammal-bycatch/.

Target	Indicator	North Sea	Celtic Seas
The long-term viability of seal populations is not threatened by incidental bycatch.	Marine mammal bycatch (OSPAR)*	-	-
Population abundance and distribution are consistent with favourable conservation status.	Grey seal abundance and distribution	GES achieved	GES achieved
	Harbour seal abundance and distribution	GES not achieved	GES status uncertain
Grey seal pup production does not decline substantially in the short or long-term.	Grey seal pup production (OSPAR)	GES achieved	GES achieved

Current impact of fisheries on the baseline condition

Fishing is one of several anthropogenic activities that are considered relevant to marine mammals. Other pressures include noise impacts from offshore infrastructure such as renewable energy and pollution from a range of sources. More information on relevant pressures is provided in section 2.6.1 of the Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status).

Seal bycatch

The 2019 UK MS assessment suggests a new target on bycatch mortality will be used in the future. Seal bycatch was not considered within the 2019 assessment. Grey seals are one of the three marine mammal species regularly recorded during the UK Bycatch Monitoring programme. Figures for seals (grey and harbour) are combined but the majority are thought to be greys. In the 2018 report[28] the authors were fairly confident that all seals observed in gillnets were greys. Harbour seals (referred to as common seals in the report) are rarely caught and numbers are too low to generate a useful bycatch estimate separately. The gears that pose the most risk to grey seals appears to be tangle and trammel nets, which was estimated to account for over 90% of seal bycatch in 2019[27].

The most recent OSPAR quality status reports assessment on marine mammal bycatch[29] (which is likely to feed into the next round of UK MS assessments), concludes that although grey seal bycatch is high, bycatch in 2020 was below the threshold value set and therefore not thought to be demographically significant. This suggests that in an updated UK MS assessment, seal bycatch is not likely to be threatening the long-term viability of the population and the bycatch target will be met.

Seal abundance and production

The 2019 UK MS assessment reports that grey seal numbers have continued to increase. Increases in grey seal pup production has slowed since the rapid increase following the end of culling in the 1970s, but still shows a positive trend. This is line with GES. Harbour seal abundance has increased over both the short and long term in the English Channel and along the East Coast of England. But there have been short-term and long-term declines in parts of Scotland. The cause of the declines is not currently known. For more information, see Biodiversity, food webs and marine protected areas - Marine online assessment tool.

Seals summary

Grey seals populations and productivity continues to increase, and targets are being met. Bycatch (largely in tangle and trammel nets) is occurring but not at levels that

28 Northridge, S., Kingston, A. and Thomas, l. (2019) Annual report on the implementation of Council Regulation (EC) No 812/2004 during 2018. Sea Mammal Research Unit. Available at Science Search (defra.gov.uk)

29 https://oap.ospar.org/en/ospar-assessments/quality-status-reports/qsr-2023/indicator-assessments/marine-mammal-bycatch/

threaten population viability. For harbour seals, the status is not in line with GES where population declines have occurred in some areas. The cause is unknown. It is not thought to be linked to bycatch as occurrences are rare and there is no indication that it is linked to other pressures associated with fishing.

D1 and D4 – Birds

The UK has achieved its aim of GES for non-breeding waterbirds in the Greater North Sea but not in the Celtic Seas. Breeding seabirds have not achieved GES.

Seabirds are well monitored species that are an important marine ecosystem component that contributes to overall biodiversity (D1). In addition, as top predators, the abundance of birds can also provide some understanding and insight as to how the wider food web is functioning (D4).

To meet Good Environmental Status, the high-level objective is that 'the abundance and demography of marine bird species indicate healthy populations that are not significantly affected by human activities. According to the 2019 UK MS updated part 1 assessment (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf), GES has not been achieved for seabirds in the Greater North Sea and the Celtic Seas and the situation is declining, evidenced by increasing breeding failure rates. The baseline environmental condition with respect to birds is therefore one where some recovery is required to meet GES. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/birds/

A summary of the current status is shown in Table A3. It should be noted that the current indicators used do not always cover the entire breadth of what is set out in the targets. For instance, although there are plans for target about bycatch, there was no indicator developed or used as part of the 2019 assessment.

Table A3. Detail from the 2019 UK MS assessment on descriptor D1; D4: Birds. Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UK MS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/). *For this indicator, detail of a pilot assessment can be found on the OSPAR 2023 quality status report website at https://oap.ospar.org/en/ospar-assessments/quality-status-reports/qsr-2023/indicator-assessments/marine-bird-bycatch-pilot/

Target	Indicator	North Sea	Celtic Seas
The long-term viability of marine bird populations is not threatened by deaths caused by incidental bycatch catch in mobile and static fishing gear.	Under development*	-	-
The population size of species has not declined substantially since 1992 as a result of human activities.	Marine bird abundance	GES not achieved	GES not achieved
Widespread lack of breeding success in marine birds caused by human activities should occur in no more than three years in six.	Marine bird breeding success/failure	GES not achieved	GES partially achieved
	Kittiwake breeding success[30]	GES achieved	Not assessed
There is no significant change or reduction in population distribution caused by human activities.	Distribution of breeding and non-breeding marine birds	Not assessed	Not assessed
There is no significant change or reduction in population distribution caused by human activities.	Invasive mammal presence on island seabird colonies	Not assessed	Not assessed

Current impact of fisheries on the baseline condition

Fishing is one of several anthropogenic activities that are considered relevant to this ecosystem component, including incidental bycatch and competition for resources (for example, sandeel fishing). Other pressures include mortality due to renewables, disturbance from a range of activities, oil pollution, and transfer of non-indigenous species to islands from ships. More information on relevant pressures is provided in section 2.6.1 of the Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at

30 Kittiwake breeding success has only been achieved for the English mainland colonies. GES for Kittiwake breeding success has not been achieved for the entire North Sea region due to breeding failures in Orkney and Shetland.

https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status).

Bird populations size and breeding success

In the 2019 UK MS assessment, population targets were met for non-breeding water birds in the Greater North Sea but not in the Celtic Seas. Population targets for breeding seabirds were not met for breeding seabirds in either sub-region. In both sub-regions, a quarter or more species showed frequent and widespread breeding failures. Surface-feeding species that predominantly prey on small fish are often subject to greater ecological pressures compared to others. This would suggest that the surface feeding availability of small forage fish species including lesser sandeel and sprat is limiting the breeding success of surface-feeding species such as black-legged kittiwake. Reductions in food availability could be a result of climate change or due to past and present fisheries, or a combination of both. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/birds/.

The recent avian influenza outbreak Is likely to have had a strong negative effect on seabird population sizes for some species. It is not yet clear what the extent of the impact is, but it has the potential to move the baseline further away from meeting GES targets.

Bird bycatch

The 2019 UK MS assessment suggests a new target on bycatch mortality that will be used in the future. It is well recognised that certain fishing gears can pose a high bycatch risk to seabirds. Anderson et al[31] (2022) identifies the UK offshore demersal longline fishery and the <10m static net fishery as the fleets that pose the highest risk to birds.

Mortality estimates are not produced routinely for birds using data available from the UK Bycatch Monitoring Programme. Preliminary estimates using the available data suggests that UK vessels in longline, gillnet and midwater trawls may account for thousands of seabird mortalities each year covering several species, with fulmar and cormorant being the most affected species in terms of possible population impacts with a further five species (great northern diver, gannet, shag, guillemot and razorbill) having an estimated bycatch mortality that exceeded 1% of total adult mortality

31 Anderson, O.R.J., Thompson, D. & Parsons, M. (2022). Seabird bycatch mitigation: evidence base for possible UK application and research. JNCC Report No. 717, JNCC, Peterborough. ISSN 0963-8091. https://hub.jncc.gov.uk/assets/dbed3ea2-1c2a-40cf-b0f8-437372f1a036

(Northridge et al 2020[32] and Miles et al 2020[33]). However, these estimates have high uncertainty in part because sample sizes are low and possibly unrepresentative of the fleet.

Bird summary

Seabird populations are currently below the level that is considered to meet GES and the situation is deteriorating. Some declines in breeding success have been linked to prey availability caused by climate change and / or past and present fisheries. Invasive predatory mammals are also known to impact breeding success on island colonies. The impact of bycatch will be included in future assessments and current evidence suggests that some longline and static net fisheries could be having possible population level impacts on certain species.

D1 and D4 – Fish and D3 – Commercially exploited fish and shellfish

Demersal fish biodiversity is recovering from a history of over-exploitation, but GES has not yet been achieved in either the Greater North Sea or the Celtic Seas. A partial assessment of pelagic shelf fish status did not provide a clear result.
The UK has achieved its aim of GES for some commercially exploited fish. Most national shellfish stocks have either not yet achieved GES or their status is uncertain. The percentage of quota stocks fished below MSY and the proportion of marine fish spawning stock biomasses capable of producing MSY have increased significantly since 1990.

Fish are an important ecosystem component that contributes to overall levels of biodiversity (D1). In addition, fish of different species have a significant role in marine food webs (D4), acting as both predators and prey. Some fish species are commercially exploited, and only a proportion of these have managed quotas. Over exploitation can lead to a decline in stocks (D3) which can reduce both future commercial opportunities and have wider ecological impacts.

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32 Northridge. S., Kinston. A. and Coram. A. (2020). Preliminary estimates of seabird bycatch by UK vessels in UK and adjacent waters. Scottish Ocean Institute, University of St Andrews. Final report to JNCC

33 Miles, J., Parsons, M. and O'Brien, S. (2020). Preliminary assessment of seabird population response to potential bycatch mitigation in the UK-registered fishing fleet. Report prepared for the Department for Environment Food and Rural Affairs (Project Code ME6024).

In order to meet Good Environmental Status, the high-level objective for fish is that 'the abundance and demography of fish indicate healthy populations that are not significantly affected by human activities. For stocks of commercial fish, the high-level objective is that 'Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock'.

According to the 2019 UK MS updated part 1 assessment (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf), neither of these objectives are currently being met, although there are signs of improvement. The baseline environmental condition with respect to fish is therefore one where recovery is required to meet GES. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/fish/ and https://moat.cefas.co.uk/pressures-from-human-activities/commercial-fish-and-shellfish/.

The 2019 assessment used a limited number of indicators. More indictors are being included in future assessments. A summary of the current status and indicators is shown in Table A4a and A4b.

Table A4a. Detail from the 2019 UK MS assessment on fish D1; D4: Fish. Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UK MS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/).

Target	Indicator	North Sea	Celtic Seas
The size structure of fish communities is indicative of a healthy marine food web.	Size composition in fish communities.	GES not achieved	GES not achieved
The size structure of fish communities is indicative of a healthy marine food web.	Proportion of large fish (Large Fish Index).	GES not achieved	GES partially achieved
The size structure of fish communities is indicative of a healthy marine food web.	Mean maximum length of fish.	GES not achieved	GES not achieved
Incidental bycatch is below levels which threaten long-	Under development.	Not assessed	Not assessed

Target	Indicator	North Sea	Celtic Seas
term viability and recovery of fish populations.			
The population abundance of sensitive species is not decreasing due to anthropogenic activities and long-term viability is ensured.	Recovery in the population abundance of sensitive fish species.	GES not achieved	GES achieved
For fish species in the Habitats and Birds Directive population abundance and geographic distribution meets established favourable reference values.	UK assessments of listed fish species.	Not assessed	Not assessed
For listed fish species, the area and the quality of the habitat is sufficient.	UK assessments of listed fish species.	Not assessed	Not assessed

Table A4b. Detail from the 2019 UK MS assessment D3: commercial fish and shellfish. Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UK MS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/).

Target	Indicator	North Sea	Celtic Seas
The Fishing mortality rate of populations of commercially exploited species is at or below levels which can produce the maximum sustainable yield.	Commercial fishing pressure for stocks of UK interest.	GES partially achieved	GES partially achieved

Target	Indicator	North Sea	Celtic Seas
The Spawning Stock Biomass of populations of commercially exploited species are above biomass levels capable of producing the maximum sustainable yield.	Reproductive capacity of commercially exploited stocks of UK interest.	GES partially achieved	GES partially achieved

Current impact of fisheries on the baseline condition

The status of commercial fish stocks (D3) primarily relates to exploitation rates so is predominantly influenced by fishing activities. For commercial fish some (53% of quota stocks) were being exploited at or below MSY in 2015, but this was not the case for all stocks. Out of a suite of 79 TACs which can be reported across multiple years, 32 of the 79 baseline TACs were consistent with ICES' advice (40%) in 2023 compared to 27 TACs (34%) in 2022 (Bell et al.2023[34]). Most non-quota stocks are unassessed, and do not have MSY or a suitable proxy in place despite being a significant proportion of UK landings. Most shellfish stocks have either not met the requirement or their status is uncertain. For more information, see https://moat.cefas.co.uk/pressures-from-human-activities/commercial-fish-and-shellfish/

Fish as part of the ecosystem (D1 and D4) encompasses a much wider range of species, including those not commercially targeted. Both the removal of targeted species and bycatch of non-targeted / non-commercial fish species is relevant. While fishing is considered the main anthropogenic activity that is relevant to this ecosystem component, other pressures such as noise from renewable infrastructure and hydrodynamic changes brought about from coastal defence are also relevant in some instances. More information on relevant pressures is provided in section 2.6.1 of the Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status).

Recovery from past over-exploitation by fisheries does appear to be occurring in some areas. Demersal fish biodiversity is recovering from a history of over-exploitation, but GES has not been achieved in either the Greater North Sea or the Celtic Sea. A partial assessment of pelagic shelf fish status did not provide a clear result. For more

34 Bell ED, Nash RMD, Garnacho E, De Oliveira J, Hanin M, Gilmour F, O'Brien CM 2023. Assessing the sustainability of negotiated fisheries catch limits by the UK for 2023. Cefas project report for Defra.

information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/fish/

Fish summary

The current status of fish communities in the UK is primarily shaped by historical over-exploitation by fisheries, while ongoing over-exploitation continues to be a notable contributing factor. Improved fisheries management since the 1990s has resulted in more stocks being fished at or below MSY levels so, although the target is not yet met, there is a positive trend. Improved fisheries management has also resulted in some positive trend in fish communities beyond the targeted stocks.

D1 and D6 – Benthic Habitats

The levels of physical damage to soft sediment habitats are consistent with the achievement of GES in UK waters to the west of the Celtic Seas, but not in the Celtic Seas or in the Greater North Sea. For sublittoral rock and biogenic habitats GES has not yet been achieved. Descriptor also relevant to Geodiversity (geology and sediments).

Benthic habitats are an important ecosystem component that contributes to overall levels of biodiversity (D1). It is also important to ensure the structure and function of the benthic ecosystems is adequately safeguarded by considering seafloor integrity (D6).

To meet Good Environmental Status, the high-level objective is that 'the health of seabed habitats is not significantly adversely affected by human activities'. However, according to the 2019 UK MS updated part 1 assessment (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf), GES has not been achieved. This states that the main problem is caused by physical disruption of the seabed from fishing gear (demersal towed gear). The baseline environmental condition with respect to benthic habitats is therefore one which is required to meet GES. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/benthic-habitats/

A summary of the current status is shown in Table A5. Most indicators focussing on intertidal benthic habitat are consistent with GES (except for saltmarsh in the North Sea), but subtidal habitats are not consistent with GES.

Table A5. Detail from the 2019 UK MS assessment on D1; D6: Benthic habitats. Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at

https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UK MS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/). *The benthic communities' indicator (OSPAR BH2) is currently in the pilot stage of development.

Target	Indicator	North Sea	Celtic Seas
The physical loss of each seabed habitat type caused by human activities is minimised and where possible reversed.	Physical loss of predicted habitats	GES not achieved	GES not achieved
The extent of habitat types adversely affected by physical disturbance caused by human activity should be minimised.	Extent of Physical damage indicator to predominant and special habitats	GES not achieved	GES not achieved
The extent of habitat types adversely affected by physical disturbance caused by human activity should be minimised.	Benthic communities' indicator*	Not assessed	Not assessed
Habitat loss of sensitive, fragile, or important habitats caused by human activities is prevented, and where feasible reversed.	Physical loss of predicted habitats indicator	GES not achieved	GES not achieved
The extent of adverse effects caused by human activities on the condition, function and ecosystem processes of habitats is minimised.	Benthic communities' indicator	Not assessed	Not assessed
The extent of adverse effects caused by human activities on the condition, function and ecosystem processes of habitats is minimised.	Aggregated Infaunal Quality Index	GES not achieved	GES partially achieved
The extent of adverse effects caused by human activities on the condition, function and ecosystem processes of habitats is minimised.	Aggregated Saltmarsh Tool	GES not achieved	GES achieved

Target	Indicator	North Sea	Celtic Seas
The extent of adverse effects caused by human activities on the condition, function and ecosystem processes of habitats is minimised.	Aggregated Rocky Shore Macroalgal Index	GES achieved	GES achieved
The extent of adverse effects caused by human activities on the condition, function and ecosystem processes of habitats is minimised.	Aggregated Intertidal Seagrass Tool	GES achieved	GES achieved
The extent of adverse effects caused by human activities on the condition, function and ecosystem processes of habitats is minimised.	Intertidal rock community change indicator (MarClim)	GES status uncertain	GES status uncertain

Current impact of fisheries on the baseline condition

Fishing is one of several anthropogenic activities that are considered relevant to this ecosystem component. Other pressures include physical loss from renewable energy generation and oil extraction, coastal defence and the input and spread on invasive non-native species. But the main barrier to the achievement of GES is caused by physical disruption of the seabed from fishing. More information on relevant pressures is provided in section 2.6.1 of the Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status).

Physical disturbance of seabed

Fishing is considered to be the main driver of physical disturbance and occurs when gear is towed across the seafloor. The degree of disturbance depends on factors such as the size of the gear, the activity level (for example, number of tows per year) how fragile the benthic species present are and how quickly they can recover. The use of demersal towed gears is widely distributed. Using available VMS data and benthic habitat data available, the 2019 UK MS assessment concluded that seabed disturbance targets were not being met within the Greater North Sea and Celtic Seas. As the analysis combined the VMS of all towed gear metiers together, it is not yet possible to determine the relative contribution of different gear types to the current levels of seabed disturbance. Other activities, such as aggregate extraction, have yet to be included within the analysis, but the spatial extents of these are considerably

smaller than fishing activity. For more information and detail of the analysis, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/benthic-habitats/physical-damage/ and https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/biodiversity-status/habitats/extent-physical-damage-predominant-and-special-habitats/

Habitat loss

UK MS assessments on a limited range of highly sensitive habitats (seagrass beds and horse mussel reefs), suggest that a loss of areas of potential habitat has occurred up to 2016. This was based on modelled data. The main causes were not thought to be due to fishing as these impacts are generally considered reversable. Irreversible loss has been predicted to have come about from aquaculture, navigational dredging / dredge spoil disposal, recreational activity, and coastal development. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/benthic-habitats/physical-loss/. There are instances where fishing can result in permanent habitat loss (for instance, heavy bottom towed gear over softer, rocky reef habitats), but fishing is generally considered to lead to habitat disturbance / degradation rather than loss.

Benthic habitat summary

There is widespread disturbance of seabed habitats by demersal towed gear that is contributing to the failure to achieve GES. Other impacts from non-fisheries activities may also be having an influence, but to a much lesser degree.

D4 – Food webs

Food webs (D4) are the network of predator-prey relationships that occur in the marine environment, from phytoplankton to top predators such as birds or seals. Fish communities are a key component of food webs. Knowledge of food webs allow understanding of how changes at one trophic level can impact those above and below it.

To meet Good Environmental Status, the high-level objective for food webs is that 'the health of the marine food web is not significantly affected by human activities'. According to the 2019 UK MS updated part 1 assessment (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf), the extent to which good environmental status has been achieved is uncertain. Plankton communities are changing, some fish communities are recovering from past overexploitation, but others are not, breeding seabirds are in decline, and grey seal numbers are increasing. It is

known that the components of the marine food webs are changing but it is not always clear how they are affecting each other. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/food-webs/

A summary of the current status is shown in Table A6.

Table A6. Detail from the 2019 UK MS assessment on D4: food webs. Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UK MS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/).

Target	Indicator	North Sea	Celtic Seas
The species composition and relative abundance of representative feeding guilds are indicative of a healthy marine food web.	Maximum Length of Fish	GES not achieved	GES not achieved
The species composition and relative abundance of representative feeding guilds are indicative of a healthy marine food web.	Selected plankton lifeforms pairs (for example, large vs small zooplankton).	GES status uncertain	GES status uncertain
The species composition and relative abundance of representative feeding guilds are indicative of a healthy marine food web.	Abundance and distribution of coastal bottlenose dolphins.	GES achieved	GES status uncertain
The species composition and relative abundance of representative feeding guilds are indicative of a healthy marine food web.	Abundance and distribution of cetaceans other than coastal bottlenose dolphins	GES partially achieved	GES status uncertain
The species composition and relative abundance of representative feeding guilds are indicative of a healthy marine food web.	Marine bird abundance.	GES not achieved	GES not achieved

Target	Indicator	North Sea	Celtic Seas
The balance of abundance between representative feeding guilds is indicative of a healthy marine food web.	TBC	Not assessed	Not assessed
The size structure of fish communities is indicative of a healthy marine food web.	Size composition in fish communities.	GES not achieved	GES partially achieved
Productivity of the representative feeding guilds, characterised by key species, is indicative of a healthy marine food web.	Grey seal pup production.	GES achieved	GES achieved
Productivity of the representative feeding guilds, characterised by key species, is indicative of a healthy marine food web.	Marine bird breeding success/failure.	GES not achieved	GES partially achieved
Productivity of the representative feeding guilds, characterised by key species, is indicative of a healthy marine food web.	Kittiwake breeding success.[30]	GES achieved	Not assessed

Current impact of fisheries on the baseline condition

Anthropogenic impacts on the marine food web are multiple and complex. As fish communities are a key component of food webs, pressure from fisheries can have a significant impact. The removal of forage fish (i.e., species at a low trophic level that contribute significantly to the diets of other fish, marine mammals, or seabirds) has the potential to impact higher tropic levels. For instance, reduction in the availability of small forage fish is likely to be contributing to the breeding success of some marine birds. Climatically driven changes in plankton will also have a strong influence on the rest of the food web. More detail is given under the individual faunal group sections. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/food-webs/.

Food webs summary

Historic fishing activity has had a large impact on fish community structure which is a key component of marine food webs. With improved fisheries management focusing on stocks, some recovery is occurring. However, the management of fish stocks solely to safeguard future fisheries will not necessarily lead to all food web targets being met. Changes in plankton are likely driven by prevailing environmental conditions, but other impacts cannot be ruled out.

D10 – Marine Litter

To achieve Good Environmental Status for marine litter, the high-level objective is that 'the amount of litter and its degradation products on coastlines and in the marine environment is reducing and levels do not pose a significant risk to the environment and marine life.' According to the 2019 UK MS updated part 1 assessment (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf), GES has not been achieved for marine litter, and it remains a significant pressure on marine ecosystems. The baseline environmental condition with respect to marine litter is therefore one where improvement is required to meet GES. For more information, see https://moat.cefas.co.uk/pressures-from-human-activities/marine-litter/.A summary of the current status is shown in Table A7.

Table A7. Detail from the 2019 UK MS assessment on D10 Marine litter.Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UK MS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/).

Target	Indicator	North Sea	Celtic Seas
A decrease in the total amount of the most common categories of litter found on surveyed beaches.	Presence of litter (beaches).	GES not achieved	GES not achieved
A decrease in the number of items of litter on the seabed.	Presence of litter (seabed).	GES status uncertain	GES status uncertain

Target	Indicator	North Sea	Celtic Seas
A downward trend in the number of northern fulmars with more than 0.1g of plastic particles in their stomach.	Presence of floating litter.	GES status uncertain	GES status uncertain
Develop an appropriate indicator to measure micro-litter in the marine environment.	In development.	Not assessed	Not assessed

Current impact of fisheries on the baseline condition

Fishing activities can contribute to marine litter through discarded or lost fishing gear, including nets, lines, and traps. This type of litter, also known as "ghost gear", can persist in the environment, entangling marine life, smothering benthic habitats, and introducing microplastics into the marine food chain. In addition, waste generated onboard fishing vessels, such as packaging materials and food waste, can also contribute to marine litter when not disposed of properly.

Marine litter summary

Marine litter, including from fishing activities, is a significant pressure on marine ecosystems and water quality. The UK has not yet achieved its aim of GES for litter. Beach litter levels in the Celtic Seas have remained largely stable since the assessment in 2012, whilst beach litter levels in the Greater North Sea have slightly increased. Waste fishing material is a component of beach litter. Both floating litter and seafloor litter remain an issue, with plastic the predominant material. Achieving GES for marine litter requires improved waste management practices, the reduction of lost or discarded fishing gear, and increased awareness and monitoring of the issue.

D11 – Underwater noise

To achieve Good Environmental Status for underwater noise, the high-level objective is that ‘loud, low and mid frequency impulsive sounds and continuous low frequency sounds introduced into the marine environment through human activities are managed to the extent that they do not have adverse effects on marine ecosystems and animals at the population level.’ The 2019 UK MS updated part 1 assessment (available here), indicates that data on underwater noise is limited, making it difficult to determine whether GES has been achieved. However, increasing awareness of the issue has led to further research and monitoring efforts. For more information, see

https://moat.cefas.co.uk/pressures-from-human-activities/underwater-noise/. A summary of the current status is shown in Table A8.

Table A8. Detail from the 2019 UK MS assessment on D11 Underwater noise. Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UK MS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/).

Target 2019	Indicator	North Sea	Celtic Seas
Levels of anthropogenic impulsive sound sources do not exceed levels that adversely affect populations of marine animals.	-	GES status uncertain	GES status uncertain
Levels of anthropogenic continuous low-frequency sound do not exceed the levels that adversely affect populations of marine animals	Safe levels of low anthropogenic continuous low frequency sound.	GES status uncertain	GES status uncertain

Current impact of fisheries on the baseline condition

Fishing activities can generate underwater noise through the use of engines, sonar, and other equipment. Although fisheries are not the primary source of anthropogenic underwater noise (shipping, construction, and energy production are major contributors), they can still contribute to the overall noise pollution in the marine environment. This noise can impact marine species that rely on sound for communication, navigation, and foraging, leading to changes in behaviour, stress, and potential displacement from preferred habitats.

Summary

Underwater noise from fisheries, while not the primary source, can still contribute to the overall noise pollution in the marine environment. Fishing vessels will contribute to underwater noise through sonar, engine noise, gear interacting with seabed and deploying and retrieving gear. The achievement of GES for underwater noise in the UK is uncertain. Research and monitoring programmes established since 2012 have provided an improved understanding of the impacts of sound on marine ecosystems.

However, achieving GES for underwater noise will require better understanding and monitoring of the issue, as well as the development and implementation of strategies to manage noise pollution from various sources.

Appendix C: UK MPA designations

- Conservation of Habitats and Species Regulations 2017, The Conservation of Offshore Marine Habitats and Species Regulations 2017 and The Conservation (Natural Habitats, &c.) Regulations 1994
  - Special Protection Areas (SPAs) - England, Scotland, Wales
  - Special Areas of Conservation (SACs) - England, Scotland, Wales
- Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)

  A. Special Protection Areas (SPAs) – Northern Ireland
  B. Special Areas of Conservation (SACs) – Northern Ireland
- Marine and Coastal Access Act 2009
  - Marine Conservation Zones (MCZs) – England, Wales
  - Nature Conservation Marine Protected Areas (NCMPAs), offshore waters – Scotland
- Marine (Scotland) Act 2010
  - Nature Conservation Marine Protected Areas (NCMPAs), inshore waters – Scotland
- Marine Act (Northern Ireland) 2013
  - Marine Conservation Zones (MCZs) – Northern Ireland
- Natural Environment and Rural Communities Act 2006 (Part 4)
  - Sites of Special Scientific Interest (SSSI) – England, Scotland, Wales
- The Environment (Northern Ireland) Order 2002
  - Coastal Areas of Special Scientific Interest (ASSIs) - Northern Ireland
- Convention on Wetlands of International Importance
  - Ramsar Sites (Wetland of International Importance under the Convention on Wetlands of International Importance Especially as Waterfowl Habitat)

Appendix D: Marine Plans – Specific detail within the UK

Scotland

Scotland's first National Marine Plan was adopted in 2015 and provides a statutory policy framework to guide the sustainable development and management of marine activities and resources in Scotland's marine area. The plan was developed and adopted in accordance with the requirements set out in the Marine and Coastal Access Act (MCAA) 2009 and Marine (Scotland) Act 2010 (the 'Marine Acts') and in conformity with the UK Marine Policy Statement. Under the MCAA, Scottish Ministers are the marine plan authority, and the plan covers both Scottish inshore and offshore waters and applies to the exercise of both reserved and devolved functions. The plan sets out specific national and regional policies and objectives relating to commercial fisheries, alongside cross-cutting general policies on environment and ecosystem conservation, sustainable development and climate change mitigation and adaptation.

England

Marine plans put into practice the objectives for the marine environment that are identified in the MPS alongside the National Planning Policy Framework (NPPF) and the Localism Act 2011. The Marine Management Organisation (MMO) is responsible for preparing marine plans in England, and published the North East, North West, South West, South East marine plans by 2021. The marine plans include policies to support a sustainable fishing industry and a healthy marine environment.

Northern Ireland

The Marine and Coastal Access Act 2009 (MCAA) and the Marine Act (Northern Ireland) 2013 (The Marine Act), require the Department of Agriculture, Environment and Rural Affairs (DAERA) as the Marine Plan Authority (MPA), to prepare marine plans. The draft Marine Plan has been developed within the framework of the UK Marine Policy Statement (UK MPS). This will facilitate the sustainable development of the marine area.

Appendix E: Glossary

Biodiversity: The variety of all life on earth, including the diversity within and between all plant and animal species and the diversity of ecosystems.

Blue carbon: Carbon captured by the world's oceans and coastal ecosystems. Blue carbon habitats are the habitats where it is stored.

Bycatch: Defined in section 52 of the Fisheries Act 2020 means (a) fish that are caught while fishing for fish of a different description, or (b) animals other than fish that are caught in the course of fishing.

Climate change: Referring to human-induced climate change driven by greenhouse gas emissions. It includes global warming, warming oceans, greater risks of flooding, droughts, and heat waves.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): CITES is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.

Convention on the Conservation of Migratory Species of Wild Animals (CMS): The Convention on the Conservation of Migratory Species of Wild Animals, also known as the Convention on Migratory Species (CMS) is an international agreement that aims to conserve migratory species throughout their ranges. The agreement was signed under the auspices of the United Nations Environment Programme and is concerned with conservation of wildlife and habitats on a global scale.

Descriptors (UK Marine Strategy): Descriptors are elements within the environment that provide the means to assess general status or condition of that environment. This can be done through the establishment of indicators or targets for each descriptor.

Ecosystem: A biological community which consists of all the organisms and the physical environment with which they interact.

Ecosystem-based approach: Defined in section 1(10) of the Fisheries Act 2020 as an approach which (a) ensures that the collective pressure of human activities is kept within levels compatible with the achievement of good environmental status (within the meaning of the Marine Strategy Regulations 2010 (S.I. 2010/1627)), and (b) does not compromise the capacity of marine ecosystems to respond to human-induced changes.

Findspots: The place where one or more artefacts have been found. May prove to be associated with a site, other finds, natural features etc., or isolated (no apparent relationship).

Fish: Marine and estuarine finfish and shellfish, including migratory species such as European eel and salmon.

Fisheries: The commercial or recreational capture of wild marine organisms (fish and shellfish); commercial fishing can use a variety of mobile and static gear, vessels, and locations.

Fisheries Framework (Fisheries Management and Support Framework): outlines the legislation and policies for the sustainable management of fisheries and the wider seafood sector. It covers the catching, processing, and supply industries, including access to fishing opportunities, licensing, stock recovery, enforcement, data collection, aquaculture, recreational sea angling, and areas of collaboration and common principles. It includes governance structures and ways of working.

Fisheries Management Plan (FMP): A document, prepared and published under the Fisheries Act 2020, that sets out policies designed to restore one or more stocks of sea fish to, or maintain them at, sustainable levels.

Fisheries policy authorities: As defined by section 52 of the Fisheries Act 2020, “fisheries policy authorities” means (a) the Secretary of State, (b) the Scottish Ministers, (c) the Welsh Ministers, and (d) the Northern Ireland department.

Fishermen’s fasteners: Places where fishermen have snagged their fishing gear.

Food webs: The natural interconnection of food chains and a graphical representation of what-eats what in an ecological community.

Good Environmental Status (GES): A qualitative description of the state of the seas that the Marine Strategy Regulations 2010 requires authorities to achieve or maintain by the year 2020. Achieving GES is about protecting the marine environment, preventing its deterioration, and restoring it where practical, while allowing sustainable use of marine resources.

Inshore: the area extending out to 12 nautical miles from the UK’s territorial sea baselines.

Inshore Fisheries and Conservation Authorities (IFCAs): IFCAs are responsible for the management of fishing activities in English coastal waters out to six nautical miles from territorial sea baselines. The 10 IFCAs have a shared 'vision' to lead, champion and manage a sustainable marine environment and inshore fisheries.

International Council for the Exploration of the Sea (ICES): Coordinates and promotes marine research on oceanography, the marine environment, the marine ecosystem, and on living marine resources in the North Atlantic.

Joint Fisheries Statement (JFS): As defined by section 2(1) of the Fisheries Act 2020, a document which sets out the policies of the fisheries policy authorities for achieving, or contributing to the achievement of, the fisheries objectives in the Fisheries Act 2020.

Marine environment: Includes (a) the natural beauty or amenity of marine or coastal areas, or of inland waters or waterside areas, (b) features of archaeological or historic interest in those areas, and (c) flora and fauna which are dependent on, or associated with, a marine or coastal, or aquatic or waterside, environment.

Marine litter: Any solid material which has been deliberately discarded or unintentionally lost on beaches, on shores or at sea. It includes any persistent, manufactured or processed solid material.

Marine Management Organisation (MMO): An executive non-departmental public body in the United Kingdom established under the Marine and Coastal Access Act 2009, with responsibility for planning and licensing of activities in English waters from 0-200nm, save fisheries activities within 0-6nm which are the responsibility of the IFCAs. The MMO also has some UK responsibilities.

Marine Protected Areas (MPA): Areas of the sea protected by law for nature conservation purposes.

Marine Plans: A marine plan is a document which has been prepared and adopted for a marine plan area by the appropriate marine plan authority in accordance with Marine and Coastal Access Act 2009, the Marine (Scotland) Act 2010 or the Marine Act (Northern Ireland) 2013, and which states the authority's policies for and in connection with the sustainable development of the area.

Maximum Sustainable Yield (MSY): Defined in the Fisheries Act 2020 as the highest theoretical equilibrium yield that can be continuously taken on average from a marine stock under existing environmental conditions without significantly affecting recruitment.

National fisheries authorities: As defined by section 25(4) of the Fisheries Act 2020, these are (a) the Secretary of State, (b) the Marine Management Organisation, (c) the Scottish Ministers, (d) the Welsh Ministers, and (e) the Northern Ireland department. The term ‘national fisheries authorities’ differs from ‘fisheries policies authorities’ in including the MMO.

Non-quota stocks (NQS): Species that are not managed through TACs (quota limits). They include some finfish, most commercial shellfish species, and various other species.

Offshore: the area extending from 12 to 200 nautical miles from the UK's territorial sea baselines.

Precautionary approach to fisheries management: Defined in section 1(10) of the Fisheries Act 2020 as an approach in which the absence of sufficient scientific information is not used to justify postponing or failing to take management measures to conserve target species, associated or dependent species, non-target species or their environment.

Processing: As defined by section 52 of the Fisheries Act 2020: in relation to fish or any other aquatic organism, includes preserving or preparing the organism, or producing any substance or article from it, by any method for human or animal consumption.

RAMSAR Convention: The convention emphasises the special value of wetland, particularly as a key habitat for waterfowl. The Convention resulted in the designation of sites known as Ramsar Sites for management and conservation at an international level.

Recreational sea fishing: An umbrella term for a variety of recreational activities including recreational sea angling recreational netters and charter boats.

Regional Fisheries Management Organisation (RFMO): A multilateral international body or agreement set up to manage and conserve fish stocks in a particular region.

Remote Electronic Monitoring (REM): Integrated on-board systems that may include cameras, gear sensors, video storage, and Global Positioning System units, which capture comprehensive videos and are used to monitor fishing activity with associated sensor and positional information.

Resilience: The ability of an ecosystem, species, habitat, or industry to respond, recover or adapt to either changes or disturbances within a reasonable timeframe without permanent loss or damage.

Sensitive species: As defined in section 52 of the Fisheries Act 2020, sensitive species means: (a) any species of animal or plant listed in Annex II or IV of Directive 92/43/EEC of the Council of the European Communities on the conservation of natural habitats and of wild flora and fauna (as amended from time to time), (b) any other species of animal or plant, other than a species of fish, whose habitat, distribution,

population size or population condition is adversely affected by pressures arising from fishing or other human activities, or (c) any species of bird.

Shellfish: As defined in section 52 of the Fisheries Act 2020, shellfish includes molluscs and crustaceans of any kind found in the sea or inland waters.

Statutory Nature Conservation Bodies' (SNCBs): The Statutory Nature Conservation Bodies' (SNCBs) are Natural England, Natural Resources Wales, NatureScot, the Northern Ireland Environment Agency, the Joint Nature Conservation Committee, and DAERA's statutory advisory body, the Council for Nature Conservation and the Countryside.

Sustainable Development: As defined by the Brundtland report (1987), sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable fishing: Sustainable fisheries protect their stocks and the wider environment whilst delivering social and economic prosperity. Fisheries management decisions should balance environmental, economic, and social considerations to create sustainable fisheries that benefit present and future generations. It means ensuring that fish stocks can be fished commercially and recreationally, both now and in the future. Both the short-term and the long-term impacts of decisions managing fishing activity to protect stocks and on the fishing industry should be considered, while any short-term decisions to give social or economic benefit should not significantly compromise the long-term health of the marine environment. These decisions should recognise the cultural importance of fishing through maintaining and, where possible, strengthening coastal communities and livelihoods alongside the requirement for fish stocks to reach and maintain sustainable levels.

Territorial sea: The waters under the jurisdiction of a state, defined by UNCLOS as up to 12 nautical miles from the baseline or low-water line along the coast. The baselines for measurement of the territorial sea are set in the Territorial Sea (Baselines) Order 2014.

The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR): An international agreement for cooperation for the protection of the marine environment of the North-East Atlantic. Work under the Convention is managed by the OSPAR Commission, made up of representatives of the Governments of 15 Contracting Parties and the European Commission, representing the European Union. Work to implement the OSPAR Convention is taken forward through the adoption of decisions, which are legally binding on the Contracting Parties, recommendations, and other agreements.

Total Allowable Catch (TAC): The total allowable catch (TAC) is a catch limit set for a particular fishery or stock, generally for a year or a fishing season. TACs are usually expressed in tonnes of live weight equivalent but are sometimes set in terms of numbers of fish.

Trade and Cooperation Agreement (TCA): The Trade and Cooperation Agreement between the United Kingdom of Great Britain and Northern Ireland, of the one part, and the European Union and the European Atomic Energy Community of the other part. This agreement governs the relationship between the UK and the EU. It was signed in December 2020, applied from 1 January 2021, and was ratified (in a slightly amended form) in April 2021.

UK Marine Policy Statement (UKMPS): The UK policy framework for preparing marine plans and taking decisions that affect the marine environment in the UK.

UK Marine Strategy (UK MS): The UK Marine Strategy provides the framework for delivering marine policy at the UK level and sets out how we will achieve the vision of clean, healthy, safe, productive, and biologically diverse oceans and seas.

UN Convention on Biological Diversity (CBD): The international legal instrument for the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.

UN Convention on the Law of the Sea (UNCLOS): A multilateral international agreement that lays down a comprehensive regime of law and order in the world's oceans and seas, establishing rules governing all uses of the oceans and their resources. It was signed in 1982 and came into force in 1994.

UN Sustainable Development Goals: 17 United Nations goals ‘to transform our world’ and promote prosperity whilst protecting the planet. Goal 14 is to conserve and sustainably use the oceans, seas, and marine resources for sustainable development.

Water quality: A measure of the condition of water and its suitability to sustain a range of uses for both biotic and human benefits.

Appendix F: Statutory Consultee Consultation Responses

As required by the 2004 Act, we have sought the views of our statutory consultees on this SEA and associated ER and their responses are detailed below.

DAERA Response:

Northern Ireland Environment Agency
Gníomhaireacht Comhshaoil Thuaisceart Éireann
Norlin Airlan Environment Agency
www.daera-ni.gov.uk

[redact]
1B North
Victoria Quay
Edinburgh
EH6 6QQ
E: [redact]

4 June 2024

Strategic Environmental Assessment Team
Natural Environment Division
Klondyke Building
Gasworks Business Park
Cromac Avenue
Belfast
BT7 2JA

SEATeam@daera-ni.gov.uk

Re: Nephrons Fisheries Management Plan – SEA Screening and Scoping Report

Dear [redact]

Thank-you for your email dated 30th April 2024 via [redacted] regarding the SEA Screening and Scoping exercise in respect of Nephrons Fisheries Management Plan.

The SEA Team within the Department of Agriculture, Environment and Rural Affairs Northern Ireland (DAERA) has considered the consultation and our opinions are set out below.

DAERA notes comments regarding the screening stage of the SEA process within Section 5.1 of the scoping report. DAERA is content with these conclusions.

DAERA notes from the Scoping report no Zone of Influence has been included, DAERA recommends that this should be included within the Environmental report. Further, the scoping report does not mention any form of transboundary engagement, DAERA recommends that if the plans Zone of Influence extends into any other jurisdiction, then consultation with said jurisdiction should be considered.

DAERA notes that no SEA objectives have been provided, in addition no targets or indicators have also been provided. Alongside SEA objectives, targets and indicators should also be provided within the Environmental Report.

***Sustainability** at the heart of a living, working, active landscape valued by everyone.*

An Agency within the Department of Agriculture, Environment and Rural Affairs
Gníomhaireacht de chuid na Roinne Talmhaíochta, Comhshaoil agus Gnóthaí Tuaithe
An Agency wi'in the Department o Fairmin, Environment an' Kintra Matthers
INVESTORS IN PEOPLE We invest in people Standard

Natural Environment Division Comments

NIEA Natural Environment Division works to ensure that Northern Ireland's special natural environment, including its flora and fauna and landscapes, is conserved, enhanced and managed for the benefit of this and future generations, thereby contributing to sustainable development.

NED notes the use of Defras Magic Map Application, NED advise that NIEA also provide a Map viewer which can provide more Northern Irish information, please find at the following web address: www.daera-ni.gov.uk/services/natural-environment-map-viewer

NED notes from Section 3 that the Environmental Report will provide an overview description of the environmental baseline. NED would recommend that environmental data under each topic area includes maps were appropriate including areas where activities should not go. Details on existing environmental problems relevant to the plan should be identified in the context of relevant environmental objectives standards and thresholds. NED also recommend that a section on how the existing environment without the implementation of the plan should be included within each topic area in the Environmental Report. NED recommend that within the Environmental Report that any significant gaps in baseline data should be provided and if any alternative / proxy data sources are used where baseline data is unavailable. Any technical deficiencies or lack of know how should also be detailed. NED also note that that no section on interrelationships appear to have been included, this should be included in the Environmental Report.

NED notes that Section 4 contains a list of Relevant Plans and Programs and Environmental Protection Objectives. NED advises that section would benefit from the inclusion of a number of additional plans and programs. These are provided at the end of the NED response. NED advise that details on any relevant conflicts and/or synergies between this plan's objectives and the objectives of other plans and programs should be identified and described within the Environmental Report. Please note this should include transboundary plans or programs should they require consultation.

NED notes from section 5.1 that it is not possible to rule out actions arising from the FMP having a likely significant impact on European sites or European offshore marine sites. NED note that no AA (Appropriate Assessment) screening appears to have been carried out at present. NED would recommend that an AA screening is carried out and dependent on the outcome of this a full AA. This would also be the case for a Marine Conservation Zone assessment for MCZs. NED would welcome the opportunity to review the completed AA screening and full AA should it be required and any Marine Conservation Zone Assessment when they have been completed.

NED also notes from Section 5.2 that Biodiversity, Fauna, Flora, Geology and Sediments, Water Climatic factors, Cultural Heritage, and Landscape/Seascape have been scoped into the SEA assessment. NED also note that within Table 2 a justification has been provided. NED welcome this.

NED notes from Section 5.3 that the level of detail possible for the environmental assessment will depend upon the stage of development of the policies and measures of the FMP and that these are subject to evolution. NED advise that the SEA is therefore likely to require periodic reviews. NED would therefore like to see within the Environmental Report details of triggers which might be in place to ensure that the SEA remains up to date throughout the FMP process.

NED note from Section 6 that alternatives will be detailed in the Environmental Report. NED looks forward to reviewing these as part of the Environmental Report.

Please note following the decision of the United Kingdom to leave the European Union, the collective term of "Natura 2000" sites the network of European protected sites are now known as "National Site Network" sites within the United Kingdom, and is including Northern Ireland.

It may be worth including in your considerations the following:

- The Wildlife (NI) Order 1985 (as amended)
- Wildlife and Natural Environment Act (NI) 2011
- The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)
- The Environment (NI) Order 2002
- The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017
- The Strategic Planning Policy Statement (SPPS) for Northern Ireland
- Planning Policy Statements (PPS – in particular PPS2 and PPS18). It should be noted that the PPS's will be superseded by Local Development Plans when they are adopted.
- Biodiversity Strategy for NI to 2020 https://www.daera-ni.gov.uk/publications/biodiversity-strategy-northern-ireland-2020-0
- Draft Environment Strategy https://www.daera-ni.gov.uk/consultations/esni-public-discussion-document
- The Draft NI peatland policy: https://www.daera-ni.gov.uk/consultations/ni-peatland-strategy-consultation.
- The Draft Green Growth Strategy Consultation on the draft Green Growth Strategy for Northern Ireland | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)
- Northern Ireland Energy Strategy 2050 Northern Ireland Energy Strategy 2050 | Department for the Economy (economy-ni.gov.uk)

DAERA have a map browser for NI protected sites and known priority habitat: www.daera-ni.gov.uk/services/natural-environment-map-viewer

A number of useful information sources that highlight the current state of the environment in Northern Ireland at a regional level and which could be referenced are:

Northern Ireland State of the Environment Reports: https://www.daera-ni.gov.uk/publications/state-environment-report-2013

Northern Ireland Environmental Statistics Reports: https://www.daera-ni.gov.uk/articles/northern-ireland-environmental-statistics-report

Other relevant web-links are;
Designated Scientific Sites: www.daera-ni.gov.uk/landing-pages/protected-areas

Regional Landscape Character Map viewer: https://www.daera-ni.gov.uk/services/regional-landscape-character-areas-map-viewer

DAERA have a map browser for NI protected sites and known priority habitat:
www.daera-ni.gov.uk/services/natural-environment-map-viewer

Our natural environment datasets are available at the link below:
www.daera-ni.gov.uk/articles/download-digital-datasets

Appropriate Assessments should refer to the status of habitats and species in the relevant reports available on the JNCC website as follows: UK Article 17 report for the Habitats Directive https://jncc.gov.uk/our-work/article-17-habitats-directive-report-2019/ and the UK Article 12 report for the Birds Directive https://jncc.gov.uk/our-work/european-reporting/#birds-directive-reporting

Landscape and Visual Team Comments

Having reviewed the Screening and Scoping Report for the Fishers Management Plan for Nephrops.
The Landscape and Visual team welcome that Landscape and Seascape have been considered, with seascape being identified as a potential impact within the report. Further information on the Northern Ireland Regional Seascape Character Assessment can be located using the following link (https://www.daera-ni.gov.uk/articles/seascape-character-areas)
It is unlikely the proposal will have impact on the Northern Ireland terrestrial landscape.

Climate Change Team Comments

The CCC's third independent risk assessment has specific climate change risks identified for Scotland for Marine species, habitats and fisheries, but there is no mention of climate risks in the context and background section 1.2, nor in section 3, 3.1 or 3.2 which deal with the Environmental Baseline, existing and potential effects.

Marine and Fisheries Division Comments

Marine Plan Team

Consideration should be given to including the draft Marine Plan for Northern Ireland in the list of relevant Plans, Programmes and Environmental Protection Objectives. Subject to agreement by the Northern Ireland Executive and Secretary of State for Environment, Food and Rural Affairs it is intended to deliver a finalised Marine Plan by the end of 2024.

Marine Conservation Branch response

Marine Conservation Branch welcomes the opportunity to comment on the SEA Scoping Report for the two Nephrops Fisheries Management Plans, and in general is content with the topics covered. We do have some additional comments as follows:

- We agree that marine cultural heritage should be scoped into the SEA.
- With regards to the application of the precautionary principle, the rationale and mechanisms must be clearly laid out for stakeholders as concern has been previously raised that the precautionary principle has been used to force through management measures.
- In Section 4.2, we advise also considering the following plans, policies and legislation:
  - **Draft Marine Plan for Northern Ireland**
  - **Wildlife (Northern Ireland) Order 1985**
  - **Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995**
  - **Wildlife and Natural Environment Act (Northern Ireland) 2011**
  - **An Integrated Coastal Zone Management Strategy for Northern Ireland 2006-2026**
  - **Northern Ireland Regional Seascape Character Assessment 2014**
  - We advise use of the DAERA Marine Map Viewer

Yours sincerely,

[redact]
Senior Scientific
Officer NIEA, DAERA

How the consultation response was considered

Point #	How point was considered
1. DAERA notes from the Scoping report no Zone of Influence has been included, DAERA recommends that this should be included within the Environmental report. Further, the scoping report does not mention any form of transboundary engagement, DAERA recommends that if the plans Zone of Influence extends into any other jurisdiction, then consultation with said jurisdiction should be considered.	Point noted. The FMPs cover stocks in UK waters only and include actions specifically related to engagement with Coastal State partners.
2. DAERA notes that no SEA objectives have been provided, in addition no targets or indicators have also been provided. Alongside SEA objectives, targets and indicators should also be provided within the Environmental Report.	The Environmental Report will examine how the policies and actions in the FMPs may result in both significant positive and negative environmental effects. Further details will be outlined in Section 2, *Approach to Strategic Environmental Assessment*. Additionally, the report will provide information on relevant indicators for the SEA.
3. NED notes from Section 3 that the Environmental Report will provide an overview description of the environmental baseline. NED would recommend that environmental data under each topic area includes maps were appropriate including areas where activities should not go. Details on existing environmental problems relevant to the plan should be identified in the context of relevant environmental objectives standards and thresholds. NED also recommend that a section on how the existing environment without the implementation of the plan should be included within each topic area in the Environmental Report. NED	Some recommendations will be included as part of the development process of the Environmental Report. The environmental baseline and the impacts on UK MS, MPA features, and PMFs will be informed by advice from SNCBs. Due to the high-level nature of FMP policies and actions, as well as their early stage of development, assessing the impact of area-specific management measures is unlikely to be possible at this stage. Before any changes to fisheries management are made as a result of the draft Nephrops FMPs, new measures, where necessary, will undergo Habitats Regulations Assessments and Marine Conservation Zone assessments. These assessments will consider potential in-combination effects with other plans and

Point #	How point was considered
recommend that within the Environmental Report that any significant gaps in baseline data should be provided and if any alternative / proxy data sources are used where baseline data is unavailable. Any technical deficiencies or lack of know how should also be detailed. NED also note that that no section on interrelationships appear to have been included, this should be included in the Environmental Report.	projects within an MPA and will identify any specific interactions.
4. NED notes that Section 4 contains a list of Relevant Plans and Programs and Environmental Protection Objectives. NED advises that section would benefit from the inclusion of a number of additional plans and programs. These are provided at the end of the NED response. NED advise that details on any relevant conflicts and/or synergies between this plan's objectives and the objectives of other plans and programs should be identified and described within the Environmental Report. Please note this should include transboundary plans or programs should they require consultation.	Point noted. Additional plans/programmes will be considered as appropriate in the Environmental Report.
5. NED notes from section 5.1 that it is not possible to rule out actions arising from the FMP having a likely significant impact on European sites or European offshore marine sites. NED note that no AA (Appropriate Assessment) screening appears to have been carried out at present. NED would recommend	Point noted. Before any changes to fisheries management are made as a result of the draft Nephrops FMPs, new measures, where necessary, will undergo Habitats Regulations Assessments and Marine Conservation Zone assessments.

Point #	How point was considered
that an AA screening is carried out and dependent on the outcome of this a full AA. This would also be the case for a Marine Conservation Zone assessment for MCZs. NED would welcome the opportunity to review the completed AA screening and full AA should it be required and any Marine Conservation Zone Assessment when they have been completed.	
6. NED notes from Section 5.3 that the level of detail possible for the environmental assessment will depend upon the stage of development of the policies and measures of the FMP and that these are subject to evolution. NED advise that the SEA is therefore likely to require periodic reviews. NED would therefore like to see within the Environmental Report details of triggers which might be in place to ensure that the SEA remains up to date throughout the FMP process.	The Environmental Report will include more detailed information in Section 8, "Monitoring and Review."
7. NED also notes from Section 5.2 that Biodiversity, Fauna, Flora, Geology and Sediments, Water Climatic factors, Cultural Heritage, and Landscape/Seascape have been scoped into the SEA assessment. NED also note that within Table 4 a justification has been provided. NED welcome this.	Point noted.
8. NED note from Section 6 that alternatives will be detailed in the Environmental Report. NED looks forward to reviewing these	Point noted.

Point #	How point was considered
as part of the Environmental Report.	
9. Please note following the decision of the United Kingdom to leave the European Union, the collective term of “Natura 2000” sites the network of European protected sites are now known as “National Site Network” sites within the United Kingdom, and is including Northern Ireland.	Point noted and wording updated.
10. Landscape and Visual Team Comment The Landscape and Visual team welcome that Landscape and Seascape have been considered, with seascape being identified as a potential impact within the report. Further information on the Northern Ireland Regional Seascape Character Assessment can be located using the following link (https://www.daera-ni.gov.uk/articles/seascape-character-areas). It is unlikely the proposal will have impact on the Northern Ireland terrestrial landscape.	Point noted.
11. Climate Change Team Comments The CCC’s third independent risk assessment has specific climate change risks identified for Scotland for Marine species, habitats and fisheries, but there is no mention of climate risks in the context and background section 1.2, nor in section 3, 3.1 or 3.2 which deal with the Environmental Baseline, existing and potential effects.	Point noted. Climatic factors have been scoped into the Environmental Report.

Point #	How point was considered
12. Marine Plan Team Consideration should be given to including the draft Marine Plan for Northern Ireland in the list of relevant Plans, Programmes and Environmental Protection Objectives. Subject to agreement by the Northern Ireland Executive and Secretary of State for Environment, Food and Rural Affairs it is intended to deliver a finalised Marine Plan by the end of 2024.	Marine Plans will be included in the Environmental Report, specifically in Section 4 ("Relevant Plans, Programmes, and Environmental Protection Objectives") and Appendix D.
13. Marine Conservation Branch response Marine Conservation Branch welcomes the opportunity to comment on the SEA Scoping Report for the Nephrops Fisheries Management Plans, and in general is content with the topics covered. We do have some additional comments as follows: • We agree that marine cultural heritage should be scoped into the SEA. • Sustainability at the heart of a living, working, active landscape valued by everyone. • With regards to the application of the precautionary principle, the rationale and mechanisms must be clearly laid out for stakeholders as concern has been previously raised that the precautionary principle has been used to force through management measures. • In Section 4.2, we advise also considering the following plans, policies and legislation: ○ Draft Marine Plan for Northern Ireland	Points noted. Some recommendations will be incorporated into the report as part of the SEA process. Blue carbon is included as a sub-section under climatic factors.

Point #	How point was considered
○ Wildlife (Northern Ireland) Order 1985 ○ Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 ○ Wildlife and Natural Environment Act (Northern Ireland) 2011 ○ An Integrated Coastal Zone Management Strategy for Northern Ireland 2006-2026 ○ Northern Ireland Regional Seascape Character Assessment 2014 • We advise use of the DAERA Marine Map Viewer	

Historic Environment Division Response (Northern Ireland):

Department for Communities
An Roinn Pobal
Depairtment fur Commonities
www.communities-ni.gov.uk

Historic Environment Division
Second Floor
2 Titanic Boulevard
Belfast,
BT3 9HQ

Telephone: (028 90569840)

Email :[redact]
[redact]

Date: 22/05/2024

HISTORIC ENVIRONMENT DIVISION COMMENTS RE: SEA SCREENING AND SCOPING FISHERIES MANAGEMENT PLANS FOR NEPHROPS CO-ORDINATED BY THE MARINE DIRECTORATE FOR THE SCOTTISH GOVERNMENT

DfC Historic Environment Division (HED) operate via a Service Level Agreement with colleagues in DAERA in relation to SEA, whereby we provide authoritative comment and advice in relation to matters of Cultural Heritage including archaeological and architectural heritage. We make the following comments in respect of the documentation received by our office on 30/04/2024.

HED have reviewed the scoping report and agree with the scoping in of cultural heritage in assessment. Although we consider the transboundary risk to cultural heritage to be low, we nonetheless provide linkage to our Historic Environment Digital Datasets | Department for Communities (communities-ni.gov.uk) which will help in characterisation of the cultural heritage resource and understanding the potential for transboundary effects. Datasets on Northern Ireland's marine historic environment can be availed of via contacting [redact@daera-ni.gov.uk . We also attach a link to our historic environment map viewer Historic Environment Map Viewer | Department for Communities (communities-ni.gov.uk).

If there are any queries about the content of this response we can be contacted via the address above.

Yours sincerely,

[redact]
Senior Archaeologist

[redact]
Senior Architect

HERITAGE RECORDS AND DESIGNATIONS BRANCH

How the consultation response was considered

Point #	How point was considered
1. HED have reviewed the scoping report and agree with the scoping in of cultural heritage in assessment. Although we consider the transboundary risk to cultural heritage to be low, we nonetheless provide linkage to our Historic Environment Digital Datasets | Department for Communities (communities-ni.gov.uk) which will help in characterisation of the cultural heritage resource and understanding the potential for transboundary effects. Datasets on Northern Ireland's marine historic environment can be availed of via contacting colin.dunlop@daera-ni.gov.uk . We also attach a link to our historic environment map viewer Historic Environment Map Viewer | Department for Communities (communities-ni.gov.uk).	Point noted.

Historic Environment Scotland Response (Scotland):

HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

By email to: sea_gateway@gov.scot

[redact]
Head of Fisheries Management Strategy
Marine Directorate
Marine Economy and Communities Portfolio
Scottish Government

Longmore House
Salisbury Place
Edinburgh
EH9 1SH

Enquiry Line: 0131-668-8716
Switchboard: 0131 668 8600
HMConsultations@hes.scot

Our case ID: 300072898
Your ref: 01886
24 May 2024

Dear [redact]

Environmental Assessment of Plans and Programmes Regulations 2004
01886 - Marine Scotland - Nephrops Fisheries Management Plans

Scoping Report

Thank you for your consultation which we received on 30 April 2024 about the above scoping report. We have reviewed this in our role as a Consultation Body under the above Regulations. This letter contains our views on the scope and level of detail of the information to be included in the Environmental Report. Please note that our view is based on our main area of interest for the historic environment in Scotland.

Scope and level of detail
We understand that this assessment relates to the Nephrops Fisheries Management Plans which will set out stocks status, policies and actions for sustainable harvesting as well as monitoring indicators.

We understand from the provided scoping report that the assessment will give high level consideration of the potential pathways for effects on the historic environment as a result of the activities covered by the management plans. In particular the potential impacts of the management plan on the issue of the interaction between fishing gear and marine heritage assets is identified as an area that will be considered.

We therefore note that cultural heritage has been scoped into the assessment and we agree with this decision. We also welcome the recognition of the role that fisheries management plan can potentially play in the safeguarding of cultural heritage features.

As the scoping report notes, the UK MS assessment process does not cover cultural heritage. Information on heritage designations in the marine environment is available from Historic Environment Scotland's website at the Historic Environment Scotland Portal. There are currently 8 historic Marine Protected Areas in Scottish waters.

Further sources of evidence for the marine historic environment in Scottish waters include the Canmore database which contains known maritime records for the entire Scottish Marine Area to 200 miles offshore with these sites on Pastmap under Canmore Maritime. Canmore Maritime presents searchable online access to the national collection of material relating to the marine historic environment in Scottish Waters. Furthermore, Wrecksite provides access to the UKHO worldwide wreck database.

Information on sites and vessels designated under the Protection of Military Remains Act 1986 is also available here.

Consultation and Next Steps

We understand that the consultation document, draft FMPs and the Environmental Report will be published for public consultation in the summer 2024. While no specific consultation period is put forward we would normally recommend a minimum of 6 weeks for such consultations.

Please note that, for administrative purposes, we consider that the consultation period commences on receipt of the relevant documents by the SEA Gateway. We hope this is helpful. Please contact us if you have any questions about this response. The officer managing this case is Andrew Stevenson who can be contacted by phone on 0131 668 8960 or by email on [redact]@hes.scot.

Yours sincerely

Historic Environment Scotland

How the consultation response was considered

Point #	How point was considered
1. We understand from the provided scoping report that the assessment will give high level consideration of the potential pathways for effects on the historic environment as a result of the activities covered by the management plans. In particular the potential impacts of the management plan on the issue of the interaction between fishing gear and marine heritage assets is identified as an area that will be considered. We therefore note that cultural heritage has been scoped into the assessment and we agree with this decision. We also welcome the recognition of the role that fisheries management plan can potentially play in the safeguarding of cultural heritage features.	Point noted.
2. As the scoping report notes, the UK MS assessment process does not cover cultural heritage. Information on heritage designations in the marine environment is available from Historic Environment Scotland's website at the Historic Environment Scotland Portal. There are currently 8 historic Marine Protected Areas in Scottish waters. Further sources of evidence for the marine historic environment in Scottish waters include the Canmore database which contains known maritime records for the entire Scottish Marine Area to 200 miles offshore with	Point noted.

Point #	How point was considered
these sites on Pastmap under Canmore Maritime. Canmore Maritime presents searchable online access to the national collection of material relating to the marine historic environment in Scottish Waters. Furthermore, Wrecksite provides access to the UKHO worldwide wreck database. Information on sites and vessels designated under the Protection of Military Remains Act 1986 is also available here.	

Historic England Response

Hi [redacted]

Many thanks for your email of 30th April. I'm sure you will have anticipated many of the points below, but I certainly appreciate the opportunity to respond.

As previously, Historic England is pleased to offer its comments in response to Defra seeking views on the Scoping Reports, all dated April 2024, for Strategic Environmental Assessment (SEA) of three draft Fisheries Management Plans (FMPs) coordinated by Scottish Government:

- The Whitefish/Demersal FMP, which covers six stocks in English waters
- The Nephrops FMP, which covers one stock in English Waters; and
- The Pelagic FMP, which covers five stocks in English waters.

Historic England (HE) is the Government's advisor on all aspects of the historic environment in England. HE's general powers under section 33 of the National Heritage Act 1983 were extended via the National Heritage Act 2002 to modify our functions to include securing the preservation of monuments in, on, or under the seabed within the seaward limits of the UK Territorial Sea adjacent to England. HE also provides advice in relation to English marine plan areas (inshore and offshore) as defined by the Marine and Coastal Access Act (MCAA) 2009.

HE is pleased to see that cultural heritage is regarded as being within the scope of all three SEAs.

We agree that fishing activities that target a) whitefish/demersal stocks and b) nephrops stocks have the potential to cause physical disturbance to the seabed and, therefore, to heritage assets in and on the seabed. We agree that interaction between fishing gear and marine heritage assets is the most relevant impact under this heading.

We acknowledge that interaction between fishing gear and marine heritage assets is limited in the case of fishing activities targeting pelagic stocks, and that this interaction is effectively scoped out of the Pelagic FMP SEA.

We also agree that fishing activities that target all three sets of stocks – whitefish/demersal, nephrops, and pelagic – have the potential to cause input of litter. As we have flagged in previous responses, Abandoned, Lost or Discarded Fishing Gear (ALDFG) can snag and accumulate on historic wrecks, adding to the stress on their structures, obscuring them, and creating a risk to visiting divers (including archaeologists, volunteers, and recreational divers). Historic England has funded the removal of ALDFG from several designated heritage assets, underscoring the impact of litter derived from fishing activities on heritage.

HE is also pleased to see that landscape/seascape is regarded as being within scope of the SEAs for the Whitefish/Demersal FMP and the Nephrops FMP. As above,

fisheries activities that target these stocks have the potential to cause physical disturbance to the seabed: interaction between fishing gear and seabed formations will impact now-submerged prehistoric land-surfaces that often comprise organic deposits (such as peat) and other former terrestrial fine-grained deposits (muds and silts) containing organic material. We further concur that fishing activity targeting these stocks has the potential to disturb blue carbon habitats and affect seabed carbon dynamics. Archaeological records and approaches are attuned to identifying organic and other fine-grained deposits, hence there may be scope for heritage to contribute to the assessment of fishing impacts on these key seabed formations and blue carbon. We think that this aspect of the impact of fisheries on landscapes should receive particular attention in the SEAs.

Correspondingly, we acknowledge that interaction between fishing gear and seabed formations is limited in the case of fishing activities targeting pelagic stocks, and that landscape/seascape has been scoped out of the Pelagic FMP.

We have underlined previously the positive interactions that arise between fishing and cultural heritage, including the importance of the cultural heritage of fishing acknowledged in the opening sentence of the Joint Fisheries Statement (JFS). We note also that section 1.2 of all three Scoping Reports states that fisheries management decisions should recognise the cultural importance of fishing through maintaining and strengthening coastal communities alongside sustainable levels of fish stocks. With these requirements in mind, we have previously suggested that FMPs be given an express role in developing the cultural heritage of the fisheries to which they refer: the scope of these three FMPs should be extended accordingly.

We look forward to all three Environmental Reports evaluating the potential effects, both negative and positive, of fishing for these stocks on cultural heritage and landscape/seascape as scoped here. In light of comments above, we would expect the Environmental Reports to address:

FMPs	**Whitefish /Demersal FMP**	**Nephrops FMP**	**Pelagic FMP**
Cultural Heritage			
Interactions between fishing gear and marine heritage assets on the seabed	X	X	
Impacts on heritage from the input of litter (ALDFG)	X	X	X

The cultural importance of fishing through maintaining and strengthening coastal communities	X	X	X
Landscape/seascape			
Interactions between fishing gear and prehistoric seabed formations, blue carbon habitats, and seabed carbon dynamics	X	X	

Based on the detail set out in the three Scoping Reports, our expectation is that each Environmental Report will cover the following with respect to cultural heritage and landscape/seascape:

- Review existing evidence on the current state of the marine environment.
- Assess the nature and extent of likely effects of each draft FMP.
- Acknowledge the potential significant effects associated with fishing activity being managed through each draft FMP.
- Set out in broad terms how each FMP will seek to avoid, reduce, or at least mitigate significant negative effects.
- Acknowledge pressures not currently being managed and propose new interventions to contribute to mitigating negative environmental effects where necessary.
- Consider how each draft FMP will support existing mitigation, and how they will propose new measures (if necessary) to further mitigate negative environmental effects.
- Consider proposals for future monitoring of the effects of each FMP.

We are pleased to see again the acknowledgement that cultural heritage and landscape/seascape are not considered in the UK Marine Strategy (UK MS). As a result, the UK MS does not set out an environmental baseline for cultural heritage and landscape/seascape upon which each Environmental Report can base an overview description; nor does the UK MS provide descriptors, indicators or monitoring measures for cultural heritage and landscape/seascape.

We would be very pleased to discuss with Defra how cultural heritage and landscape/seascape might be brought within UK MS, and/or how suitable mechanisms

to support each FMPs can be developed for cultural heritage and landscape/seascape alongside the UK MS. In the meantime, we look forward to discussing with Defra what appropriate other sources of evidence will be used to cover cultural heritage and landscape/seascape in the Environmental Reports.

We are not aware that any assessments of the risks and impacts of fishing activities on cultural heritage and landscape/seascape have been conducted or are ongoing as part of the UK's obligations under legislation relating to Marine Protected Areas (MPAs) etc. Accordingly, we also look forward to discussing with Defra what additional measures are being introduced to address this gap.

We also note that advice on the impacts of fishing activity was not sought from Historic England during the development of the draft FMPs alongside the advice sought from Statutory Nature Conservation Bodies (SNCBs). Again, we look forward to discussing with Defra what additional measures are being taken to address this lack of advice and to prevent similar occurrences in future.

Thank you again for seeking HE's views on these Scoping Reports. HE would be very pleased to continue conversations with Defra about how cultural heritage can best strengthen the effectiveness of FMPs in contributing to sustainable and well managed fisheries.

Any queries regarding this response or further dialogue can be addressed to me via the contact details below. We are happy for this response to be made public.

All the best

[redacted]

Head of Marine & Coastal Heritage Historic England

Environment Cluster | Policy Development | Policy and Evidence Group

How the consultation response was considered

Point #	How point was considered
1. HE is pleased to see that cultural heritage is regarded as being within the scope of all three SEAs.	Point noted.
2. We agree that fishing activities that target a) whitefish/demersal stocks and b) nephrops stocks have the potential to cause physical disturbance to the seabed and, therefore, to heritage assets in and on the seabed. We agree that interaction between fishing gear and marine heritage assets is the most relevant impact under this heading.	Point noted.
3. We also agree that fishing activities that target all three sets of stocks – whitefish/demersal, nephrops, and pelagic – have the potential to cause input of litter. As we have flagged in previous responses, Abandoned, Lost or Discarded Fishing Gear (ALDFG) can snag and accumulate on historic wrecks, adding to the stress on their structures, obscuring them, and creating a risk to visiting divers (including archaeologists, volunteers, and recreational divers). Historic England has funded the removal of ALDFG from several designated heritage assets, underscoring the impact of litter derived from fishing activities on heritage.	Point noted. The impact of litter will be considered through UK MS descriptor D10.
4. HE is also pleased to see that landscape/seascape is regarded as being within scope of the SEAs for the Whitefish/Demersal FMP and the Nephrops FMP. As above, fisheries activities that target these stocks have the	Point noted. Blue carbon will be included as a sub-section under climatic factors.

Point #	How point was considered
potential to cause physical disturbance to the seabed: interaction between fishing gear and seabed formations will impact now-submerged prehistoric land-surfaces that often comprise organic deposits (such as peat) and other former terrestrial fine-grained deposits (muds and silts) containing organic material. We further concur that fishing activity targeting these stocks has the potential to disturb blue carbon habitats and affect seabed carbon dynamics. Archaeological records and approaches are attuned to identifying organic and other fine-grained deposits, hence there may be scope for heritage to contribute to the assessment of fishing impacts on these key seabed formations and blue carbon. We think that this aspect of the impact of fisheries on landscapes should receive particular attention in the SEAs.	
5. We have underlined previously the positive interactions that arise between fishing and cultural heritage, including the importance of the cultural heritage of fishing acknowledged in the opening sentence of the Joint Fisheries Statement (JFS). We note also that section 1.2 of all three Scoping Reports states that fisheries management decisions should recognise the cultural importance of fishing through maintaining and strengthening coastal communities alongside sustainable levels of fish stocks.	Point noted. The policies and actions related to cultural heritage will be addressed in the Environmental Reports.

Point #	How point was considered
With these requirements in mind, we have previously suggested that FMPs be given an express role in developing the cultural heritage of the fisheries to which they refer: the scope of these three FMPs should be extended accordingly.	
6. We look forward to all three Environmental Reports evaluating the potential effects, both negative and positive, of fishing for these stocks on cultural heritage and landscape/seascape as scoped here. In light of comments above, we would expect the Environmental Reports to address these.	The Environmental Reports focuses on how the policies and actions in the FMPs could give rise to both significant positive and negative environmental effects. However, the Environmental Reports also acknowledge existing environmental effects of fishing activity and set out policies and actions to address them, where appropriate.
7. Based on the detail set out in the three Scoping Reports, our expectation is that each Environmental Report will cover the following with respect to cultural heritage and landscape/seascape: - Review existing evidence on the current state of the marine environment. - Assess the nature and extent of likely effects of each draft FMP. - Acknowledge the potential significant effects associated with fishing activity being managed through each draft FMP. - Set out in broad terms how each FMP will seek to avoid, reduce, or at least mitigate significant negative effects. - Acknowledge pressures not currently being managed and propose new interventions to	Point noted. Environmental Reports (ER) will provide recommendations on how FMPs could consider fishing, cultural heritage and landscape/seascape

Point #	How point was considered
contribute to mitigating negative environmental effects where necessary. - Consider how each draft FMP will support existing mitigation, and how they will propose new measures (if necessary) to further mitigate negative environmental effects. - Consider proposals for future monitoring of the effects of each FMP.	
8. We are pleased to see again the acknowledgement that cultural heritage and landscape/seascape are not considered in the UK Marine Strategy (UK MS). As a result, the UK MS does not set out an environmental baseline for cultural heritage and landscape/seascape upon which each Environmental Report can base an overview description; nor does the UK MS provide descriptors, indicators or monitoring measures for cultural heritage and landscape/seascape.	Point noted.
9. We would be very pleased to discuss with Defra how cultural heritage and landscape/seascape might be brought within UK MS, and/or how suitable mechanisms to support each FMPs can be developed for cultural heritage and landscape/seascape alongside the UK MS. In the meantime, we look forward to discussing with Defra what appropriate other sources of evidence will be used to cover cultural heritage and	Point noted. Defra would welcome further discussions with HE to consider this point.

Point #	How point was considered
landscape/seascape in the Environmental Reports.	
10. We are not aware that any assessments of the risks and impacts of fishing activities on cultural heritage and landscape/seascape have been conducted or are ongoing as part of the UK's obligations under legislation relating to Marine Protected Areas (MPAs) etc. Accordingly, we also look forward to discussing with Defra what additional measures are being introduced to address this gap.	Point noted. Defra would welcome further discussions with HE to consider this point.
11. We also note that advice on the impacts of fishing activity was not sought from Historic England during the development of the draft FMPs alongside the advice sought from Statutory Nature Conservation Bodies (SNCBs). Again, we look forward to discussing with Defra what additional measures are being taken to address this lack of advice and to prevent similar occurrences in future.	Point noted.

JNCC Response:

Joint Nature Conservation Committee
Inverdee House,
Baxter Street,
Aberdeen,
AB11 9QA

04th June 2024

BY EMAIL ONLY

Subject: SEA Scoping Response for the Draft North Sea and West Coast of Scotland Nephrops Fisheries Management Plans

The Joint Nature Conservation Committee (JNCC) appreciates the opportunity to review and comment on the Scoping Report for the Strategic Environmental Assessment (SEA) of the draft North Sea and West Coast of Scotland Nephrops Fisheries Management Plans (FMPs).

SEA Legal Obligations:
We agree with the decision to undertake a full environmental assessment, in compliance with the Environmental Assessment of Plans and Programmes Regulations 2004.

SEA Scope and Approach:
The detailed screening and scoping processes are appropriate. Focusing on significant issues such as biodiversity and climatic factors is justified. The geographic scope and species focus are appropriate and clearly defined, with the key environmental issues likely to be affected by the FMPs scoped into the assessment.

Environmental Baseline:
The description of the environmental baseline, including the contribution of UK fishing fleets on carbon emissions, is appropriate and thorough.

Assessment Methodology:
The proposed methodology, focusing on an assessment of potential significant environmental effects and using existing evidence, is appropriate.

Alternatives and Mitigation:
Considering reasonable alternatives is well-addressed, and we welcome the intention to consider how the FMPs can support and enhance existing mitigation measures, as well as proposing new mitigation where required. The Environmental Report should provide clear, evidence-based recommendations on appropriate mitigation strategies to be incorporated into the final FMPs.

Consultation:
We appreciate the clear plan for consultation, including timelines and integration of feedback.

JNCC finds the scoping report for the Strategic Environmental Assessment (SEA) of the draft North Sea and West Coast of Scotland Nephrops Fishery Management Plans (FMPs) to be thorough and well-structured. We look forward to continued collaboration and are available to provide further support and advice as needed.

We eagerly anticipate reviewing the Environmental Report when it becomes available and providing additional input. Please do not hesitate to reach out to us if you have any questions or require any further information.

Yours sincerely,

Senior Fisheries Advisor
JNCC, Inverdee House, Baxter Street, Aberdeen, AB11 9QA
Tel: 01224 266550, Direct Dial: 01224 083516, Mobile: 07976451305

How the consultation response was considered

Point #	How point was considered
1. We agree with the decision to undertake a full environmental assessment, in compliance with the Environmental Assessment of Plans and Programmes Regulations 2004.	Point noted.
2. The detailed screening and scoping processes are appropriate. Focusing on significant issues such as biodiversity and climatic factors is justified. The geographic scope and species focus are appropriate and clearly defined, with the key environmental issues likely to be affected by the FMPs scoped into the assessment.	Point noted.
3. The description of the environmental baseline, including the contribution of UK fishing fleets on carbon emissions, is appropriate and thorough.	Point noted.
4. The proposed methodology, focusing on an assessment of potential significant environmental effects and using existing evidence, is appropriate.	Point noted.
5. Considering reasonable alternatives is well-addressed, and we welcome the intention to consider how the FMPs can support and enhance existing mitigation measures, as well as proposing new mitigation where required. The Environmental Report should provide clear, evidence-based recommendations on appropriate mitigation strategies to be incorporated into the final FMPs.	Point noted. Recommendations will be included in the Environmental Report.

Point #	How point was considered
6. We appreciate the clear plan for consultation, including timelines and integration of feedback.	Point noted.
7. JNCC finds the scoping report for the Strategic Environmental Assessment (SEA) of the draft demersal species Fishery Management Plans (FMPs) to be thorough and well-structured. We look forward to continued collaboration and are available to provide further support and advice as needed.	Point noted.
8. We eagerly anticipate reviewing the Environmental Report when it becomes available and providing additional input. Please do not hesitate to reach out to us if you have any questions or require any further information.	Point noted.

Natural England Response:

Defra
Seacole Building
2 Marsham Street
London
SW1P 4DF

Sterling House
Dix's Field
Exeter
Devon
EX1 1QA

22nd May 2024

BY EMAIL ONLY

Re: Strategic Environmental Assessment Scoping Report of Nephrops Fisheries Management Plans co-ordinated by the Marine Directorate of the Scottish Government

Dear [redact]

Thank you for your consultation email dated the 30th April 2024 seeking Natural England's views on whether the proposed scope of the Strategic Environmental Assessment for the demersal Fisheries Management Plans co-ordinated by the Marine Directorate of the Scottish Government is appropriate. Natural England note that the scoping report covers the two Nephrops Fisheries Management Plans (FMPs). Please consider our advice in relation to FMPs which, as outlined in the Joint Fisheries Statement, include English waters. Namely:

- The North Sea Nephrops Fisheries Management Plan

We have reviewed the scoping report provided. Natural England agrees with the outcome of the screening exercise and welcomes the commitment to an environmental assessment which covers the activities managed by the above FMP, in line with The Environmental Assessment of Plans and Programmes Regulations 2004. NE also agree that the scoping report has correctly identified the issues to be taken forward for further consideration in an Environment Report. Whilst very high-level, we also agree with the suggested assessment methodology.

Given the very high-level nature of the information in the scoping report, Natural England would welcome proactive early engagement between the Marine Directorate and all relevant SNCBs in the development of the Strategic Environmental Assessment Environment Report for the Nephrops Fisheries Management Plans to ensure a streamlined process.

Best wishes,

[redact]
Principal Officer, Strategy, Fisheries Management Plans
Natural England

How the consultation response was considered

Point #	How point was considered
1. We have reviewed the scoping report provided. Natural England agrees with the outcome of the screening exercise and welcomes the commitment to an environmental assessment which covers the activities managed by the above FMPs, in line with The Environmental Assessment of Plans and Programmes Regulations 2004. NE also agree that the scoping report has correctly identified the issues to be taken forward for further consideration in an Environment Report. Whilst very high-level, we also agree with the suggested assessment methodology.	Point noted.
2. Given the very high-level nature of the information in the scoping report, Natural England would welcome proactive early engagement between the Marine Directorate and all relevant SNCBs in the development of the Environment Report to ensure a streamlined process.	Point noted.

NatureScot Response:

NatureScot
Scotland's Nature Agency
Buidheann Nàdair na h-Alba

[redact]
Marine Directorate
Scottish Government
Victoria Quay
Edinburgh
EH6 6QQ

By email to: sea.gateway@gov.scot

03 June 2024

Our ref: SEA01886sco

Dear [redact],

ENVIRONMENTAL ASSESSMENT (SCOTLAND) ACT 2005

01886 SCOPING – THE SCOTTISH GOVERNMENT – NEPHROPS FISHERIES MANAGEMENT PLANS

Thank you for your Scoping Report consultation which NatureScot received via the Scottish Government SEA Gateway. In our role as a Consultation Authority, in accordance with section 15(2) of the Environmental Assessment (Scotland) Act 2005, we have reviewed the report with regard to the potential for significant environmental effects that are within our remit.

We have the following comments:

Section 3 Environmental Baseline

We agree with the proposed content and the level of detail to be included in the environmental baseline.

Section 4 Relevant Plans, Programmes and Environmental Protection Objectives

Section 4.2. Domestic

The scoping report refers to the 'Biodiversity Strategy – Scotland', with a link to the former draft strategy. Please note that the Strategy has now been published (September 2023) and the correct link to the published Strategy is https://www.gov.scot/publications/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland-2/

Battleby, Redgorton, Perth PH1 3EW
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01738 444177 nature.scot
NatureScot is the operating name of Scottish Natural Heritage

Section 5.2: Scoping

With respect to the Scottish Government's proposals, we agree with the issues to be addressed in the Environmental Report, and with the justifications for the SEA topics as summarised in Table 2.

Section 5.3 Assessment Methodology

Bullet 7 refers to advice from the Statutory Nature Conservation Bodies. Please note that JNCC and NatureScot provided corresponding advice for the Scottish waters covered by the plan.

Section 8 Consultation

We would consider a minimum 6 week period for consultation on the draft Fishery Management Plans and the SEA environment report to be appropriate.

Should you wish to discuss any of our comments on this scoping consultation, please do not hesitate to contact me using the email address below or via our SEA Gateway at sea_gateway@nature.scot.

Yours sincerely,

[redact]

Marine Sustainability Manager – Sustainable Coasts and

Seas [redact]

cc. sea.gateway@sepa.org.uk, sea.gateway@hes.scot

Battleby, Redgorton, Perth PH1 3EW
Battleby, Ràth a' Ghoirtein, Peairt PH1 3EW
01738 444177 nature.scot
NatureScot is the operating name of Scottish Natural Heritage

How the consultation response was considered

Point #	How point was considered
1. Section 3 Environmental Baseline We agree with the proposed content and the level of detail to be included in the environmental baseline.	Point noted.
2. Section 4 Relevant Plans, Programmes and Environmental Protection Objectives Section 4.2. Domestic The scoping report refers to the 'Biodiversity Strategy – Scotland', with a link to the former draft strategy. Please note that the Strategy has now been published (September 2023) and the correct link to the published Strategy is https://www.gov.scot/publications/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland-2/	Point noted. Updated link will be used.
3. Section 5.2: Scoping With respect to the Scottish Government's proposals, we agree with the issues to be addressed in the Environmental Report, and with the justifications for the SEA topics as summarised in Table 2.	Point noted.
4. Section 5.3 Assessment Methodology Bullet 7 refers to advice from the Statutory Nature Conservation Bodies. Please note that JNCC and NatureScot provided corresponding advice for the Scottish waters covered by the plan.	Point noted. Advice commissioned by the Marine Directorate will be included.
5. Section 8 Consultation We would consider a minimum 6 week period for consultation on the draft Fishery Management Plans and the SEA environment report to be appropriate.	Point noted.

SEPA Response

Environmental Assessment of Plans and Programmes Regulations 2004

01886 SEA Scoping report of Nephrops Fisheries Management Plans (FMPs) - Scoping Consultation

Thank you for your Scoping consultation submitted under the above Regulations. This was received by SEPA via the Scottish Government SEA Gateway on 1 May.

We have considered the document submitted and comment as follows in respect of the scope and level of detail to be included in the Environmental Report (ER). It is noted that the SEA topics of population, human health, air and material assets will be scoped out. We agree with the proposed scope of the assessment.

It is understood that it is the draft Nephrops FMPs as plans of management that will be assessed against the environmental issues scoped into the assessment rather than the activities themselves. We are satisfied with this approach however; it would have been useful to have had an example of how the results of the assessment will be set out. The assessment results should provide enough information to clearly justify the reasons for each of the assessments presented. It is also helpful if the assessment matrix directly links the assessment result with proposed mitigation measures.

We note that alternatives are still being considered. Any reasonable alternatives identified during the preparation of the plan should be assessed as part of the SEA process and the findings of the assessment should inform the choice of the preferred option. This should be documented in the Environmental Report.

The Scottish Government SEA Guidance provides guidance to Responsible Authorities about the type of information that is expected to be provided at each SEA stage; we have also produced SEA topic guidance for those issues which fall within our remit.

On completion, the Environmental Report and the plan to which it relates should be submitted to the Scottish Government SEA Gateway (SEA_Gateway@gov.scot) which will forward it to the Consultation Authorities.

We note that the Environmental Report will be published for consultation in summer 2024. Typical consultation periods range from 6-12 weeks depending on the content and nature of the plan.

In this case we will not be providing a detailed assessment of the Environmental Report.

If you have queries relating to this letter, please contact us via our SEA Gateway at sea.gateway@sepa.org.uk including our reference number in the email subject.

Your sincerely,

[redacted]

Principal Policy Officer

Planning Service

E copy to: sea_gateway@nature.scot sea.gateway@hes.scot

Disclaimer: This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at this time. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning or similar application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application or similar application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. For planning applications, if you did not specifically request advice on flood risk, then

advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found on our website planning pages - www.sepa.org.uk/environment/land/planning/

How the consultation response was considered

Point #	How point was considered
1. It is noted that population, human health, air and material assets will be scoped out, we agree with the proposed scope of the assessment.	Point noted.
2. It is understood that it is the draft Nephrops FMPs, as plans of management that will be assessed rather than the activities themselves. We are satisfied with this approach; however, it would have been useful to have had an example of how the results of the assessment will be set out. The assessment results should provide enough information to clearly justify the reasons for each of the assessments presented. It is also helpful if the assessment matrix directly links the assessment result with proposed mitigation measures.	Point noted.
3. We note that alternatives are still being considered. Any reasonable alternatives identified during the preparation of the plan should be assessed as part of the SEA process and the findings of the assessment should inform the choice of the preferred option. This should be documented in the Environmental Report.	Point noted.
4. The Scottish Government SEA Guidance provides guidance to Responsible Authorities about the type of information that is expected to be provided at each SEA stage; we have also produced SEA topic guidance for those issues which fall within our remit.	Point noted.

Point #	How point was considered
5. On completion, the Environmental Report and the plan to which it relates should be submitted to the Scottish Government SEA Gateway (SEA_Gateway@gov.scot) which will forward it to the Consultation Authorities.	Point noted.
6. We note that the Environmental Report will be published for consultation in summer 2024. Typical consultation periods range from 6-12 weeks depending on the content and nature of the plan.	Point noted.
7. In this case we will not be providing a detailed assessment of the Environmental Report.	Point noted.