Department
for Environment
Food & Rural Affairs

Fisheries Management Plan for Cockles in English Waters

Strategic environmental assessment environmental report

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Contents

Non-technical summary

The cockle fisheries management plan (FMP) has been prepared to meet the requirements of the Fisheries Act 2020. It sets out the policies and proposed actions Defra will use to manage cockle fishing activity, so that stocks are harvested within sustainable levels. Alongside these actions, the cockle FMP sets out additional actions to help support the wider social, economic, and environmental aspects of the fishery.

This environmental report 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 cockle FMP 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 FMP.

The assessment was conducted against a baseline that primarily used existing evidence on the state of the marine environment. This evidence is set out in the updated UK Marine Strategy Part 1, published in 2019. Additional sources of evidence were used to establish the status of the 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 at the present time to reach a judgement on the environmental effects of the cockle FMP.

This report sets out those plans, programmes, and environmental protection goals, both international and domestic, that Defra consider relevant to the cockle FMP.

This report considers and acknowledges the existing environmental effects of cockle fishing using dredges and hand gathering, 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
- climatic factors

The potential positive and negative environmental effects of the cockle FMP's policies and actions alone and in-combination have also been assessed.

This strategic environmental assessment (SEA) concluded that current evidence shows the cockle fishery has a limited impact on the marine environment beyond the cockle population itself. No significant issues in relation to MPAs were identified. The most commercially viable cockle fisheries are prosecuted in MPAs, within inshore fisheries and conservation authority (IFCA) districts. Therefore, management pathways are already in place to manage stocks and mitigate effects on designated MPA features. As cockle fishing activity occurs within protected areas the impact on the marine environment beyond MPA boundaries is limited.

Despite the limited impact of the cockle fishery on the marine environment, the cockle FMP sets out actions to:

- support existing management pathways
- improve the evidence base to better understand the wider ecological considerations of cockle fishing

The assessment of likely negative effects identified a low risk of significant adverse effects on the environment from implementing individual policies and actions. 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 cockle FMP policies and actions will also be monitored to identify unforeseen adverse effects at an early stage. This is so that appropriate remedial action can be undertaken.

This assessment recommends that future iterations of the cockle FMP 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

- how fisheries management can contribute to reducing potential negative interactions with submerged prehistoric landscapes or seascapes

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 Fisheries Act 2020 requires the fisheries policy authorities[1] in the UK to publish Fisheries Management Plans (FMPs) as set out in the Joint Fisheries Statement (JFS), to manage fishing activity so the harvesting of fish stocks remains within sustainable levels.

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 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.

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;

1 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.

policies and actions to harvest within sustainable limits; 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 a 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 FMPs to report their effectiveness every three years and 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 fisheries management measures/ interventions 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 will 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 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 cockle FMP applies to common cockle (Cerastoderma edule*)* in English waters covering inshore and offshore areas where fishing activity takes place. Cockles are widely distributed around UK inshore and offshore waters, but for the latter we only have anecdotal information from fishermen. In English waters fishing grounds are

typically located within the six nautical mile zone from the coast. The most commercially viable cockle fisheries are found within Marine Protected Areas (MPAs), mainly found within Eastern IFCA, Kent and Essex IFCA, Southern IFCA and Northwestern IFCA districts. Fishing is concentrated in these areas with little activity occurring outside MPA boundaries.

Cockle FMP goals and actions

The FMP vision is that cockle fisheries in English waters will be managed to achieve environmental, social, and economic sustainability for the benefit of coastal communities and wider society. To realise this vision, three overarching goals have been identified.

1. Maintain stocks at levels that are environmentally sustainable in the long term and are not overexploited by continuing with the current management approach.
2. Improve the evidence base to ensure identified fisheries are managed utilising adaptive management cycles using an ecosystem-based approach.
3. Deliver a framework to support the cockle industry, recognising their contribution to coastal communities and the skilled employment they provide.

The specific actions identified in the cockle FMP, their rationale, and indicators to be delivered during the lifespan of the plan by government, fishery regulators and stakeholders are set out below.

The cockle FMP actions

Action 1: develop a framework to support the role of the FMP in realising sustainable cockle fisheries in English waters

Relevant goals: Goals 1 and 3.

Rationale

The evolution of management, harvesting methods and market forces has created 4 distinct and locally specific cockle fisheries. These fisheries are not distributed over wide areas and do not cross fisheries regulator boundaries.

Stock assessments have been regularly undertaken and feed into annual adaptive management measures, which run under byelaw or regulating order legislation that has been approved by government. We are proposing to develop a national survey and stock assessment framework to provide guidance from current IFCA cockle stock assessment methodologies to those regulators whose cockle fisheries are

emerging. The framework will link together the local work of the IFCAs with national priorities, namely the need to deal effectively with emerging inshore and offshore cockle and co-located bivalve fisheries.

In a national context, IFCA stock assessment work can be used as the blueprint for a national cockle fishery framework. This will give regulators an understanding of a possible process to follow when new cockle and other bivalve fisheries could potentially emerge.

We recognise the need to link local management to a national, flexible, strategic approach that can address other issues common to all cockle fisheries in English waters. Such issues may include:

- emerging, private or unregulated fisheries
- unfished cockle beds
- shellfish certification
- water quality issues

Indicators:

- agreed stock boundaries (or functional units), where appropriate
- a national survey and stock assessment framework is developed

Action 2: consider developing national monitoring and reporting mechanisms to detect inshore and offshore emerging fisheries if they exist

Relevant goals: Goals 1 and 2.

Rationale

Commercially viable beds require stock sampling at appropriate spatial and temporal scales to ensure harvesting does not adversely affect their continued productivity.

There may be unidentified beds that fall outside existing management measures and sampling regimes. The risk is that any unidentified beds may be subject to unsustainable harvest levels should commercial harvesting begin.

There are data issues between national and local reporting systems that prevent us from strategically identifying emerging fisheries.

Indicators:

- a register of private fisheries in English waters is created

- guidelines for regulators when considering emerging commercial inshore and offshore fisheries are developed

Action 3: review the data collection framework and evidence base relating to interactions between cockle fisheries and designated bird prey requirements

Relevant goals: Goal 2.

Rationale

Current fisheries management must take into account impacts on designated features of Marine Protected Areas. Regional English cockle fisheries have a proven track record of incorporating these considerations into management decisions. To fully develop an adaptive management approach, the data collection framework assessing annual variation of designated bird requirements should be further developed. Currently developing Natural Capital Approaches could usefully provide enhanced integration of identified ecological requirements by providing regulators with improved data.

Indicators:

- produce a review of the evidence base used for the bird food model supporting the main cockle fisheries
- following on from above make recommendations on the mechanism used to provide regulators with advice

Action 4: assess the data collection framework for social and economic data used to inform management decisions

Relevant goals: Goals 1, 2 and 3.

Rationale

Cockles export trade data is currently aggregated with clams and other arc shells. Disaggregated trade data is needed to better understand trends in the trade balance of cockles. Employment data for the distinct dredge fisheries for cockles are currently aggregated with other similar gear types, such as scallop dredges. Disaggregated employment data will better help inform management decisions. Landings, trade and employment data for hand-gathered fisheries is not representative of the major commercial fisheries. Industry has indicated limited market opportunities resulting from the current shellfish certification process. A flexible, adaptive approach is required to support industry development.

Indicators:

- a report is produced that investigates the economic burdens on businesses associated with shellfish health sampling and export certification

- guidelines are developed for regulators when considering how emerging commercial inshore and offshore fisheries should be managed

Action 5: consider establishing a national cockle FMP forum

Relevant goals: Goals 1, 2 and 3.

Rationale

The establishment of a national cockle forum will help share best practice and identify common issues that have an impact on all English cockle fisheries.

Due to the geographic scope and inshore nature of the commercially viable and publicly managed fisheries, the regional IFCAs operate at an appropriate scale. This will allow them to manage the sustainable harvest of cockles while considering wider ecological and socio-economic considerations.

Wider considerations that impact all cockle fisheries, such as shellfish water classification testing and fishery interactions with other bivalve fisheries, could be usefully considered within a national forum to further industry participation. The national forum could also consider possible interactions between cockle fisheries and maritime heritage assets, such as underwater archaeological structures and wrecks.

Indicators:

- establish a national forum
- understand how the cockle fishery interacts with the management of other bivalve mollusc fisheries

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 definition in Regulation 2.

Defra consider that regulation 3(2)(a) of the SEA Regulations 2004 applies to the cockle FMP as the plan relates to England only.

In accordance with the SEA Regulations 2004, Defra carried out a screening exercise which determined that the proposed policies in the cockle FMP may have 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 FMP 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 cockle in English waters has the potential to impact these sites and interest features. For example, shellfish harvesting 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 cockle FMP have the potential to affect multiple European marine sites and the wider marine environment.

Based on the outcome of the screening, Defra concluded the FMP falls within the description of a plan in regulation 5(3) of the SEA Regulations 2004, and so because 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 process

Defra 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 cockle FMP was provided to the following Consultation Bodies:

- Historic England
- Natural England
- Environment Agency
- Joint Nature Conservation Committee (JNCC)

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.

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

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

Section: 4 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 (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

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 FMP. Based on its initial evaluation of likely significant effects and taking into account the results

of the scoping consultation carried out (see above and Appendix F), the following conclusions were reached regarding the content of the Environmental Report.

Defra propose that the Environmental Report will address the effects on the following issues:

- biodiversity, fauna, and flora (including 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 emission, blue carbon)
- cultural heritage (including the following sub-section: interactions between fishing gear and marine heritage assets)
- landscape and seascape (including the following sub-section: interactions between fishing gear and seabed formations, benthic habitats)

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

- population
- human health
- air
- material assets

Fishing activity being managed through the FMP 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 cockle FMP. 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 cockle FMP. We provide the justification behind this decision and additional rationale behind why sub-sections were considered below.

Additional rationale behind why sub-sections were considered is included 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 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 with 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 with this issue heading. The assessment of benthic habitats will also be relevant when considering the impact of cockle fishing on seabed formations. Where specific impacts are known, they will also be considered

Results of the scoping exercise to determine those environmental issues likely to be significantly affected by the cockle FMP and therefore scoped into the SEA[2]

Environmental issues likely to be significantly affected by the FMP:

- **biodiversity, fauna, and flora (UK MS descriptors D1, D3, D4, D6)** - Fishing activity for cockles has the potential to cause abrasion/disturbance of the substrate on the surface of the seabed, changes in suspended solids (water clarity), penetration and/or disturbance of the substratum below the surface of the seabed including abrasion, smothering and siltation rate changes (light), visual disturbance; extraction of, or mortality/injury to, wild species; reductions in prey species important for designated features. These issues are within the scope of this SEA
- **geology and sediments (soil) (UK MS descriptor D6)** - Fishing activity for cockles 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)** - The FMP aims to make fishing practices more environmentally sustainable so there is scope to reduce the impact fisheries have on water quality. This issue is within the scope of this SEA
- **climatic factors** - The FMP will contribute to the climate change goal of Fisheries Act, seeking to ensure it develops relevant policies to both mitigate impact on and adapt to climate change. For example, by reducing the carbon footprint of the fishery, and seeking a positive impact on blue carbon habitats. This issue is within the scope of this SEA
- **cultural heritage** - Fishing activity for cockles has the potential to interact with marine heritage assets. While the FMP is 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** - Cockle fishing through physical disturbance of the seabed has the potential to affect seascape features. This issue is within the scope of this SEA

2 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.

Environmental issues not likely to be significantly affected by the FMP:

- **population (human)** - The FMP would not result in significant increases, decreases or both in human population numbers, or changes to in-migration or out-migration. This issue is beyond the scope of this SEA
- **human health -** The FMP would not result in any significant human health issues. Whilst fishing remains a dangerous vocation and the FMP will promote safe operations, the regulation of the safety of fishing operations falls elsewhere. This issue is beyond the scope of this SEA
- **air -** The FMP is 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
- **material assets** - The FMP will not intrinsically impact on 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

Assessment methodology

This SEA reflects the geographical scope and fishing activity covered by the FMP. It considers the goals and associated actions of the cockle FMP only as no required management measures were identified.

The assessment reviewed existing evidence on the current state of the marine environment, which included the impact of fishing within the baseline state.

It assessed the nature and extent of likely effects of the cockle FMP (including its policies) on those environmental issues scoped into the assessment and where applicable their associated UK MS descriptors identified in the above section.

As the FMP is part of 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 this FMP with other plans and projects, including Marine Plans and 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 FMP actions as they are delivered, and include:

- Defra's Revised Approach to fisheries management programme (IFCA 0-6 nautical miles, MMO 6-12 nautical miles)

- the Marine Management Organisation's (MMO) ongoing Fishery Assessment programme (outside 12 nautical miles) in England

Future delivery of the goals and goals specified in the FMP programme may give rise to management changes such as new legislation to regulate cockle fishing. Such changes may have the potential to impact MPAs and their features and will be subject to more detailed assessment before being implemented.

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

During the development of the cockle FMP, advice from Statutory Nature Conservation Bodies (SNCBs) (Natural England and JNCC) on the impacts of fishing activity in relation to MPAs and UK MS descriptors was considered. This ER reviews how this advice has been reflected in the FMP, and how the proposed policies and actions could change the baseline.

It is important to note the cockle FMP contains a range of policies 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 FMP at the present time.

This assessment acknowledges the cockle FMP sets outs goals to develop the evidence base for the cockle fishery. Our assessment used the best available evidence at the present time to reach a judgement on the environmental effects of the cockle FMP.

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. 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 actions.

It is likely that without the FMP, those issues which are contributing to the current state of the marine environment will likely continue to have an influence. The FMP seeks to promote the management of the cockle fisheries in a more coherent and coordinated manner that seeks to build on existing management of environmental issues. The FMP has 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 FMP's proposed policies and actions could change the baseline.

Biodiversity, flora, fauna and geodiversity[3] (geology and sediments)[4]

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 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

3 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.

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

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

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).

Grey seals populations 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 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

Birds 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 and commercially exploited fish and shellfish 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 the benthic ecosystems is 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 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.

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.

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 were 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 2019, estimated emissions by the UK fishing fleet (802 kt CO_2e) would have represented 0.18% of the UK's total territorial emissions (455 Mt CO_2e)[5], or 0.66% of

5 BEIS (Department for Business, Energy & Industrial Strategy) (2021b) 2019 UK Greenhouse Gas Emissions: Final Figures – Statistical Summary. Final UK greenhouse gas emissions national statistics: 1990 to 2019

the UK's domestic transport emissions (122 Mt CO_2e)[6]. To put this into context, estimated emissions by the UK fishing fleet would have been equivalent to 1.7% of total agricultural emissions in 2019 (46.3 Mt CO_2e). Recent analysis conducted by Cefas has reviewed the "at-sea" emissions across nine main gear types. Wide differences in carbon emission levels exist between the main fleet segments, with passive gear types tending to have lower emissions than active gears, but this is not always consistently the case. The resolution of the analysis was not high enough to capture the emissions generated from the cockle fishery in England, or the predominate gear types used within the fishery (tractor dredging, hydraulic dredging).

Blue carbon

Certain marine habitats including seagrass, kelp and muddy sediments are able to capture and store carbon and therefore these are known as blue carbon habitats. Currently there is no comprehensive assessment of the impact of cockle fishing 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 COP26, UK Administrations will work together to address key research questions related to blue carbon.

Climate change impacts on cockle stocks and fisheries

Climate change and warming oceans are changing the distribution of commercially important shellfish species[7]. Cockles have a large thermal range, and populations can experience temperature ranges from below 0°C to above 22°C. Cockles do, however, have distinct breeding periods with optimum conditions for egg-laying and egg development found between 6-10°C[8]. Beyond this range, egg development and offspring survival reduce.

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6 DfT (Department for Transport) (2021) Statistical Release: Transport and Environment Statistics 2021 Annual Report, 11 May 2021. Transport and environment statistics: 2021 (2019 data)

7 Mieszkowska, N., Burrows, M. and Sugden, H. (2020) Impacts of climate change on intertidal habitats relevant to the coastal and marine environment around the UK. MCCIP Science Review 2020, 256–271.

8 Smith, KE., Thatje, S., Hauton, C. (2013) Thermal tolerance during early ontogeny in the common cockle Buccinum undatum (Linnaeus 1785): Bioenergetics, nurse egg partitioning and developmental success. Journal of Sea Research, Volume 79, 2013, Pages 32-39.

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 in English waters.

The report identifies that positive and negative interactions can arise when archaeological material present on the foreshore and seabed, is encountered during commercial fishing.

The following interactions between fishing gear and marine heritage assets can occur[9]:

- demersal trawl and dredge gears are widely used and are most likely to interact with marine heritage assets. Direct interactions with heavy bottom gears, are likely to be significant. However, some archaeological resources may not be discovered without interactions with fishing gear, and therefore significance of the interaction with findspots[10] is moderate because of both positive and negative impacts

The report identifies several potential and evidenced interactions between commercial fishing and marine heritage assets. However, given the anecdotal nature of many of these interactions a comprehensive assessment of the extent of interactions and their impacts, is currently not available for English waters.

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"

9 Information derived from Fishing and the Historic Environment, page 44.

10 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).

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 (for example Area of Outstanding Natural Beauty, 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 a suite of different characteristics that include natural factors, cultural and social factors, and cultural associations. A number of subheadings exist under these character headings, 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, 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 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 to damage submerged prehistoric peaty deposits known as moorlog[14]. However, a comprehensive assessment of the extent of interactions and their impacts, is currently not available for English waters. Conserving moorlog, as potential blue carbon habitats might contribute to climate change mitigation and adaptation.

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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)

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.

Existing Environmental Effects of Cockle Fishing

Cockle fishing is not currently considered to be having a significant influence on the current environmental baseline due to existing measures in place, to manage the impact of fishing activity on cockle stocks and designated MPA features. Nevertheless, we recognise that fishing for cockles is not without its risks to the environment.

The cockle FMP focuses on maintaining the sustainable harvesting of cockle stocks (fishing currently occurs using evidence-based management approaches such as the rule of thirds and Catch Per Unit Effort), while seeking to identify where further improvements to sustainable harvesting can be made. This focus seeks to further reduce the environmental risks linked to over-fishing these stocks, thereby giving positive benefit to environmental status over the long term.

As described in Section 2, this Environmental Report focuses on assessing how the goals and actions in the cockle FMP 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 FMP actions as they are delivered, and include:

- Defra's Revised Approach to fisheries management programme (IFCA 0-6 nautical miles, MMO 6-12 nautical miles)
- the Marine Management Organisation's (MMO) ongoing Fishery Assessment programme (outside 12 nautical miles) in England

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

Biodiversity, flora, fauna and geodiversity, water quality

Environmental effects associated with MPAs:

Advice provided to Defra by our SNCBs gives more detail on the risks associated with cockle fishing in relation to the designated features of MPAs in English waters.

The following impacts were identified as being associated with cockle fisheries:

suction (hydraulic) dredging, pump scoop, prop washing, box dredges, other dredges:

- the main impacts include abrasion/disturbance of the substrate on the surface of the seabed; changes in suspended solids (water clarity); penetration and/or disturbance of the substratum below the surface of the seabed including abrasion; smothering and siltation rate changes (light); visual disturbance; bycatch of designated features, targeted or bycatch of prey of designated features

hand gathering and raking:

- the main impacts include abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes for example removal of substratum (extraction); penetration and/or disturbance of the substratum below the surface of the seabed including abrasion; visual disturbance; bycatch of designated features, targeted or bycatch of prey of designated features

tractor dredge harvesting:

- the main impacts include abrasion/disturbance of the substrate on the surface of the seabed; changes in suspended solids (water clarity); penetration and/or disturbance of the substratum below the surface of the seabed including abrasion; smothering and siltation rate changes (light); visual disturbance; bycatch of designated features, targeted or bycatch of prey of designated features

In England the assessments of the impact of fishing activities inside MPAs are undertaken by the IFCAs within 6nm and the MMO outside 6nm. Figure 1 shows the distribution of English MPAs. Stakeholders have worked 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 goals. Current management measures already in place related to cockle fishing activities are detailed on the MMO and Association of IFCAs websites. The cockle fishery in the Wash, for example, is subject to an annual Habitat Regulation Assessment to assess the impact of the fishery on MPA features.

Figure 1. England's MPA network

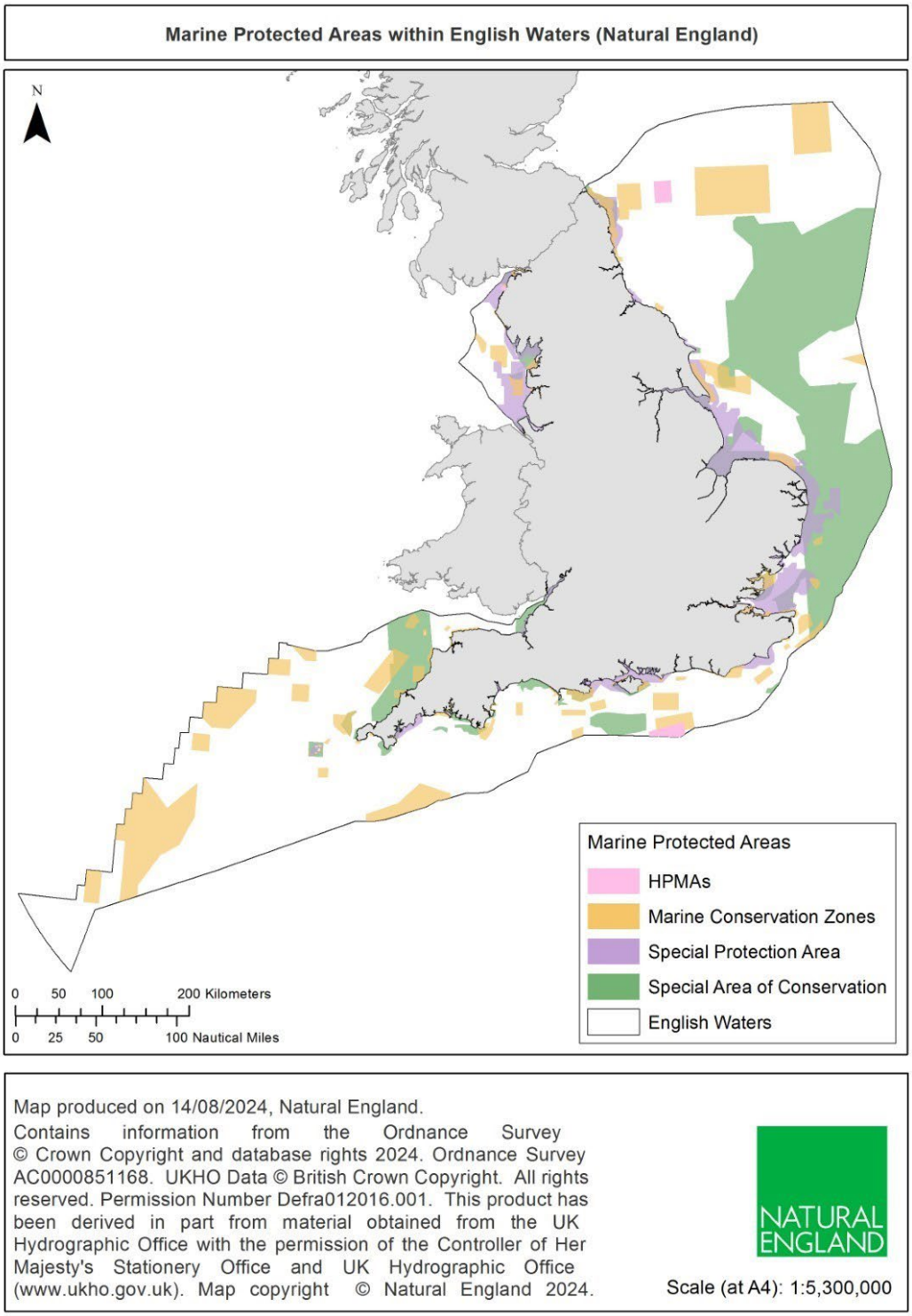

Figure 1 description: a map showing the location of marine protected areas within English waters. The map includes marine conservation zones, special areas of conservation and special protection areas.

- MPAs hug much of the English coastline, especially around ecologically rich areas such as estuaries, salt marshes, and rocky shores. Clusters exist near places like Cornwall, Devon, Dorset, and the Northumberland coast
- large offshore MPAs spread across the North Sea, English Channel, and parts of the Celtic Sea
- the southwest contains a number of MPAs up against the boundary of the UK exclusive economic zone

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 prey depletion) or when the feature of an MPA is mobile and travels outside the site.

Advice provided to Defra by the SNCBs on outside MPA boundary impacts of cockle fishing activities concluded that the cockle fishery does not pose a significant risk of bycatch of mobile species or depleting important prey species of species that are designated features of MPAs.

Environmental effects associated with UK MS descriptors:

Advice provided to Defra by the SNCBs gives more detail on the key risks to UK MS descriptors arising from cockle fishing and their likely impact on achieving Good Environmental Status (GES) (Appendix A).

The following potential issues and their associated risk level[15] have been identified for cockle fishing on UK MS descriptors:

- **biodiversity and food webs, biological diversity of cetaceans (D1, D4):** Bycatch risk from cockle fishery activities is considered to be very low, and cockles do not form part of the diet of cetaceans. Therefore, this fishery does not pose a risk to this sub descriptor
- **biodiversity and food webs, biological diversity of seals (D1, D4):** Bycatch is thought to be the biggest fisheries pressure facing seals, however the risk in

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

relation to cockle fishery activities are considered to be very low. Cockles do not form part of the diet of seals, therefore this fishery does not pose a risk to this sub descriptor

- **biodiversity and food webs, biological diversity of seabirds (D1, D4):** Bycatch risk from cockle fishery activities is considered to be very low. However, cockles are the main food source for overwintering oystercatchers and a key food source for a variety of other overwintering birds including eider, knot, shelduck, curlew, redshank, dunlin, sanderling and common gull. the risk to D1, D4 birds is thought to be low as management in MPAs will also benefit UK MS descriptors as there is much overlap in the species which are qualifying features of SPAs and those which are included in indicators for UK MS descriptor D1, D4 seabirds. Furthermore, the inclusion of the vast majority of large cockle beds in MPAs means there is likely to be little remaining unmanaged activity
- **biodiversity and food webs, biological diversity of fish (D1, D4):** Bycatch risk of fish from cockle fishery activities is considered to be very low due to the harvesting methods employed
- **food webs (D4):** Risks from cockle fishery activities are considered to be low, although comprehensive advice was not provided by SNCBs. Advice noted that strategic collaboration is needed to improve ecosystem models and our understanding of how fishing mortality impacts food web dynamics
- **biodiversity sea floor integrity (D1, D6):** Cockle fishing activities occur within MPA boundaries, with assessment and management undertaken by the IFCAs. Little activity is thought to be occurring outside site boundaries and none of these activities are considered to be occurring at a level that is currently preventing the achievement of GES for this descriptor. Therefore, the risk for this descriptor is low
- **marine litter (D10):** Risks from cockle fishery activities are considered to be low. SNCB advice noted that abandoned, lost, or discarded fishing gear is associated with entanglements and ghost fishing, however, fishing litter is likely to be a relatively small component of overall marine litter, therefore fishing measures alone are unlikely to contribute significantly to the achievement of GES

SNCB advice did not include detailed advice relating to D3 Commercial fish. However, developing and implementing actions to maintain and further improve sustainable harvesting of cockle stocks reduces the risks associated with achieving targets for D3 Commercial fish.

SNCB advice noted that cockle fisheries in English waters can be considered low risk in terms of their impacts on the designated features of MPAs in English waters arising from fishing activities outside site boundaries, and in relation to UK MS descriptors. Ongoing efforts to manage stocks sustainably will continue to contribute to GES for several UK MS descriptors.

Climatic factors

Vessels fishing for cockle 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 the 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 cockle on organic carbon stocks. Improved recording of the intensity of cockle fishing 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.

Ocean warming does pose a potential risk to the distributional boundaries of this species. Recent evidence has also shown that cockles have a negative relationship between temperature and size, with cockles in cooler waters reaching larger maximum sizes[16]. This poses the additional potential impact of climate warming altering the cockle population size and structure, which would have knock on implications for size-based management measures. Ocean acidification may also lead to shell weakening could affect the quality of the catch and its transportability[17].

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 or findspots often reliant on fishing gear interactions. Negative effects can be caused by physical disturbance to cultural heritage on and within the seabed. Specific effects include: impeded access and interpretation of assets by fishing gear (for example, 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

16 Smith, KE., Thatje, S., Hauton, C. (2013) Thermal tolerance during early ontogeny in the common cockle Buccinum undatum (Linnaeus 1785): Bioenergetics, nurse egg partitioning and developmental success. Journal of Sea Research, Volume 79, 2013, Pages 32-39.

17 Martin, N., Clusella-Trullas, S. and Robinson, T.B., 2022. Predicted changes in temperature, more than acidification, affect the shell morphology and survival of the girdled dogcockle, *Trochia cingulata* (Linnaeus, 1771). Journal of Molluscan Studies, 88(2), p.eyac011.

from its original place on the seabed during fishing practices. Avoiding negative interactions with marine heritage assets will help conserve them for their enjoyment by future generations.

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

Cockle fishing through the physical disturbance of the seabed has the potential to affect seascape features. While there is no established assessment methodology for seascape features, physical disturbance of the seabed for the harvesting methods employed in the fisheries are assessed as all occur within MPAs. Based on SNCB advice related to risks to MPA features and MS Descriptor 6 Seafloor integrity, risks to seascape features are considered low.

4. Relevant plans, programmes and environmental protection goals

The cockle FMP has broad application since it covers an activity that occurs across English waters. Consequently, the plan will interact with a range of established national legislation, plans and programmes, and international agreements and declarations signed by the UK.

The cockle FMP applies to English 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 goals that Defra consider relevant to the implementation of the cockle FMP.

International

The cockle FMP has 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 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 a Contracting Party to NEAFC – Northeast Atlantic Fisheries Commission relevant to stocks being managed through the FMP Programme:
- Convention for the Protection of the Archaeological Heritage of Europe
- Council of Europe Landscape Convention

Domestic

The cockle FMP has had regard to the following national legislation, plans and programmes during preparation:

Marine protected areas

FMPs are required by law to consider the implications of the fishing activity they manage for designated sites, primarily Marine Protected Areas (MPAs). Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are protected under the Conservation of Habitats and Species Regulations 2017, known as the Habitats Regulations. Marine Conservation Zones (MCZs) are protected by the Marine and Coastal Access Act 2009. 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 cockle FMP will support the management of fishing activity in MPAs. When implementing any actions arising from the FMP that overlap with European Marine Sites (SACs and SPAs) 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 goals 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 SACs and SPAs. Appendix C lists the different types of MPA and relevant designations in the UK.

Highly protected marine areas

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 HPMA designations in English waters came into force on 5 July 2023.

The three sites are:

- Allonby Bay
- Northeast of Farnes Deep
- Dolphin Head

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

Conservation of Habitats and Species Regulations 2017 and Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

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 and Welsh waters. The cockle FMP will seek to 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 cockle FMP 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 Good Environmental Status (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 goal' of the Fisheries Act 2020 – sections 1(4) and 1(10).

The Marine strategy part one: UK initial assessment and good environmental status outlines an initial assessment of our seas and characteristics, targets and indicators of GES in UK seas.

The Marine strategy part two: UK marine monitoring programmes outlines the monitoring programmes for measuring progress towards GES in UK seas.

The UK Marine Strategy Part Three: Programme of Measures identifies FMPs as a tool to support the delivery of 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 Ians – UK wide

The Marine and Coastal Access Act 2009 (MCAA) makes provision for the UK Marine Policy Statement (MPS), published 2011, and requires (together with the Marine Act (Northern Ireland) 2013, The Marine (Scotland) Act 2010) the production of marine plans where the MPS is in place. 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 goals. Under MCAA section 58, decisions relating to the marine area should be taken in line with the Marine Plan. The cockle FMP considers 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 England is provided in Appendix D.

The Environment Act 2021 – UK wide

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 cockle FMP 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) 2025 - GOV.UK for England. The EIP published in 2023 and updated in 2025, 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 cockle FMP will deliver policies 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 cockle FMP will comply with the biodiversity duty.

The Environmental Targets (Biodiversity) (England) Regulations 2023

The Environmental Targets (Biodiversity) Regulations 2023 sets out legally binding targets to halt species decline by 2030, reverse species decline by 2042 and restore or create over 500,000 hectares of wildlife-rich habitat by 2042. The cockle FMP 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 Regulation specifically sets a legally binding target for at least 70% of protected features in marine protected areas to be in favourable condition by the end of 2042, with the remaining features to be in a recovering condition. The cockle FMP will support achieving the targets set out in the Regulations.

Climate Change Act 2008

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 cockle FMP will support policies to meet targets to achieve net zero by 2050 as set out in the legislation.

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 actions need to be taken if we are to achieve our goals. The cockle FMP 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 (the WFD Regulations) provide a framework for assessing and managing the water environment, which includes estuaries and coastal waters in England. The cockle FMP 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 to help protect and improve our

water environment. RBMPs extend out to one nautical mile from the baseline into the marine environment and seek to maintain or restore Good Ecological Status[18]. The cockle FMP will support the goals in the relevant RBMPs to meet Good Ecological Status.

Other FMPs

Defra and our delivery partners considered the interaction between the published FMPs and this tranche of plans whilst drafting this FMP. Of the published FMPs, there is potential for the cockle FMP to interact with the King Scallop FMP due to the use of dredges in cockle fisheries and potential overlap with current inshore management areas. The cockle FMP does not propose any new management measures and given the geographic scope of the fisheries within IFCA districts; fishery interactions will have been considered by the managing IFCAs. Dredges used for harvesting cockles are also of a different design than those used for king scallops. Future iterations of the cockle FMP could consider interactions with other bivalve FMPs. The interaction between FMPs will be 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 FMP.

Other Localised Plans

Explore Marine Plans (EMP) is an online interactive tool developed by the 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 cockle FMP 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 FMP.

[18] 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)

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.

The following sections assess the environmental effects of the policies and actions of the cockle FMP in relation to the environmental issues screened into this SEA, and where applicable their associated UK MS descriptors.

Overview of the potential positive and negative environmental effects of the goals and actions of the cockle FMP

The potential positive and negative environmental effects of implementing the cockle FMP goals and actions, as set out in section 1 of this ER, have been identified in below. The cockle FMP does not propose any management measures to be assessed.

1. Maintain stocks at levels that are environmentally sustainable in the long term and are not overexploited by continuing with the current management approach.

2. Improve the evidence base to ensure identified fisheries are managed with adaptive management cycles using an ecosystem-based approach.

3. Deliver a framework to support the cockle industry, recognising their contribution to coastal communities and the skilled employment they provide.

High-level assessment of the positive and negative environmental effects of the cockle-specific actions

Action 1: develop a framework to support the role of the FMP in realising sustainable cockle fisheries in English waters

Relevant goals: Goals 1 and 3.

Positive effects:

- improved evidence on stocks and development of a coherent English management framework could support sustainable harvesting of cockle stocks. This goal could consider issues that are not caused by fishing activity that affect cockle stocks such as those associated with water quality or other abiotic factors (temperature, salinity), and consider with relevant parties, policies to address them. Such issues are also relevant for other collocated bivalve species such as razor and manila clams. 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); Water (UK MS D10, D11); Climatic factors.

Negative effects:

- as a result of the stock assessment, if this leads to management that reduces opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure in other areas in the scope of the FMP. 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); Water (UK MS descriptors D10, D11); Climatic factors.

Action 2: consider developing national monitoring and reporting mechanisms to detect inshore and offshore emerging fisheries if they exist

Relevant goals: Goals 1 and 2.

Positive effects:

- identifying emerging fisheries and assessing risk of the development of unregulated fisheries could allow management to be developed to ensure cockle beds are fished sustainably. This may also 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); Water (UK MS descriptors D10, D11)

Negative effects:

- bringing in management that reduces opportunities of commercial capture of cockles outside existing management structures could lead to spatial changes in fishing effort that increases fishing pressure inside areas currently fished. This could have a negative impact on the marine environment

Relevant SEA Issues: Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6); Geology/sediments (UK MS - D6); Water (UK MS descriptors D10, D11); Climatic factors

Action 3: review the data collection framework and evidence base relating to interactions between cockle fisheries and designated bird prey requirements

Relevant goals: Goal 2.

Positive effects:

- this goal could provide a better understanding of the effects of the fishery of designated MPA features, including the seabed, improving the sustainability of the fishery, and further reducing the impacts of fishing activity on the

marine environment. 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)

Negative effects:

- landscape and Seascape: No immediate negative effects are anticipated. If this action leads to management that reduces opportunities, it could lead to changes in fishing effort, spatial changes in effort and/or displacement to currently unfished areas designated features sensitive to disturbance or removal of prey species

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 4: assess the data collection framework for social and economic data used to inform management decisions

Relevant goals: Goal 1, 2 and 3.

Positive effects:

- supporting social, economic, and cultural importance in the cockle fishery is consistent with ecosystem-based approaches and can lead to improved governance and environmental outcomes

Negative effects:

- if social, economic, and cultural importance are considered in isolation, fisheries management approaches may have negative environmental consequences

Action 5: consider establishing a national cockle FMP forum

Relevant goals: Goals 1, 2 and 3.

Positive effects:

- sharing best practice and addressing fishery issues and wider policy considerations could lead to better management that could improve the overall sustainability of the fishery. Achieving stock sustainability could help cockle populations become more resilient to environmental change and could positively benefit marine ecosystem function and biodiversity. Better

understanding how cockle fisheries interact with the management of other bivalve mollusc fisheries could have further positive benefits to marine ecosystem function and biodiversity. Understanding how cockle fisheries interact with maritime heritage assets can create opportunities for these assets to be discovered and protected

Relevant SEA Issues: Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6); Climatic factors

Negative effects:

- no negative effects are anticipated. Therefore, this goal is considered to pose a low risk

Overview of potential positive environmental effects of the FMP

Biodiversity, flora, fauna, geology and sediments, water quality, climatic factors, cultural heritage, landscape and seascape

The overarching aim of the cockle FMP is to effectively manage the harvesting of cockle stocks within sustainable limits while focusing on improving the sustainability of the fishery over the long-term. Given the geographic scope of the commercial fisheries and the interactions with MPAs, adaptive management measures are well established.

Securing the long-term sustainable harvesting of cockle stocks across English waters, with the long-term aim of fishing within sustainable limits (MSY or appropriate proxies) could:

- help reduce the risk of cockle stocks being over-exploited
- reduce fishing-related mortality which may help cockle populations become more resilient to environmental change which could benefit marine ecosystem function and biodiversity; and,
- help control species removal from food webs

Contribution of policies and evidence to support the management of cockle harvesting within sustainable limits in England (set out on in section 1 and assessed in section 5), will help to contribute to the achievement of GES for Commercial fish (D3) for the UK MS by seeking to ensure that target stocks are harvested sustainably. The cockle FMP's proposed actions to develop better evidence surrounding bird prey requirements will support social and economic sustainability,

while also contributing to the achievement of GES for Biological diversity (birds) (D1) and Food webs (D4).

The cockle FMP considered advice from SNCBs on the risks posed by fishing for cockle when developing and implementing the policies set out in the FMP. Considering the wider impacts on the marine environment at the FMP preparation stage should lead to more informed management interventions that could have a positive effect on the environment.

The cockle FMP adopts 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.

Climate impacts in the cockle fishery are not well understood. Further research on the impact of climate change on the cockle fisheries under this FMP is needed. However, it is not currently within scope of this iteration of the FMP to deliver mitigation strategies against climate impacts but may be within its remit to support fisheries through national transition to low carbon fishing and related policies.

Through Goal 3, the cockle FMP will contribute to building an improved understanding of the potential impacts that cockle fishing can have on blue carbon habitats.

Through Goals 2 (stock assessments) and 3 (understanding emerging fisheries), the cockle FMP will contribute to building an improved understanding of how climate change is influencing cockle stock range and the physical and biological characteristics of cockle species. This will help the cockle fishery adapt to climate driven changes in the distribution of stocks, contributing to the climate goal in the Fisheries Act 2020.

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

In addition, there is the potential for positive interactions to arise between fishing and cultural heritage and submerged prehistoric landscapes or seascapes. A degree of fishing disturbance can lead to some heritage assets being revealed and investigated, thereby improving the knowledge base.

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

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 importance of cockle 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 cockle fisheries management policies and measures could support measures that protect the historic marine environment and improve early reporting of previously unknown sites.

Overview of potential negative environmental effects of the FMP

Biodiversity, flora, fauna, geology and sediments, water quality, climatic factors, cultural heritage, landscape and seascape

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 biodiversity, flora, fauna, water quality, cultural heritage, and landscape and seascape from implementing individual policies and actions. However, there remains uncertainty. In particular, we do not yet know the potential environmental effects of implementing the combination of policies and actions set out in the cockle FMP.

Nevertheless, the Fisheries objectives which will guide our 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.

Where there are viable inshore cockle fisheries these are managed at a level appropriate to the needs of the stocks by the relevant IFCAs. There are offshore and inshore areas where there is potential for future fisheries to emerge but current intelligence from government and industry on the extent to which such fisheries exist, does not support government intervention. Introducing management where a fishery does not exist will create a regulatory burden for both government and industry and those sectors dealing with collocated bivalve fisheries. However, in recognition of the potential risks of emerging fisheries the cockle FMP (Actions 2 and 4) propose to a)

assess risks of unregulated fisheries and consider a national prohibition on commercial capture of cockles outside existing management structures and b) develop guidelines for regulators when considering emerging commercial inshore and offshore fisheries, respectively.

There is the potential for factors such as the spatial footprint, intensity, type of gear and fishing methods of the cockle fishery to alter through publishing the FMP and implementing its polices 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 actions being implemented. For example, precautionary management actions intended to have a positive effect to support the FMP goals may lead to displacement of fishing activity to other locations or into fisheries. This change may result in negative environmental effects that fall outside the scope (geographic area or species) of this FMP. Where an FMP cannot solve an issue, it may be appropriate for other FMPs to consider this issue. Or, if areas beyond English waters are affected, it may be appropriate for this issue to be considered through wider UK or international fisheries management fora.

Section 5 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. Changes to fishing activity resulting from the implementation of the FMP goals will be monitored as part of the process of evaluating the effectiveness of FMPs. Such monitoring will help identify any unintended consequences on the environment and indicate whether the implementation of these policies 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 cockle FMP could potentially have positive or negative in-combination effects with other domestic programmes to deliver sustainable fisheries (see above). 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 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 goals and achieving long-term improvements to the marine environment.

Undertaking the in-combination assessment at this stage in the production cycle of the FMP proved difficult due to the policies being at an early stage of development. The assessment of the likely negative effects of the individual policies and actions in section 5 identified a low risk of significant adverse effects on the environment and therefore no amendments are needed ahead of publishing the FMP. When considering the combined effects of other potential policies, we are not aware at this stage that any other regimes or activities are going to change that position.

The FMP 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 FMP goals 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 FMP as required.

Marine Plans set out priorities and directions for future development within the plan area, inform sustainable use of marine resources and help marine users understand the best locations for their activities. Marine Plans consider all marine activities, resources and ecosystems and therefore assessing FMP policies against Marine Plan policies represents the most efficient way of determining how FMP policies will broadly interact with other marine activities, ensuring compliance with Section 58 of the Marine and Coastal Access Act 2009.

Before there are any changes to fisheries management as a result of the cockle FMP, where necessary, all new actions 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 combined effect of implementing the polices, actions and measures 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

Cockle fishing is an ongoing activity that poses some risks to the quality status of the marine environment. The cockle FMP focuses on maintaining and further improving the sustainable harvesting of cockle stocks and therefore will reduce the risks to the future status of cockle stocks in the long term thus giving positive benefit to the environment.

Nevertheless, we acknowledge that fishing for cockles within sustainable limits may not remove all the associated negative effects of that fishing on the wider marine environment. The most commercially viable cockle fisheries are prosecuted in MPAs, within IFCA districts, therefore management pathways are already in place to mitigate effects on designated MPA features and protect the 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 delivering the sustainability goal.

The cockle FMP takes a precautionary approach to fisheries management and adopts a balanced and proportionate approach towards delivering the Fisheries objectives.

The cockle FMP potentially 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.

The cockle FMP does not specifically consider the impacts of fishing on marine heritage assets. However, existing 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 actions to maintain and further improve the sustainable harvesting of cockle stocks but there is scope for future iterations of the FMP to address this wider issue.

The cockle FMP does not specifically consider the impacts of fishing on submerged prehistoric landscapes or seascapes. However, existing 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 actions to maintain and further improve sustainable harvesting of cockle stocks but there is scope for future iterations of the FMP to address this wider issue.

6. Proposed actions to reduce significant negative effects

Existing negative effects of cockle fishing

This ER has acknowledged the existing negative environmental effects associated with the fishing activity which will be managed through the FMP. The actions proposed by the FMP to reduce negative effects are set out below. Biodiversity, Flora, Fauna, Geology and Sediments (soil), Water quality

Measures currently being implemented by the IFCAs set out in the cockle FMP include: cockle or shellfish permits, minimum landing size (MLS)/minimum conservation reference size (MCRS), gear restrictions, spatial and temporal restrictions and maximum vessel length. These measures will be part of the overall management strategy and will contribute to the conservation of stocks and the wider environment.

While there is no delineation of stock boundaries, management areas align with the significant fisheries within IFCA districts. Stock assessments are undertaken which feed into annual adaptive management which is subject to assessment and consultation with SNCBs. The proposed actions seek to improve the evidence available to fishery managers to support the sustainable management of cockle stocks, the wider environment, and promote social and economic sustainability. Actions will also support the detection of emerging fisheries.

The cockle FMP has considered advice from SNCBs with respect to the impacts from cockle fishing activity on MPA features and the wider marine environment in relation to UK MS descriptors. SNCB advice noted that risks associated with cockle fisheries within MPAs are low due to existing assessment and management pathways. Advice also noted that the ongoing efforts to manage stocks sustainably will continue to contribute to GES for several UK MS descriptors. The cockle FMP has set out the following proposed actions to reduce those known negative effects.

Within MPA impacts

The MPA network (Appendix C) offers protection through the existing MPA management process via the power to make byelaws to our most valuable species and habitats by managing human activities such as fishing, to avoid likely significant effects on the environment.

No new management measures are proposed within the cockle FMP, recognising the established assessment and management pathways for the main commercial fisheries. Before Defra implement any new management interventions in future

iterations of the cockle FMP, 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, an appropriate assessment completed in accordance with 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, a Marine Conservation Zone (MCZ) Assessment will also be completed before any new management measure is implemented that may significantly hinder the conservation goals of an MCZ.

The points above will make sure the impacts of cockle fishing activity and the FMP's policies and actions do not prevent our ability to meet the conservation goals for MPA features, thereby enabling us to achieve the legally binding target for MPA condition set out in the Environmental Targets (Marine Protected Areas) Regulations 2022.

Impacts outside MPAs

The cockle fishery does not pose a significant risk of bycatch of mobile species that are designated features of MPAs. Nevertheless, potential impacts will be considered via a bycatch monitoring plan to be set out in future iterations of the FMP. Where required, the cockle FMP will collaborate with other existing initiatives that are working to mitigate negative impacts of fishing action, such as the Bycatch Mitigation Initiative, Clean Catch UK.

The cockle fishery poses a low risk to designated bird species by depleting biomass of important prey species as it is not thought that significant beds are found outside MPA boundaries. Identified evidence actions will support the detection of emerging fisheries outside MPA boundaries.

UK MS descriptors impacts

SNCB advice highlighted that cockle fisheries in English waters can be considered low risk in terms of their impacts in relation to UK MS descriptors. Despite the low risk of impacts, ongoing efforts to manage stocks sustainably and manage the impact of cockle harvesting on MPA features will continue to contribute to the achievement of GES for UK MS descriptors D3 commercial fish, D1 biological diversity and D4 food webs.

In addition, the actions proposed by the cockle FMP will help further support the achievement of GES for UK MS descriptors D3 commercial fish, D1 biological diversity and D4 food webs and therefore have a positive effect on the current baseline.

Climate change

Vessel emissions

Where appropriate vessel emissions may support national transition to low carbon fishing and related policies.

Blue carbon

The evidence around the risks and impacts of cockle fishing on blue carbon habitats within English waters remains uncertain. The cockle FMP acknowledges 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. The cockle FMP will contribute to building an improved understanding of the potential impacts that cockle fishing can have on blue carbon habitats.

Climate change impacts on cockle stocks and fisheries

Over the duration of this plan the focus will be on contributing to the evidence base and monitoring trends to assess likely impact to shellfish species generally and cockle specifically.

Cultural heritage

The cockle FMP does not explicitly consider the potential impacts of cockle 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. Defra should work with agencies such as Historic England 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 FMP to contribute to having a positive effect on the current baseline.

Landscapes and seascapes

The cockle FMP does not explicitly consider the potential impacts of cockle fishing activity on submerged prehistoric landscapes or seascapes. The FMP has considered the impact of cockle fishing activity seabed integrity which may could indirectly help to conserve submerged prehistoric landscapes or seascapes.

Defra should work with agencies such as Natural England, JNCC and Historic England 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 FMP and the wider marine environment that fishing for cockles operates in. This has the potential for the FMP to contribute to having a positive effect on the current baseline. In addition, by working with these agencies 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.

Effects identified by this assessment

The assessment of the likely negative effects of the individual policies 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 goals and policies 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 be considered when developing monitoring activities as part of the implementation process (see below), to ensure that any negative effects of the 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 FMP will help identify any unintended consequences on the environment that could subsequently lead to significant negative environmental effects. Where likely unintended environmental consequences are identified, appropriate changes to management or mitigation will 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 cockle FMP seeks to support these commitments by providing the tools (FMP policies and actions) to deliver improvements to the sustainable harvesting of cockle stocks.

The range of environmental issues identified through this assessment have been considered by the cockle FMP. The FMP acknowledges 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.

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

7. Reasonable alternatives

Regulation 12(2)(b) of the SEA Regulations 2004 requires the fisheries policy authorities to consider reasonable alternatives to the cockle FMP. 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'[19].

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. The JFS lists the planned FMPs, including the cockle FMP. This listing creates a legal requirement to prepare and publish the cockle FMP and does not allow for a reasonable alternative to producing an FMP unless a 'relevant change of circumstances', as set out in section 7 (7)[20] of the Fisheries Act 2020 applies; we are not aware of any information that would invoke these circumstances.

The cockle FMP, alongside the other 43 FMPs was agreed by the fisheries policy authorities through the JFS publication process. 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 an FMP were considered. The list of proposed FMPs, that included an FMP for cockle, was part of the public consultation on the Joint Fisheries Statement in early 2022. There were no comments on the inclusion of an FMP for cockle.

The cockle fishery is an ongoing activity and management already exists. Continuing with the current approach without new actions and further evidence collection was judged to increase the likelihood of stocks being overexploited with insufficient

19 Reasonable alternatives definition

20 Fisheries Act 2020 (legislation.gov.uk)

protection for the wider marine environment. Therefore, additional policies, actions and evidence are required. The cockle FMP seeks to promote the management of the fishery in a more coherent and coordinated manner that considers wider environmental issues. The FMP 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. The cockle FMP policies and actions were developed to specifically address those fisheries management issues identified within the cockle fishery.

The interventions adopt a precautionary approach as required by the Fisheries Act 2020 and are intended to safeguard stocks and the fishery in the short term whilst more information is gathered to inform evidence-based adaptive management in the future.

A range of environmental issues for example, through SNCB advice 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 polices 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 FMP. An assessment of the potential alternatives is provided below. No management measures are proposed in the cockle FMP.

Assessment of alternatives to proposed cockle actions

Action 1: develop a framework to support the role of the FMP in realising sustainable cockle fisheries in English waters

Alternative proposed actions:

- a framework to achieve sustainable cockle fisheries in English waters is currently in existence in those IFCAs with commercially viable cockle fisheries. Wider application of this framework is necessary to provide clarity on stock abundance and health in accordance with Environmental Regulations and exploitation in line with an ecosystem-based approach in all English waters
- no reasonable alternative has been identified

Action 2: consider developing national monitoring and reporting mechanisms to detect inshore and offshore emerging fisheries if they exist

Alternative proposed actions:

- national reporting mechanisms contain review periods necessary to ensure appropriateness of measures currently in force. National reporting mechanisms also need to allow for emerging cockles fisheries to be part of an appropriate governance structure that provides certainty to the fleet and to regulators
- no reasonable alternative has been identified

Action 3: review the data collection framework and evidence base relating to interactions between cockle fisheries and designated bird prey requirements

Alternative proposed actions:

- IFCAs and the MMO have the duty to account for and mitigate against impacts on designated features (such as migrating birds) of Marine Protected Areas in their management approaches. Improved evidence facilitates the adoption of an ecosystem-based approach. developing natural capital approaches could be further integrated into cockle fisheries management to enhance decision-making processes. the absence of or limited evidence currently requires precautionary approaches to be adopted in some fisheries
- no reasonable alternative has been identified

Action 4: assess the data collection framework for social and economic data used to inform management decisions

Alternative proposed actions:

- various actions have been identified in the cockle FMP to support this goal including the disaggregation of cockle export trade data (currently aggregated with clams and other arc shells); disaggregation of cockle dredge gear data (currently aggregated with other similar gear types such as scallop dredges); disaggregation of employment data to help inform management decisions; clarity on landings, trade and employment data for hand gathered fisheries; consider market issues linked to the current shellfish certification process. In all these, a flexible, adaptive approach is required to support industry development
- no reasonable alternative has been identified

Action 5: consider establishing a national cockle FMP forum

Alternative proposed actions:

- cockle fisheries are distinctly local. IFCA approaches to overarching considerations (water classification, environmental stress factors, market

trends) may differ and appear disjointed. Identification and development of inshore and offshore fisheries necessitates a coherent national framework within which to consider evidence needs and management approaches. Wider fishery considerations that impact all cockle fisheries and fishery interactions with other bivalve fisheries, could be usefully considered within a national forum to further industry participation

- no reasonable alternative has been identified at this stage

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

The cockle FMP 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 actions 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 cockle FMP alongside the consultation of this ER. These consultations will provide stakeholders with the opportunity to review proposed actions and present alternatives if available.

8. Monitoring and review

Monitoring

Regulation 17 of the SEA Regulations 2004 requires Defra to monitor any significant environmental effects arising through the implementation of the cockle FMP. Monitoring should 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 FMP fall into two types:

- monitoring the effectiveness of FMP
- monitoring environmental impacts

Monitoring effectiveness of the FMP

Delivery of the cockle FMP actions will be monitored and assessed against a set of performance indicators to ensure the overarching outcomes and actions are effective in achieving FMP goals and the requirements of the Act. Initial performance indicators are included in the cockle FMP and will be further developed during the first reporting cycle. In line with the Act, the long-term outcome for cockle stocks in English waters is that these fisheries are managed to ensure stocks are harvested sustainably in the long term and are not overexploited, and that any environmental effects arising through the implementation of the cockle FMP are monitored and addressed where required. Existing data collection programmes, and assessment and management pathways for the commercial fisheries are established. Most commercial fisheries within the scope of this FMP are subject to third party sustainability certification, such as the Marine Stewardship Council certification scheme. These certification schemes ensure that sustainability criteria are frequently monitored.

Initial performance assessments will be based on specific activities of existing management processes which will demonstrate the progress has been made to deliver the goals of this plan.

These specific indicators will include but are not limited to:

- agreed stock boundaries (or functional units), where appropriate
- a national survey and stock assessment framework is developed
- a register of private fisheries in English waters is created
- guidelines for regulators when considering emerging commercial inshore and offshore fisheries are developed
- produce a review of the evidence base used for the bird food model supporting the main cockle fisheries
- following on from above make recommendations on the mechanism used to provide regulators with advice
- a standing item is on the national forum agenda to explore data issues
- a report is produced that investigates the economic burdens on businesses associated with shellfish health sampling and export certification
- the national forum is established

The cockle FMP proposes several specific actions to deliver progress that will be tested against the above indicators. Detailed monitoring plans and target delivery dates will be put in place for these actions. These plans will include key milestones to deliver outcomes following publication of the final FMP in 2024 and the next iteration at the 6-year review point.

In addition to the monitoring set out in the FMP, monitoring of the environmental effects of implementing the FMP's policies and actions will be undertaken by fisheries managers (Defra, MMO, IFCAs). These actions may include:

- monitoring changes in fishing activity for example changes in effort or the spatial and/or temporal patterns of fishing, resulting from the implementation of the FMP

If any negative impacts are identified, fisheries managers should consider adjusting cockle fishery management.

Environmental Impacts

There are existing monitoring programmes that consider the potential impact of fishing activity on the environment. The following programmes may identify adverse impacts from cockle fishing that could be addressed through amending the FMP or its implementation.

MPAs

The conservation status of conservation sites, including SACs, SPAs, and MCZs is monitored by the SNCBs, and is reported under the Habitats Regulations and Marine and Coastal Access Act. 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 its policies and actions 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.

UK MS

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

Atmospheric emissions

The Climate Change Committee (CCC) was set up under the Climate Change Act 2008 to support the strategic aims of the UK 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 pot and trap fishing fleet has been considered in this SEA and would continue to be reviewed against the FMP goals as part of monitoring.

Review and revising of the FMP

The Fisheries Act 2020 requires the cockle FMP to be reviewed at least every six years; the 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 FMP has contributed to the cockle fishery harvesting within sustainable limits and the Fisheries Act 2020 goals.

The results of monitoring the effectiveness of the cockle FMP 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 FMP.

The findings of these reviews will inform the development of subsequent iterations of the cockle FMP. As part of the reporting and wider review processes, alternatives to management can be identified to ensure the cockle FMP delivers on its goals and wider environmental obligations.

The SEA Environmental Report will be periodically updated, as required to reflect how the implementation of proposed FMP 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.

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 healthy populations that are not significantly affected by human activities'. However, according to the 2019 updated Marine Strategy Part One: UK updated assessment and Good Environmental Status, 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, read UK MS Cetaceans assessment.

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 and the UK MS Marine Online Assessment Tool.

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.

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, read UK MS harbour porpoise bycatch assessment.

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, read OSPAR Marine Mammal By-catch assessment. 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)[21], 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

21 Kingston, A., Thomas, I. and Northridge, S. (2021) UK Bycatch Monitoring Programme Report for 2019. Sea Mammal Research Unit.

assessment unit and Coastal Southwest assessment unit). For more information, read UK MS Abundance and distribution of coastal bottlenose dolphins assessment.

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, read UK MS Abundance and distribution of cetaceans other than coastal bottlenose dolphins assessment.

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 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 Marine Strategy Part One: UK updated assessment and Good Environmental Status, 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, read, UK MS seal biodiversity assessment.

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 and the UK MS Marine Online Assessment Tool.

Table notes:
Note 1: For this indicator, read OSPAR Marine Mammal By-catch assessment 2023.

Target	Indicator	North Sea	Celtic Seas
The long-term viability of seal populations is not threatened by incidental bycatch.	Marine mammal bycatch (OSPAR)Note1	Not applicable	Not applicable
Population abundance and distribution are consistent with favourable conservation status.	Grey seal abundance and distribution	GES achieved	GES achieved
Population abundance and distribution are consistent with favourable conservation status.	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.

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[22] 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[23].

The most recent OSPAR quality status reports assessment on marine mammal bycatch[24] (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 in 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, read UK MS seal biodiversity assessment.

22 Northridge, S., Kingston, A. and Thomas, I. (2019) Annual report on the implementation of Council Regulation (EC) No 812/2004 during 2018. Sea Mammal Research Unit).

23 Kingston, A., Thomas, I. and Northridge, S. (2021) UK Bycatch Monitoring Programme Report for 2019. Sea Mammal Research Unit.

24 Marine Mammal By-catch

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 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 Marine Strategy Part One: UK updated assessment and Good Environmental Status, 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, read UK MS marine bird biodiversity assessment.

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 and the UK MS Marine Online Assessment Tool.

Table notes:

Note 1: For this indicator, read OSPAR Pilot Assessment of Marine Bird Bycatch 2023.

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 (Note1)	Data not available	Data not available
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
Widespread lack of breeding success in marine birds caused by human activities should occur in no more than three years in six.	Kittiwake breeding success[25]	GES not achieved	Not assessed

25 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.

Target	Indicator	North Sea	Celtic Seas
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.

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, read, UK MS marine bird biodiversity assessment.

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[26] (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 (Northridge et al 2020[27] and Miles et al 2020[28]). 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.

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26 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.

27 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

28 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).

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.

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 Marine Strategy Part One: UK updated assessment and Good Environmental Status, 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, read, UK MS fish biodiversity assessment and UK MS commercial fish and shellfish assessment.

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 and the UK MS Marine Online Assessment Tool.

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-term viability and recovery of fish populations.	Under development	Not assessed	Not assessed
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

Target	Indicator	North Sea	Celtic Seas
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 and the UK MS Marine Online Assessment Tool.

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
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[29]). 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, read UK MS commercial fish and shellfish assessment.

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.

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 information, read UK MS fish biodiversity assessment.

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.

29 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.

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 Marine Strategy Part One: UK updated assessment and Good Environmental Status, 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, read UK MS benthic biodiversity and seafloor habitats assessment.

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 and the UK MS Marine Online Assessment ToolTable notes: Note 1: 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[Note1]	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

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 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
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 of 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.

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, read UK MS Extent of physical damage to predominant seafloor habitats assessment and UK MS Extent of Physical Damage to Predominant and Special Habitats assessment.

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 and dredge spoil disposal, recreational activity, and coastal development. For more information, read UK MS Potential physical loss of predicted seafloor habitats assessment. 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 and 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 Marine Strategy Part One: UK updated assessment and Good Environmental Status, 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, read UK MS food webs assessment.

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 and the UK MS Marine Online Assessment Tool.

Target	Indicator	North Sea	Celtic Seas
The species composition and relative abundance of representative feeding guilds are indicative of a healthy marine food web.	Mean 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

Target	Indicator	North Sea	Celtic Seas
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
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

Target	Indicator	North Sea	Celtic Seas
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, read UK MS food webs assessment.

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.

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 Marine Strategy Part One: UK updated assessment and Good Environmental Status, 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, read UK MS litter assessment. 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 and the UK MS Marine Online Assessment Tool.

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
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

Target	Indicator	North Sea	Celtic Seas
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.’ Marine Strategy Part One: UK updated assessment and Good Environmental Status, 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, read UK MS underwater noise assessment. 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 and the UK MS Marine Online Assessment Tool.

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 and The Conservation of Offshore Marine Habitats and Species Regulations 2017

- 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)

- Special Protection Areas (SPAs) – Northern Ireland
- 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

England

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

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: 0 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 Schedule 6 of the Marine and Coastal Access Act 2009, 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: 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 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.

Natural England response

BY EMAIL ONLY **12th January 2024**

Re: Strategic Environmental Assessment Scoping Reports – Cockle Fisheries Management Plan, Southern North Sea and Channel Skates and Rays Fisheries Management Plan, Southern North Sea Non-Quota Demersal Fisheries Management Plan, North Sea and Channel Sprat Fisheries Management Plan.

Thank you for your consultation email dated the 7th of December 2023 seeking our views on whether the proposed scope of the Strategic Environmental Assessments for the above FMPs are appropriate.

We have reviewed the reports provided. In all four documents, Natural England agrees with the outcomes of the screening exercise and welcomes the commitment to progress an environmental assessment of each FMP in line with the SEA Regulations 2004.

NE also agree that each 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.

FMP specific comments can be found in Annex 2. Some very minor editorial comments are included in the accompanying email. Please don't hesitate to contact me if you require any further information on our comment.

Annex 2

Southern North Sea and Channel Skates and Rays FMP SEA scoping report

In section 5.3, bullet 4 the scoping report refers to ‘Defra’s completed Revised Approach to fisheries management programme (inside 6nm)’. Natural England would suggest changing the wording to reflect the ongoing nature of this work.

How the consultation response was considered

Point	How point was considered
1. In section 5.3, bullet 4 the scoping report refers to ‘Defra’s completed Revised Approach to fisheries management programme (inside 6nm)’. NE would suggest changing the wording to reflect the ongoing nature of this work.	Wording change will be actioned in Environmental report.
2. North Sea and Channel Sprat FMP SEA scoping report page 8, section 3.1, bullet number 4 erroneously refers to demersal ray species.	Error will be addressed in Environmental report.
3. Southern North Sea Non-Quota FMP SEA scoping report page 11, section 5.2, bullet number 4 erroneously refers to cockle FMP.	Error will be addressed in Environmental report.

JNCC response

Joint Nature Conservation Committee
Inverdee House Baxter Street, Aberdeen,
AB11 9QA
https://jncc.gov.uk/

12th January 2024.

BY EMAIL ONLY

Subject: Fisheries Management Plan Strategic Environmental Assessments – JNCC Consultation Response

Thank you for the opportunity to consult on the SEA Scoping Reports for the Sprat, SouthernNorth Sea Non-Quota Species, Skates and Rays, and Cockle Fisheries Management Plans (FMPs), as per your email dated 9th December 2023. Joint Nature Conservation Committee (JNCC) acknowledges the importance of these assessments and appreciates the comprehensive effort undertaken in these producing these reports which meet requirements.

Our review of the reports indicates a comprehensive approach to identifying the potential environmental effects of the fisheries and the methodologies outlined for assessing these effects. The use of UK Marine Strategy (UK MS) descriptors as a framework is particularlyappropriate, offering a robust structure for ensuring the wide range of environmental pressures associated with fishing activities are considered.

In line with our commitment to continuous improvement and adding maximum value, wewould like to offer some suggestions that could further enrich the scoping reports:

1. **Refinement of Environmental Baseline Information**: While the current approach using UK MS descriptors provides a strong foundation, supplementing this with moredetailed data on marine environmental conditions and trends could offer additional insights, enriching the assessments.
2. **Detailing FMP Goals and Measures**: Delving into the specific policies and measures intended to achieve the FMP goals would enable a more detailed evaluation of their environmental impacts.
3. **Broadened Assessment of Effects**: Expanding on the predicted impacts,

both positive and negative, would add clarity and depth to the understanding of potentialenvironmental implications.

4. **In-depth Discussion on Alternatives**: We note the scoping report's intention to address alternatives in the Environmental Report. Providing an early insight into these aspects, even if preliminary, could be beneficial for a more comprehensive understanding at the scoping stage.
5. **Comprehensive Mitigation and Monitoring Strategies**: While the scoping report indicates these strategies will be detailed in the Environmental Report, enhancing the scoping report with early consideration of potential mitigation and monitoring approaches at the scoping phase would help in anticipating and planning for environmental management challenges.
6. **Exploration of Cumulative and Transboundary Effects**: Considering the FMPs' roles in a wider environmental context, particularly regarding cumulative and transboundary effects, would be a valuable addition.

We acknowledge and appreciate the efforts that have gone into meeting the statutory requirements in the current scoping reports. Our suggestions are intended to complement these efforts, ensuring a holistic and evidence-based approach to environmental assessment. We are ready to provide more detailed feedback as the SEA process progresses and look forward to our continued collaboration in refining these important assessments.

How the consultation response was considered

Point	How point was considered
1.	Additional evidence on marine condition will be considered as appropriate.
2.	Where appropriate, future Environmental Reports will assess all specific FMP policies and measures.
3.	Where appropriate, future Environmental Reports will provide additional information on predicted impact.
4.	Point noted.
5.	Point noted.
6.	Point noted.

Historic England response

Dear Sir/Madam

Historic England is pleased to offer its comments in response to Defra seeking views on the scope and level of detail of Strategic Environmental Assessment (SEA) of this third tranche of four Fisheries Management Plans (FMPs): for common cockle; for Southern North Sea and Channel skates and rays; for Southern North Sea non-quota species (SNS NQS); and for sprat.

As previously we note that one of these FMPs – for sprat – is joint with another devolved administration, in this case Scottish Government. We would welcome confirmation that the views of Historic Environment Scotland have also been sought.

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 four SEAs. We note that fishing activities for cockles, skates and rays, and SNS NQS are all likely to cause physical disturbance to the seabed and, consequently, to heritage assets in and on the seabed. We agree that the interaction between fishing gear and marine heritage assets is a potentially significant impact of all four fisheries, including from pelagic gear used in fishing for sprat. In the case of sprat, although pelagic gear may not physically disturb the seabed, there is still potential for pelagic gear to snag heritage assets such as wrecks protruding up into the water column.

We also note the acknowledgement that fishing activity targeting all four fisheries has the potential to cause input of litter. As we have flagged previously, Abandoned, Lost or Discarded Fishing Gear (ALDFG) can snag and accumulates 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). We would ask that the contribution of these fisheries to the input of litter and the consequent impact of ALDFG on heritage assets are assessed in all four SEAs: Historic England has funded the removal of ALDFG from several designated heritage assets, which underscores the impact of fishing-derived litter on heritage.

HE is also pleased to see that landscape/seascape is regarded as being within scope of three of the SEAs and look forward to seeing it assessed. We accept that the FMP

for sprat is unlikely to have a significant effect on landscape/seascape as pelagic fishing for this species is unlikely to cause physical disturbance to the seabed.

As fishing for cockles, skates and rays, and SNS NQS are all likely to result in physical disturbance to the seabed, we concur that all three have the potential to disturb blue carbon habitats and affect seabed carbon dynamics. There is a close relation between seabed carbon and now-submerged prehistoric land surfaces, which often comprise organic deposits (such as peat) and other former terrestrial fine-grained deposits (muds and silts) containing organic material. 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 blue carbon. We think that this aspect of the impact of fisheries on landscapes should receive particular attention as the SEAs develop.

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 have previously suggested that FMPs be given a specific goal on developing the cultural heritage of each fishery. Unfortunately, the language of the goals in each of the Scoping Reports in this tranche are inconsistent and partial in this regard: Goal 4 for cockles recognises their contribution to coastal communities, but this contribution is not elucidated; Goal 1.4 for skates and rays and for SNS NQS includes better understanding and optimising social benefits, but again they are not elucidated; and there appears to be no social/community goal for sprat. As a minimum – reflecting the weight placed on culture in the JFS – we would welcome express social /community goals in each FMP that make direct refence to enhancing culture and heritage and the contribution they make to coastal places.

Turning to the methodologies proposed for developing the FMPs – including SEAs and Environmental Reports – and then implementing the FMPs, we would like to make the following observations:

We welcome the acknowledgement that harvesting within sustainable limits may not remove all potential negative impacts on the wider environment – including heritage – and agree that additional measures will be required to address risks and impacts. We look forward to discussing these with Defra.

We look forward to the Environmental Report for each FMP evaluating the potential effects, both negative and positive on cultural heritage and landscape/seascape. In light of comments above, we would expect the Environmental Reports for each FMP to address:

- interactions between fishing gear and marine heritage assets on the seabed and in the water column

- impacts on heritage arising from physical disturbance to the seabed.
- impacts on heritage from the input of litter (ALDFG)
- heritage and blue carbon habitats / seabed carbon dynamics
- social, economic and community benefits of cultural heritage

We note that assessments will review existing evidence on the current state of the marine environment. We look forward to discussing with Defra the evidence required to achieve this with respect to cultural heritage and landscape/seascape. It would be helpful to know what evidence has already been collated on fishing, cultural heritage, and landscape/seascape through a) existing and current programmes on MPAs, b) Defra's Revised Approach to fisheries management programme, c) the MMO's Fishery Assessment programme, and c) the UK Marine Strategy (UK MS – and see below).

We are pleased to see again the acknowledgement that cultural heritage and landscape/seascape are not considered under the UK MS assessment process. We would be very pleased to discuss with Defra how they might be brought within that process, and/or how suitable indicators and monitoring measures can be developed for cultural heritage and landscape/seascape alongside UK MS.

We note that the Environmental Reports will acknowledge pressures not currently being managed, which we presume will consider pressures from fishing on cultural heritage and landscape/seascape. We look forward to each FMP proposing new measures and interventions to mitigating negative effects (and enhancing positive effects) arising from interactions between each fishery and cultural heritage and landscape/seascape. We also look forward to the proposals for future monitoring of the effects of each FMP on cultural heritage and landscape/seascape. We would, of course, be very pleased to discuss with Defra these new measures / interactions and monitoring proposals in the course of their preparation.

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

How the consultation response was considered

Point	How point was considered
1. We would welcome confirmation that the views of Historic Environment Scotland have also been sought.	Scottish Government will seek views from Historic Environment Scotland.
2. We would ask that the contribution of these fisheries to the input of litter and the consequent impact of ALDFG on heritage assets are assessed in all four SEAs.	The impact of litter will be considered through UK MS descriptor D10.
3. 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 blue carbon. We think that this aspect of the impact of fisheries on landscapes should receive particular attention as the SEAs develop.	The FMPs will consider the impact the effects of fishing on blue carbon habitats.
4. Unfortunately, the language of the goals in each of the Scoping Reports in this tranche are inconsistent and partial in this regard: Goal 4 for cockles recognises their contribution to coastal communities, but this contribution is not elucidated; Goal 1.4 for skates and rays and for SNS NQS includes better understanding and optimising social benefits, but again they are not elucidated; and there appears to be no social/community goal for sprat. As a minimum – reflecting the weight placed on culture in the JFS – we would welcome express social /community goals in each FMP that make direct refence to enhancing culture and heritage and the contribution they make to coastal places.	Goals addressing social issues will be include in the Environmental Reports. Defra will consider the suggestion for developing a specific goal for cultural heritage of each fishery, in future iterations of the FMP.
5. We welcome the acknowledgement that harvesting within sustainable limits may not remove all potential negative impacts on the wider environment – including heritage – and agree that additional measures will be required to address risks and impacts. We look forward to discussing these with Defra.	Point noted.

Point	How point was considered
6. We look forward to the Environmental Report for each FMP evaluating the potential effects, both negative and positive on cultural heritage and landscape/seascape. In light of comments above, we would expect the Environmental Reports for each FMP to address: • interactions between fishing gear and marine heritage assets on the seabed and in the water column. • impacts on heritage arising from physical disturbance to the seabed. • impacts on heritage from the input of litter (ALDFG). • heritage and blue carbon habitats / seabed carbon dynamics. • social, economic and community benefits of cultural heritage	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. We look forward to discussing with Defra the evidence required to achieve this with respect to cultural heritage and landscape/seascape. It would be helpful to know what evidence has already been collated on fishing, cultural heritage, and landscape/seascape through a) existing and current programmes on MPAs, b) Defra's Revised Approach to fisheries management programme, c) the MMO's Fishery Assessment programme, and c) the UK Marine Strategy (UK MS – and see below).	The Environmental Reports will set out the evidence used to for the environmental baseline. Defra would welcome further discussions with HE to consider this point.
8. We are pleased to see again the acknowledgement that cultural heritage and landscape/seascape are not considered under the UK MS assessment process. We would be very pleased to discuss with Defra how they might be brought within that process, and/or how suitable indicators and monitoring measures can be developed for cultural heritage and landscape/seascape alongside UK MS.	Defra would welcome further discussions with HE to consider this point.

Point	How point was considered
9. We note that the Environmental Reports will acknowledge pressures not currently being managed, which we presume will consider pressures from fishing on cultural heritage and landscape/seascape. We look forward to each FMP proposing new measures and interventions to mitigating negative effects (and enhancing positive effects) arising from interactions between each fishery and cultural heritage and landscape/seascape. We also look forward to the proposals for future monitoring of the effects of each FMP on cultural heritage and landscape/seascape. We would, of course, be very pleased to discuss with Defra these new measures / interactions and monitoring proposals in the course of their preparation.	Environmental Reports (ER) will provide recommendations on how FMPs could consider fishing, cultural heritage and landscape/seascape. Defra would welcome further discussions with HE to consider this point.

Environment Agency response

No response received.

How the consultation response was considered

Point	How point was considered
N/A	N/A