Department
for Environment
Food & Rural Affairs

Fisheries Management Plan for Queen Scallops in English Waters

Strategic environmental assessment environmental report

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Contents

Non-technical summary

The queen scallop fisheries management plan (FMP) has been prepared to meet the requirements of the Fisheries Act 2020. It sets out the policies and proposed measures Defra will use to manage queen scallop fishing activity in English waters, so stocks are harvested within sustainable levels. Alongside these measures, the queen scallop FMP also sets out management approaches to help support 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 queen scallop 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 (UKMS) Part 1, published in 2019. Additional sources of evidence were used to establish the status of the environment in relation to issues not covered by the UKMS, such as climatic factors and cultural heritage.

The historical impact of fishing activity on the marine environment has been considered part of the baseline. Our assessment used the best available evidence to reach a suitable judgement on the environmental effects of the queen scallop FMP.

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

The report considers and acknowledges the existing environmental effects of queen scallop fishing using scallop dredges in relation to:

- marine protected areas (MPAs)
- the UKMS descriptors of good environmental status (GES) for the wider marine environment

- climatic factors

The potential positive and negative environmental effects of the queen scallop FMP's policies and proposed measures, alone and in-combination, have also been assessed.

The strategic environmental assessment (SEA) concluded that the current evidence shows the queen scallop fishery has an impact on the marine environment, primarily through seabed disturbance. The impact of scallop fishing in MPAs is managed in the 0 to 12 nautical miles (nm) zone in English waters. Management in MPAs beyond the 12nm limit is being considered and implemented where necessary.

Further work is required to reduce the impact of scallop fishing on habitats beyond MPAs, to ensure GES targets for seabed integrity (D6) can be achieved. The contribution of scallop fishing to climate change related issues and its interactions with cultural heritage, through structural damage, for example, were also identified as potential impacts.

The queen scallop FMP has considered these impacts and sets out proposals to monitor and, where required, introduce mitigation to address these impacts.

The assessment of likely negative effects identified a low risk of significant adverse effects on the environment from implementing individual policies, measures, and actions. The policies, measures and actions will, where appropriate, be developed to avoid any potential negative effects identified by the assessment process. The environmental effects of implementing the queen scallop FMP policies and measures 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 queen scallop FMP should consider:

- how to 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; 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,

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.

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 or 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 queen scallop FMP applies to the queen scallop (Aequipecten opercularis) in English waters only. Queen scallops are widely distributed around the British Isles and have been specifically found within International Council for the Exploration of the Sea (ICES) Divisions 4b (Central North Sea), 4c (Southern North Sea), 7a (Irish Sea), 7d (Eastern English Channel), 7e (Western English Channel), 7f (Bristol Channel), 7h (Southern Celtic Sea), and 7g (Northern Celtic Sea). The North-Eastern Irish Sea is the location of the main queen scallop grounds in English waters, with opportunistic landings also reported in the Western Channel in some years.

The queen scallop FMP will apply to all inshore and offshore areas in English waters2 where fishing activity for queen scallops takes place.

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

Queen scallop FMP policies

The long-term goal of this FMP is to ensure future fisheries management restores and maintains English queen scallop stocks at or above MSY or a proxy for MSY. This plan brings together existing measures for queen scallops and begins to identify where evidence gaps exist and what is required to fill those gaps, to enable the necessary protection for stocks now and in the long-term. To further support the delivery of the long-term goal of the FMP, goals based around the key themes of evidence, social & economic impacts, and sustainable fisheries have been developed. The FMP proposes precautionary management measures to protect the stocks. These are presented below.

The queen scallop FMP goals and actions

Policy goal 1

Develop proposals for a comprehensive data collection programme for UK wide queen scallop fisheries, which supports a data-rich future and results in the establishment of a reliable time series that facilitates well-informed, sustainable management.

Rationale

The available scientific evidence is insufficient to make an assessment of queen scallop stocks MSY in English waters therefore this policy goal and associated actions are designed to develop proposals to obtain the scientific evidence necessary to enable an assessment of the stock's MSY.

Provision of better data allows for improved fisheries management as scientists, regulators, managers and industry have access to the information they need to make evidence-based decisions. Better data moves us away from precautionary management and further towards achieving MSY for these fisheries. This will support the sustainability objective outlined in the Fisheries Act 2020.

Whilst it is recognised that there are both fishery-dependent and independent data sources available for queen scallops around the UK, significant knowledge gaps remain that limit the reliability of potential stock assessment models within English waters only.

Actions required to begin to obtain the scientific evidence necessary to enable an assessment of the stock's maximum sustainable yield

- identify and map current gaps in the evidence base and consider actions required to fill them (short term)
- support the ICES WG Scallop group in developing stock assessment methods suitable for the queen scallop stock in the Irish Sea (short-medium term)

- develop a more structured approach to stock surveys in collaboration with scientists from around the UK (medium term)
- explore and encourage opportunities for investment in the development of evidence to support appropriate management decisions (medium term)
- explore opportunities for piloting data collection approaches in English waters (medium term)

Policy goal 2

Seek opportunities for strengthening existing measures in English waters to increase stock protection whilst the evidence base improves.

Rationale

In light of the evidence in the FMP about the fishery and the stock, the existing management measures as detailed above will continue. These will be reviewed whilst we look to improve the evidence base to underpin any future decisions. In the short term the fishery can be managed (for example to deal with fluctuations in fishing pressure) through the existing measures while the evidence base for long-term management improves. In addition, other potential additional measures which could further enhance the protection of the stock will be considered.

Actions (short – medium term) required for maintaining or increasing levels of the stock

- continue with and carry out a review of existing measures and seek opportunities for strengthening and expanding measures (where appropriate)
- develop proposals for potential management measures to be introduced in the short term, building on previous work carried out and consulted upon by UK administrations on potential queen scallop measures, for example, consideration of increased MCRS for queen scallop in UK waters, consideration of gear specifications, and newly emerging management proposals or measures introduced in other areas (as set out in management approaches). Any potential management measures will be implemented in line with our legal obligations under the TCA

Policy goal 3

Assess the interactions with the marine environment and potential impacts associated with queen scallop fisheries and develop an action plan setting out appropriate measures to reduce damaging impacts.

Rationale

Improved understanding of the wider environmental interactions of queen scallop fishing activities, in particular:

- the scale and footprint of the fishery allows for more sustainable management which will contribute to the maintenance and increase of the stock
- steps to contribute to the achievement of good environmental status (GES)
- adoption of best practice for reducing the environmental footprint of queen scallop fishing

Actions (long term)

The following proposed actions will be considered in conjunction with work being developed for the king scallop FMP (where applicable):

- improve understanding of the spatial and temporal extent of queen scallop fisheries in English waters, both for dredging and otter trawling. This is to improve confidence around the assessments of wider environmental risks associated with queen scallop fishing and positively contribute towards achieving Good Environmental Status (GES) under the UK Marine Strategy (UKMS), particularly in relation to biodiversity (descriptor D1), commercial fish and shellfish (descriptor D3) and seafloor integrity (descriptor D6)
- improve understanding of the impact that queen scallop vessels have on the marine environment (including seabed, food webs, other commercial species, blue carbon, CO2 emissions, marine litter) through collaborate studies. This should positively contribute to achieving GES, particularly in relation to biodiversity (descriptor D1), food webs (descriptor D4) and marine litter (descriptor D10)
- identify key information gaps and evidence requirements relating to abandoned, lost, discarded fishing gear (ALDFG) in English and shared UK queen scallop fisheries
- identify barriers and workable solutions to reduce the environmental footprint of the queen scallop sector whilst also considering economic sustainability. This should positively contribute towards the achievement of descriptor D6 on seafloor integrity, under the UKMS
- continue steps towards stewardship, over the longer term, to ensure compliance of the UKMS and follow Marine Protected Area (MPA) and Highly Protected Marine Area (HPMA) management measures
- develop a plan to provide combined spatial data to support evidence-based MPA designation and management decisions, and ecosystem management for all sectors (acknowledging potential confidentiality issues)

- to mitigate the potential risk caused by scallop dredging on the bycatch of mobile species, the queen scallop FMP will align with the actions set out in the published king scallop FMP to implement a bycatch monitoring and reporting plan, which will enable listed mobile species bycatch to be properly understood and effective management measures put in place. Proposed interventions to develop better evidence on bycatch and the contribution of scallop fishing related litter should positively contribute to achieving GES for descriptors D1 (biodiversity), D4 (food webs), D6 (seafloor integrity) and D10 (marine litter)

Policy goal 4

Explore the impacts of changes in marine spatial use on queen scallop fisheries from an environmental, economic, and social perspective.

Rationale

The issue of increasing spatial pressures, due to ongoing changes in marine spatial use, and the challenges it can pose to fisheries needs to be considered. Maintaining constructive engagement and communication between the UK queen scallop sector and other potential marine users ensures the interests and potential impacts (economic, environment and social) of future marine uses are understood and considered.

Actions (long term)

The following proposed actions will be considered in conjunction with work being developed for the king scallop FMP (where applicable):

- undertake a desk-based review of current and proposed future marine space use to better understand the social and economic importance of English queen scallop fisheries
- seek to ensure outputs of the queen scallop FMP feed into the cross-government MSPri programme, to link to current and proposed future marine space use in English Waters
- encourage proactive and inclusive engagement with the queen scallop sector when developing management measures within MPAs or HPMAs, offshore renewables
- identify and address evidence gaps to ensure the queen scallop sector has the appropriate data, evidence, narrative and means of engaging with regulators and potential marine users on marine spatial planning (feeding into the MSPri programme in England) and access issues (linked to FMP research plan)
- improve understanding of engagement options to ensure the queen scallop sector can provide input on spatial issues

- develop a plan to provide amalgamated spatial data to support MPA and ecosystem management for all sectors, for example, remote electronic monitoring (REM) (acknowledging potential confidentiality issues)

Policy goal 5

Develop climate change mitigation and adaptation measures for shared UK queen scallop fisheries.

Rationale

Scallop stocks and fisheries are sensitive to the environmental change brought about by climate change such as ocean warming and ocean acidification. While these stocks and fisheries are affected by this change, they are also one of the contributors. All fishing activity leaves a carbon footprint, which can further exacerbate the environmental impacts of climate change. The contribution of carbon emissions from scallop fisheries comes from vessel emissions, as well as potentially through the disruption and release of stored carbon from the marine environment via fishing gears impacting the seafloor.

To support the scallop fisheries to continue to sustainably harvest their stocks under changing climate, while also reducing their contribution to the cause, there is a need to move towards climate adaptive fisheries management. This would be in accordance with the climate change objective found in the Act.

Actions (long term)

The following proposed actions will be considered in conjunction with work being developed for the king scallop FMP (where applicable):

- improve understanding of the impact that king scallop vessels have on the marine environment (including seabed, blue carbon, CO2 emissions) through collaborative studies
- industry and government to consider reducing overall CO2 emissions through smart fishing, reduced fuel emissions, prospecting, fishing times, more efficient gear, and imposed effort limitations
- develop carbon hot spot and climate ‘refugia’ maps to identify and inform reducing potential overlap with the queen scallop fishing footprint
- develop understanding of the likely impacts of climate change on the queen scallop status (plus ecosystem links) and fisheries to inform adaptive management and long-term sustainability for queen scallop stocks the environment and industry
- collate relevant evidence generated from existing monitoring and research programmes

Queen scallop FMP measures

Measure 1

Review existing queen scallop data collection programmes and approaches applied across the UK and identify key information gaps and evidence requirements (short to medium term).

Desired outcomes:

- increased understanding of existing scientific and fishery data, how and where it is collected, how it's used and why
- identification of key evidence gaps and requirements, including provision of scientific and fishing data

Initial actions

Three important actions have been identified:

- identify and collate information from existing data gathering and scientific forums to inform work on queen scallop data collection in UK and English waters
- map out existing data and stock assessment approaches
- map out likely key evidence gaps, including determining size and age distributions, genetic differences, larval dispersal, adult migration, the locations of nursery habitats in exploited and unexploited areas, annual amounts of commercial discards of queen scallops, discard survival rates, mortality levels mobile fishing gear

Measure 2

Consider increasing MCRS for queen scallops in English waters from 40mm to 55mm (short to medium term).

Desired outcomes:

- provide increased protection to queen scallop stocks in English waters by allowing animals increased opportunities to spawn
- provide greater protection to wider stock areas by aligning the MCRS in English waters with adjacent, wider stock areas e.g. IoM territorial waters

Initial actions

Four important initial actions have been identified:

- review existing scientific evidence relating to size at maturity for queen scallops in the Irish Sea and English Channel and assess likely benefits and impacts of increasing MCRS

- review and take into consideration responses and evidence received as part of the 2016 UK queen scallop management consultation and queen scallop FMP consultation, relating to a proposed increased MCRS
- work with industry to identify likely economic impacts of increasing MCRS, for example percentage of landings reduction and, changes to gear requirements, as well as likely impacts and benefits where queen scallop are landed as bycatch
- exploring options around implementation to mitigate impacts, for example, the use of longer lead-in times or a phased approach to allow fishers to prepare for changes

Measure 3

Consider exploring potential options for introducing gear specifications for queen scallop fishing in English waters (medium term).

Desired outcomes:

- improved understanding of gear types and specifications which catch queen scallops, both targeted and as bycatch
- improved understanding of potential regional variations that could be incorporated into gear specifications due to differences in growth rates
- identify whether development of potential gear specification options could be beneficial
- assessment of the environmental and economic impacts of potential gear specification measures

Initial actions

Four important initial actions have been identified:

- collate information of all current gear types and specifications used to catch queen scallops, to build a comprehensive picture of the gears being used in different areas around the UK and catch compositions including the species and sizes being caught (both targeted and as bycatch)
- identify and collate available scientific evidence on queen scallop growth rates, and other scientific evidence where relevant, in areas where queen scallop is found in English waters
- in collaboration with scientists, industry and fishery managers, consider developing options for potential gear specifications
- assess the likely environmental and economic benefits and impacts of any initial gear specification proposals that may be developed

Measure 4

Review existing queen scallop management measures applied across the UK and consider replicating measures in English waters to increase stock protection (short to medium term).

Desired outcomes:

- consider current and new measures in English waters to ensure they are applied at the most appropriate level
- consider a broad alignment of measures where there are benefits (environmental, social, or economic) to doing so
- review existing measures, as proposed under actions below, which will enable this work to progress

Initial actions

Two stages have been identified.

Stage 1 actions:

- collate information on existing measures applying to queen scallop fisheries in English, UK, and IoM waters
- identify where measures differ across areas and explore opportunities for broad alignment or expansion into English waters
- assess where there may be social, economic, and environmental impacts of broadly aligning or expanding specific measures in various areas
- estimate how measures will contribute to achieving stock sustainability and overarching FMP goals, and likely timeframes
- identify potential implementation options and timings, for example legislation, use of existing powers and if relevant, whether piloting a proposed approach could be beneficial
- regularly seeking wider stakeholder views to inform the development of approaches

Implementation actions:

- the continuation of existing measures as well as opportunities for strengthening identified measures, based on above analysis and stakeholder input (to be kept under review)

Stage 2 actions:

- continue to develop and maintain a log of all existing management measures applied to queen scallops in English, UK, and IoM. waters, as a source of up-to-date information

- ongoing consideration of where there are benefits to broadly aligning or expanding new management approaches or if measures should be region specific
- ongoing consideration of the potential for existing management measures to be strengthened in parallel to the development of new measures
- review available catch per unit effort (CPUE) data to determine how it varies seasonally and consider whether restrictions to the fishery at particular times of the year that maximise CPUE should be considered

Measure 5

Consider developing a scientifically based fisheries management framework, based on output or input controls (long term).

Desired outcomes:

- to consider pros and cons of output and input control measures to inform evidence-based development of measures to support sustainable fishing (both options will be analysed and considered in equal measure)
- to consider the extent to which such measures could effectively be applied to the English queen scallop fishery, and the level of precautionary action that may be required due to a lack of data on which to inform or set new limits
- this will inform consultations on proposals for the implementation of new queen scallop fisheries management measures

Initial actions

There are 3 main stages that have been identified, along with additional ongoing actions and implementation actions.

Stage 1 actions:

- identify and collate existing information on output and input control measures applied to other fisheries (including queen scallop fisheries) and associated environmental, social, and economic benefits or issues

Stage 2 actions:

- develop a potential approach to how output or input controls could be applied to queen scallop fisheries - including options for the method by which limits may be set, the allocation method and criteria for fishing opportunities, and the monitoring required to measure effectiveness
- identify relevant data required, including appropriate time series of data, to underpin output or input controls, and understand if this is being collected already or if new methods for data collection are required

Stage 3 actions:

- assess the environmental, social, and economic impacts of applying output or input control limits
- estimate how measures will contribute to achieving stock sustainability and overarching FMP goals, and likely timeframes
- scope potential implementation options and timing, for example legislation, use of existing power

Ongoing actions:

- seek wider stakeholder views on approach to inform development and assess benefits and impacts

Implementation actions:

- to be informed by above analysis and stakeholder input. Consideration of a phased approach and trials, across stock areas and sectors. Results to be reported on as appropriate to inform the measures

Measure 6

Management framework: assess and mitigate the effects of queen scallop fishing on seafloor integrity (short to medium term)

Desired outcomes:

- the FMP will feed into and influence the work of a Benthic Impact Working Group, in which evidence will be used to develop further recommendations on how to manage the potential effects of fishing activities (alongside other activities) on seafloor integrity and the state of benthic habitats
- an improved understanding of the wider environmental interactions of queen scallop fishing activities, in particular the environmental and carbon footprint of the fishery
- to develop and implement an action plan for reducing damaging impacts

Actions

The first stage has been identified.

Stage 1 actions:

- feed into wider work around exploring the potential of a focused Benthic Impact Working Group. This would complement existing groups considering pressures on benthic habitats, with a remit to help progress achievement of the FMP and wider goals relating to queen scallop fishing impacts
- map current fished areas alongside areas where queen scallop stocks are present, but fishing is not permitted or feasible, such as in some MPAs and

offshore windfarms, to improve understanding of the overall footprint of the fishery

- identify and collate information on existing evidence and data required to map the interactions of queen scallop fishing with other fisheries and non-target species and the wider environment, including identification of potential evidence gaps and plans to address them
- as a priority, we consider the Benthic Impact Working Group should look to carry out a review of the fishing methods used to fish for queen scallops, the evidence required to assess the environmental impacts of the different methods, and opportunities for innovations in catching methods

2. Approach to strategic environmental assessment

Screening

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

Defra consider that Regulation 3(2)(a) of the SEA Regulations 2004 applies to the queen scallop FMP as the plan relates to England.

In accordance with the SEA Regulations 2004, Defra carried out a screening exercise which determined that the proposed policies in the proposed queen scallop 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 queen scallops 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 policies in the queen scallop FMP have the potential to affect multiple European marine sites and the wider marine environment.

Based on the outcome of the screening, Defra concluded that the FMP, falls within the description of a plan in regulation 5(3) of the SEA Regulations 2004, and, as a result of regulation 5(1), must be subject to SEA in accordance with Part 3 of the SEA Regulations 2004 during its preparation and prior to its adoption (publication).

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

Scoping 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 authorities must seek the views of the Consultation Bodies.

A Scoping Report identifying the scope and level of detail of the assessment of the queen scallop 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 Scoping section 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 the following sub-sections: cetaceans, seals, birds, fish, benthic habitats, commercially exploited fish and shellfish, food webs
- geology and sediments (soil) including the following sub-section: benthic habitats
- water including the following sub-sections: marine litter and underwater noise.
- climatic factors including the following sub-sections: vessel 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-sections: 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 queen scallop 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 queen scallop 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 the UK MS under the Water issue heading. Fishing activity was considered not to contribute on eutrophication, changes in hydrographical conditions and contaminants; therefore, these sub-sections have not been included
- climatic factors are not considered under the UK MS assessment process; therefore, no predetermined sub-sections are available. Vessel emissions and blue carbon were identified as the two most relevant issues related to fishing activity that are associated with climate change
- cultural heritage is also not considered under the UK MS assessment process; therefore, no predetermined sub-sections are available. The interaction between fishing gear and marine heritage assets was identified as the most relevant impact related to fishing activity that is associated 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 scallop 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 queen scallop FMP and thus scoped into the SEA[3].

Environmental issues likely to be significantly affected by the FMP:

- **biodiversity, fauna and flora (UK MS descriptors D1, D3, D4, D6)** - Fishing activity for queen scallops has the potential to result in the extraction of, or mortality/injury to/disturbance to, both target and non-target wild species and

3 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.

cause physical disturbance of benthic habitats. These issues are within the scope of this SEA

- **geology and sediments (soil) (UK MS descriptor D6)** - Fishing activity for scallops 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 of fisheries on water quality. This issue is within the scope of this SEA
- **climatic factors** - The FMP will make an appropriate contribution to the climate change objective of the Fisheries Act 2020, seeking to ensure it develops relevant policies to both mitigate impact on and adapt to climate change. This issue is within the scope of this SEA
- **cultural heritage** - Fishing activity for queen scallops 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** - Scallop fishing through physical disturbance of the seabed has the potential to affect seascape features. This issue is within the scope of this SEA

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

- **population (human)** - The FMP is not likely to result in significant increases or decreases in human population numbers, or changes to in-migration or out-migration. This issue is beyond the scope of this SEA
- **human health** - 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 impact material assets related to; ports and shipping; fisheries and aquaculture; leisure or recreation; tourism; marine manufacturing; defence; aggregate extraction; energy generation and infrastructure development; seabed assets. This issue is beyond the scope of this SEA

Assessment methodology

This SEA reflects the geographical scope (section 1) and type of fishing covered by the FMP. It considers the goals of the queen scallop FMP and the measures (section 1) it sets out to achieve these goals.

The assessment reviewed existing evidence on the current state of the marine environment, which included the impact of fishing within the baseline state (section 3).

It assessed the nature and extent of likely effects of the queen scallop FMP (including its policies and measures) 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 a strategic programme of work, the SEA considers the potential positive and negative environmental effects of management options in the context of the UK MS descriptors. This SEA also considers 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 nm, MMO 6-12 nm)
- the Marine Management Organisation's ongoing Fishery Assessment programme (outside 12 nm) in England

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

This ER acknowledges the likely significant effects associated with fishing activity being managed through the queen scallop 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 queen scallop FMP, advice from Statutory Nature Conservation Bodies (SNCBs) (Natural England, 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 queen scallop FMP contains a range of policies and fisheries management measures 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 measures of the FMP at the present time.

This assessment acknowledges that the queen scallop FMP sets out goals to develop the evidence base around the queen scallop fishery. Our assessment used the best available evidence at the present time to reach a judgement on the environmental effects of the queen scallop 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 measures.

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 scallop fisheries in a more coherent and coordinated manner that considers wider 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[4] (Geology and sediments)[5]

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

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

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

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

D1 and D4 – cetaceans

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

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

Other than for a limited number of coastal bottlenose dolphin populations, it is unclear whether the abundance and range of most cetacean species can be considered in line with GES. Fisheries and the removal of prey species is one of several activities and 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). As top predators seal productivity can also provide some understanding and insight as to how the food web is functioning (D4).

Grey seal 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 – seabirds

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

Seabird populations are currently below the level that is considered to meet GES, and the situation is deteriorating. Some declines in breeding success have been linked to prey availability caused by climate change and or past and present fisheries. Invasive predatory mammals are also known to impact breeding success on island colonies.

The impact of bycatch will be included in future assessments and current evidence suggests that some longline and static net fisheries could be having possible population level impacts on certain species.

D1 and D4 – fish and D3 – commercially exploited fish and shellfish

Fish and commercially exploited fish and shellfish are an important ecosystem component that contributes to overall levels of biodiversity (D1). 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 and 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 which has contributed to the current environmental baseline, has had a large impact on fish community structure which is a key component of marine food webs. With improved fisheries management focusing on stocks, some recovery is occurring. However, the management of fish stocks solely to safeguard future fisheries will not necessarily lead to all food web targets being met. Changes in plankton are likely driven by prevailing environmental conditions, but other impacts cannot be ruled out.

Water Quality

D10 – marine litter

Marine litter, including from fishing activities, is a significant pressure on marine ecosystems and water quality. The UK has not yet achieved its aim of GES for litter. Beach litter levels in the Celtic Sea 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. 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 and 2020, estimated emissions by the UK fishing fleet (802 and 702 kt CO_2e respectively) would have represented 0.18% of the UK's total territorial emissions (455

Mt CO_2e)[6], or 0.66% of the UK's domestic transport emissions (122 Mt CO_2e)[7]. 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).

Queen scallops in English waters are primarily fished using dredge gear (84%), with the exception of Isle of Man vessels which predominantly use otter trawls. Recent analysis has shown that the total UK scallop dredge fishing fleet segment (which comprises of 209 vessels fishing queen and king scallops) produced 10.2% (85kt CO2e) of the total carbon emissions at sea each year across the UK's fishing fleets[8].

The scallop dredging fleet has expanded substantially on average from between 2005-2009 to 2015-2019, and with it has seen a rise in total carbon emission by more than 37%. The increase in fleet size has been seen in the smaller scallop dredges (under 15-meter length), with vessel numbers on average increasing from 120 between 2005-2009 to 203 between 2015-2019. Less of an increase has been seen in the over 15-meter dredges, which expanded on average from 74 to 86 over the same time period. Whilst total emissions are up by 37% over this time frame, overall, per-vessel emissions have decreased for the fleet by – 8%[8].

Blue carbon

Certain marine habitats including seagrass, kelp, and muddy sediments, can capture and store carbon and therefore these are known as blue carbon habitats. Currently there is no comprehensive assessment of the impact of scallop 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 Conference of the Parties 26 (COP26), UK Administrations will work together to address key research questions related to blue carbon.

Climate change impacts on queen scallop stocks and fisheries

Scallop stocks and fisheries are sensitive to the environmental change brought about by climate change – such as ocean warming and ocean acidification. Climate change and warming oceans are changing the distribution of commercially important shellfish

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6 BEIS (Department for Business, Energy & Industrial Strategy) (2021b) 2019 UK Greenhouse Gas Emissions: Final Figures – Statistical Summary.

7 DfT (Department for Transport) 2021 Statistical Release: Transport and Environment Statistics 2021 Annual Report.

8 Engelhard, G.H., Harrod, O.L., Pinnegar, J.K. (2022) Carbon emissions in UK fisheries: recent trends, current levels, and pathways to Net Zero Final report for Defra project C8118. Centre for Environment, Fisheries & Aquaculture Science (Cefas), Lowestoft, UK.

species[9]. Crustaceans such as crabs and lobsters are considered to be more tolerant to the changes in ocean acidification than bivalve molluscs such as scallops[10].

Scallop larvae are particularly sensitive to the changes in ocean acidification, with experiments of predicted ocean acidification levels demonstrating deformity in larval shell formation and increased mortality[11] [12]. These impacts can have significant economic implications to the scallop fisheries. A recent US model showed that under worst-case ocean acidification impacts, the US Atlantic Sea scallop fishery could decline by more than 50% by the end of this century[13]. These projections highlight the potential risk of ocean acidification to scallop stocks.

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[14]:

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9 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.

10 Kroeker, KL., Kordas, RL., Crim, RN., Singh, GG. (2010). Meta-analysis reveals negative yet variable effects of ocean acidification on marine organisms. Ecology letters 13:1419-1434

11 Andersen S, Grefsrud ES, Harboe T. Effect of increased pCO(2) level on early shell development in great scallop (Pecten maximus Lamarck) larvae. Biogeosciences. 2013;10: 6161–6184.)

12 White M. M., Mullineaux L. S., McCorkle D. C., and Cohen A. L. (2014) Elevated pCO2 exposure during fertilization of the bay scallop Argopecten irradians reduces larval survival but not subsequent shell size. MEPS 498: 173–186

13 Jennie E. Rheuban et al, Projected impacts of future climate change, ocean acidification, and management on the US Atlantic sea scallop (Placopecten magellanicus) fishery, PLOS ONE (2018).

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

- 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[15] 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" 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[16].

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)[17].

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15 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).

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

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

Fishing and commercial fishing vessels are considered as seascape features and activities. Fishing ports and related fishing infrastructure are considered as landscape features[18]. 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[19]. 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.

Existing environmental effects of queen scallop fishing

Fishing using mobile demersal fishing gear, which includes scallop dredges, is considered to be the main driver of physical disturbance of the seabed. It has been identified to have a significant influence on the current baseline and is a contributing factor in the failure for the UK to reach GES for descriptor D6 Seabed Integrity (section 3).

The queen scallop FMP focuses on achieving the sustainable harvesting of scallop stocks. This focus seeks to 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 policies, measures and actions in the queen scallop 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 nm, MMO 6-12 nm)
- the MMO's ongoing Fishery Assessment programme (outside 12 nm) in England

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

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

19 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.

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 queen scallop fishing in relation to the designated features of MPAs in English waters.

The main environmental pressures on MPA features are associated with scallop dredge and bottom otter trawling fishing activity. These include the removal of target and non-target species, abrasion and disturbance of the substrate on the surface of the seabed, penetration, disturbance and abrasion of the substrate below the surface of the seabed, visual disturbance, and changes in suspended solids for example water clarity.

In England the assessments of the impact of scallop fishing activities inside MPAs are undertaken by the IFCAs within six nautical miles and the MMO outside six nautical miles. Figure 1 shows the distribution of English MPAs relevant to the queen scallop FMP. 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 objectives. Current management measures already in place related to the use of bottom towed gear is detailed on the MMO and Association of IFCAs websites. Therefore, the existing assessment and management pathways mitigate risks arising from fishing activity within English MPA boundaries, and no additional action is suggested for the FMP within MPA site boundaries.

Figure 1. England's MPA network

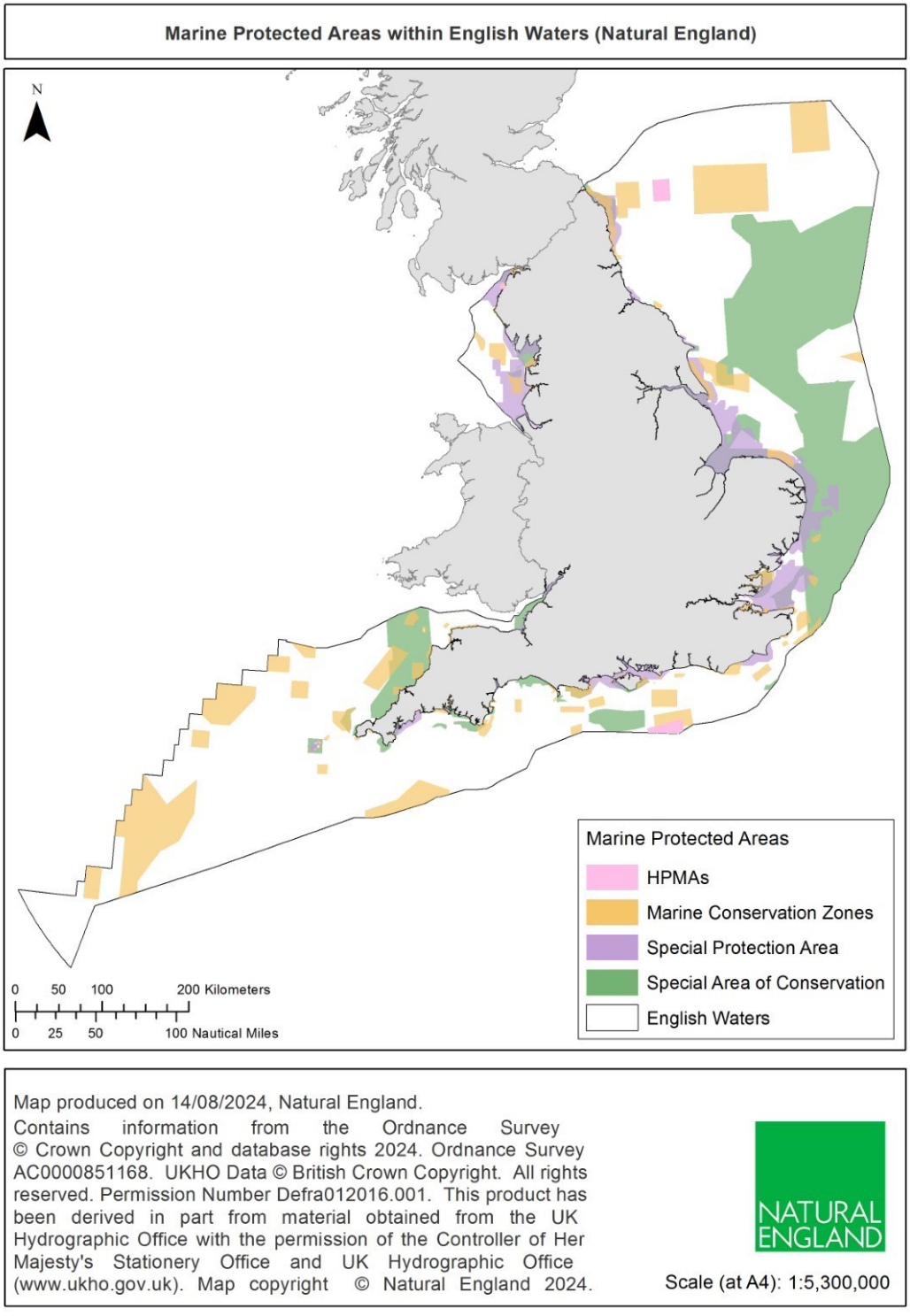

Figure 1 description: a map showing the location of marine protected areas within English waters. The map includes marine conservation zones, special areas of conservation and special protection areas.

- 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 for example 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 scallop fishing activities concluded that the queen scallop fishery poses a moderate risk[20] of bycatch of mobile species that are designated features of MPAs in queen scallop fisheries using otter trawls. There is a low risk of bycatch of important prey species that designated species depend on in queen scallop fisheries.

Gaps in available evidence mean there is a degree of uncertainty on the number and exact extent of fish and seabird species bycaught across the fishery as a whole. Improving the spatial and temporal coverage of the bycatch evidence base would also allow more robust conclusions to be drawn.

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 scallop fishing and their likely impact on achieving Good Environmental Status (Appendix A).

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20 Risk ratings were assigned as follows:

Low Risk MPAs: Although there might be a theoretical impact pathway, evidence of an actual occurrence is either absent or suggests minimal impacts at the relevant scales for the considered FMP.

Moderate Risk MPAs: Interactions deemed as moderate risk typically have an evidenced impact or expert judgment indicates a genuine risk. However, the overall impact level might be ambiguous, possibly due to limited spatial overlap between gears and protected features, significant impact fluctuations over space and time, or differences between fisheries in the FMP and those from which the evidence base was derived.

High Risk MPAs: Interactions identified as high risk are those where available evidence or expert opinion suggests a scale that is concerning relative to MPA conservation objectives. The fishing activities managed by the FMP may significantly contribute to these risks.

The following potential issues and their associated risk level[21] have been identified for scallop fishing on UK MS descriptors:

- **benthic disturbance related pressures associated with towed demersal gear:** There is a concern around benthic disturbance and the contribution to current failure to meet targets for D6 seafloor integrity. This will also have associated impacts on D1 biodiversity and D6 seafloor integrity. This is considered a high-risk issue as there is a clear link between activity and failure to meet GES indicator targets[22]
- **the impact of bycatch of species on D1 biodiversity and its relation to D4 food webs:** Bycatch in the queen scallop fishery using scallop dredges is thought to be at levels low enough to be unlikely to have population level effects and therefore impact GES indicators. It is therefore considered a low risk. However, there is a moderate risk to cetaceans, seals and seabirds associated with otter trawls. If the levels of otter trawling associated with queen scallop fisheries in English waters are very low, this reduces the bycatch risk fishery. Further information regarding the scale and location of the fishery may help to reduce risk ratings for bycatch of marine mammals, birds and designated fish in otter trawls prosecuting queen scallop fisheries
- **the contribution to fishing related litter (D10):** There is a moderate risk that the queen scallop fishery contributes to marine litter through part or whole gear loss. Abandoned, lost, or discarded fishing gear is associated with entanglements and ghost fishing. Otter trawls may pose a greater risk than scallop dredges as they be a source of plastic ropes and netting which contribute to non-biodegradable marine litter when lost, abandoned, or discarded at sea. Scallop dredging is less likely be a source of fishing litter, due to the nature of the gear used, which is largely metal. However, some strategic mitigation, such as improved onshore fishing waste disposal facilities would help reduce any residual input of scallop fishing related litter within the sea

21 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.

22 See https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/benthic-habitats/physical-damage/ but note these figures will be revised soon as a new assessment by JNCC has been undertaken.

Developing and implementing measures to achieve sustainable harvesting of queen scallop stocks reduces the risks associated with achieving targets for D3 Commercial fish.

Scallop fishing was not considered to have an impact on D1 and D4 Biodiversity and Food webs for cetaceans, seals, and birds, or D4 food webs beyond those issues already considered through bycatch.

Climatic Factors

Vessels fishing for queen scallops contribute to the total carbon emissions at sea each year by the UK's fishing fleet. 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 queen scallop on organic carbon stocks. However, the impact of scallop fishing gear for example, scallop dredges on blue carbon, is of concern. Improved recording of the intensity of scallop 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.

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

Scallop dredging or other similar towed gear has been identified to cause damage to marine heritage assets. Historic England have evidence of two recent examples of damage from fishing activity to designated heritage assets – the Klein Hollandia also known as the Eastbourne Wreck, LEN 1464317) and the Rooswijk (LEN 1000085).

The marine historic environment also plays an important role in providing ecosystem services in relation to nature conservation, sea angling, recreational diving, and

commercial fishing. Marine heritage assets, particularly ship and plane wrecks can provide habitats for marine life, with fish often aggregating around them for refuge or to feed. Avoiding negative interactions with marine heritage assets that act as habitats can positively contribute to the conservation of the wider marine environment.

Landscape and seascape

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

Fishing activity using demersal towed gear has the potential to cause physical disturbance of the seabed and therefore could impact deposits associated with prehistoric landscapes that are now submerged by sea-level rise. These former landscapes, referred to as moorlog, are often represented by peaty and other fine-grained deposits. Examples of these prehistoric landscapes and deposits can be found in the Dogger Bank region[23].

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

4. Relevant plans, programmes and environmental protection objectives

The queen scallop 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 queen scallop 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 objectives that Defra consider relevant to the implementation of the queen scallop FMP. The queen scallop FMP could interact with other relevant plans and projects. Any cumulative impacts will also be considered in any future assessments ahead of implementing measures.

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

International

The queen scallop 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 Contracting Party to the following RFMOs relevant to stocks being managed through the FMP:
- NEAFC – Northeast Atlantic Fisheries Commission
- Convention for the Protection of the Archaeological Heritage of Europe
- Council of Europe Landscape Convention

Domestic

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

Marine protected areas

FMPs are required by law to consider the implications of the fishing activity they manage for designated sites, primarily 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. 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 queen scallop 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 objectives of the site.

Marine regulators also have responsibilities relating to SSSIs under the Wildlife & Countryside Act 1981 and Natural Environment & Rural Communities Act 2006. Ramsar sites for example 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 HPMAs 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 objectives for designated features.

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

2017 include provisions for: protecting sites that are internationally important for threatened habitats and species including European marine sites and provide a legal framework for species requiring protection including 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 queen scallop FMP will support the protection of protected sites and species.

The Conservation of Offshore Marine Habitats and Species Regulations 2017

The Conservation of Offshore Marine Habitats and Species Regulations 2017 include provisions for the designation and protection of areas that host important habitats and species in the offshore marine area. The queen scallop FMP will support the protection of offshore marine habitats and species.

Marine Strategy Regulations 2010 – UK wide

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

The Marine strategy part 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 Plans – 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 objectives. Under MCAA section 58, decisions relating to the marine area should be taken in line with the Marine Plan. The queen scallop 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 queen scallop 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 queen scallop FMP will deliver measures to secure healthy stocks that will be fished in an environmentally sustainable manner.

The Environment Act 2021 also makes provision for legally binding targets of which the targets for biodiversity and Marine Protected Areas will relate to FMPs. In addition, public authorities who operate in England must consider what actions they can take to conserve and enhance biodiversity in England. This obligation is the strengthened 'biodiversity duty' that the Environment Act 2021 introduced. The queen scallop 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 queen scallop 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 marine protected areas. 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 queen scallop FMP will support achieving the targets set out in the regulations.

Climate Change Act 2008 – UK Wide

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

Marine wildlife bycatch mitigation initiative – UK Wide

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

Water Environment Regulations (Water Framework Directive) – England

The Water Environment (Water Framework Directive) (England) Regulations 2017 (referred to as the WFD Regulations) provide a framework for assessing and managing the water environment, which includes estuaries and coastal waters in England. The queen scallop 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 1 nautical mile from the baseline into the marine environment and seek to maintain or restore Good Ecological Status[24]. The queen scallop FMP will support the objectives in the relevant RBMPs to meet Good Ecological Status.

Project UK king scallop fisheries improvement projects

Fishery Improvement Projects (FIPs) are multi-stakeholder initiatives that aim to help fisheries work towards sustainability and MSC certification. The queen scallop FMP will

[24] 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)

support the UK Channel King Scallop FIP and the UK North Sea, West of Scotland, and Irish Sea King Scallop FIP.

Other FMPs

Defra and our delivery partners considered the interaction between the published FMPs and this tranche of plans whilst drafting this FMP. The queen scallop FMP has been developed considering the king scallop FMP to ensure consistency, given the similarities, and overlapping interests between the fisheries and the issues to be tackled. Aligning the development of management for queen scallops with the process for introducing management in the king scallop fishery may help to streamline resource requirements and limit stakeholder fatigue as there is overlap in the vessels landing both species. The queen scallop FMP will overlap with other FMPs that manage fishing which interacts with the seabed, including the crab and lobster FMP, the Channel demersal non-quota species FMP, the Southern North Sea and Eastern Channel mixed flatfish FMP, the Southern North Sea demersal NQS FMP, Southern North Sea and Channel skates and rays FMP and the whelk FMP.

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

5. Assessment of environmental effects

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

The present assessment acknowledges the evidence that shows those pressures that are largely derived from fishing activity and can impact the marine environment

directly. Fishing can also contribute to other environmental effects when considered in-combination with other processes and activities.

Section 5 assesses the environmental effects of the policies and actions of the queen scallop 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 measures of the queen scallop FMP

The potential positive and negative environmental effects of implementing the goals and management measures (section 1) of the queen scallop FMP have been identified below.

High-level assessment of the positive and negative environmental effects of the queen scallop-specific policy goals

Policy goal 1

Develop proposals for a comprehensive data collection programme for UK-wide queen scallop fisheries, which supports a data-rich future and results in the establishment of a reliable time series that facilitates well-informed, sustainable management.

Positive effects:

- this goal will contribute to improvements in evidence to assess the status of queen scallop stocks. These improvements will enable better evaluations of the impact of fishing on those stocks and improve the collection of biological and environmental data. This will support monitoring and evaluation of any impacts of the fishery on the wider environment. The policies and actions arising from this goal may contribute to queen scallop stocks being sustainably harvested

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

Negative effects:

- any dedicated field surveys for monitoring and data collection could result in unwanted effects on the marine environment. This goal is seen as low risk as

the environmental impacts will be considered during the development of any data collection programme

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

Policy goal 2

Seek opportunities for strengthening existing measures in English waters to increase stock protection whilst the evidence base improves.

Positive effects:

- this will make a strong contribution towards the sustainability of targeted stocks. This may also have indirect benefits for the wider environment, for example food webs and biodiversity

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

Negative effects:

- if this leads to management that reduces opportunities, that may lead to spatial changes in fishing effort that increases fishing pressure outside the scope of the FMP (area and/or species). If this leads to management that increases opportunities within the plan area, the increase in pressure could have a negative impact on the wider environment

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

Policy goal 3

Assess the interactions with the marine environment and potential impacts associated with queen scallop fisheries and develop an action plan setting out appropriate measures to reduce damaging impacts.

Positive effects:

- this goal will assess the interactions with the marine environment and potential impacts associated with queen scallop fisheries and develop an action plan to reduce damaging impacts. Actions under this goal will improve understanding of

the wider environmental interactions of queen scallop fishing activities including seabed, food webs, other commercial species, Blue Carbon, CO2 emissions and allow solutions to be developed to reduce impacts and for more sustainable management, which may help protect 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; Cultural Heritage; Seascapes

Negative effects:

- this goal could lead to changes in fishing effort, spatial changes in effort and/or displacement to currently unfished areas, if fishing effort is limited in certain areas

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; Cultural Heritage; Seascapes.

Policy goal 4

Explore the impacts of changes in marine spatial use on queen scallop fisheries from an environmental, economic, and social perspective.

Positive effects:

- this goal will explore the impacts of marine spatial use on queen scallop fisheries. The policies and actions arising from this goal may contribute to queen scallop stocks being sustainably harvested, promote more efficient and sustainable use of the marine environment, and reduce the wider environmental impacts of the fishery

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; Seascapes**.**

Negative effects:

- this goal could lead to changes in fishing effort, spatial changes in effort and or displacement to currently unfished areas. Any increase in fishing activity in potentially reduced areas could put pressure on marine systems resulting in increased bycatch and seabed disturbance. Spatial squeeze could result in increased activity of fishing activity (and other marine activities) in a smaller area, putting further pressure on marine habitats. Spatial changes in fishing area could also result in increased carbon dioxide emissions if vessels need to travel further to suitable fishing grounds

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

Policy goal 5

Develop climate change mitigation and adaptation measures for shared UK queen scallop fisheries.

Positive effects:

- this goal will develop climate change mitigation and adaptation measures for UK scallop fisheries. This will improve understanding of the contribution to climate change impacts the queen scallop fishery has, helping to reduce the impact that queen scallop vessels have on the marine environment

Relevant SEA Issues: Geology/sediments (UK MS - D6); Climatic factors.

Negative effects:

- no negative effects are anticipated. This goal is considered to pose a low risk

High-level assessment of the positive and negative environmental effects of the possible queen scallop fishery management measures.

Measure 1

Review existing queen scallop data collection programmes and approaches applied across the UK and identify key information gaps and evidence requirements.

Positive effects:

- to ensure sufficient stock data is available on which to make evidence-based fishery management decisions, there is a need to understand the type, scope and purpose of queen scallop stock data already being collected and analysed around the UK. This will help to understand where the key evidence gaps may lie and whether data to fill these is already available or if additional data collection approaches are needed

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

Negative effects:

- this measure could result in changes in data collection and monitoring in English waters only, which may not be beneficial at this local scale given the wider area the main queen scallop fishery covers

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

Measure 2

Consider increasing MCRS for queen scallops in English waters from 40mm to 55mm.

Positive effects:

- increasing MCRS may provide additional protection for spawning stocks, enhancing reproductive capacity. Ensuring healthy population of queen scallop at or above size at maturity may help queen scallop populations become more resilient to environmental change and could positively benefit marine ecosystem function and biodiversity

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

Negative effects:

- it could lead to further discards of under MCRS shellfish and an increase in effort to fill any potential shortfall in landings
- this negative impact can be mitigated in part by combining this measure with increased chain ring size (see Measure 2)
- there may also be wider impacts to other stocks, and the environment if they are returned to the sea at a different location to where they were caught and if significant numbers are put back together, therefore exceeding the carrying capacity of a certain area
- not harmonising MCRS across national or administrative boundaries may have localised stock or ecosystem impacts

Relevant SEA issues: Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6); Water (UK MS D10, D11); Climatic factors.

Measure 3

Consider exploring potential options for introducing gear specifications for queen scallop fishing in English waters.

Positive effects:

- changes to gear specifications could minimise bycatch of undersized queen scallops (particularly if MCRS is increased, as proposed above) and other

species, as well as minimising the potential negative interactions between gear and the seabed

Relevant SEA Issues: Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6); Geology/sediments (UK MS - D6); Cultural Heritage; Seascapes.

Negative effects:

- introducing gear specifications applied to English waters only could lead to changes in fishing effort, spatial changes in effort and or displacement to currently unfished areas, if restrictions are introduced in certain areas. This could lead to increased fishing pressure and potential damage to the marine ecosystem and 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.

Measure 4

Review existing queen scallop management measures applied across the UK and consider replicating measures in English waters to increase stock protection.

Positive effects:

- this measure proposes to review measures around the UK and consider replicating measures in English waters
- broad alignment of measures would provide a consistent approach to stock management in the UK. It could contribute to achieving stock sustainability and may help queen scallop populations become more resilient to environmental change and could positively benefit marine ecosystem function and biodiversity
- the review of measures itself will not have any impacts. Potential impacts from implementing different management measures would only be realised once the review is complete, therefore the potential positive and negative impacts are uncertain

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; Cultural Heritage; Seascapes.

Negative effects:

- this measure could result in changes in management England, that may not be beneficial at this local scale
- not considering local or regional differences in ecological or environmental factors could result in negative effects on the marine environment and the stock

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; Cultural Heritage; Seascapes.

Measure 5

Consider developing a scientifically based fisheries management framework, based on output or input controls.

Positive effects:

- this proposed measure sets out the process to develop a management framework to establish what the most appropriate output or input control or mechanism to manage the proportion of the queen scallop stocks that can be removed sustainably through fishing activity. The framework at its current stage of development, does not propose any specific management measures that can be assessed for likely significant effect. However, through delivering this process and achieving the desired outcome such as, producing a report summarising the analysis of existing information on output or input control measures and recommendations for next steps; including proposed measures for inclusion in a formal government call for evidence or consultation, this will contribute to achieving stock sustainability and the overarching FMP goals on wider environmental sustainability

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

Negative effects:

- stock assessments could indicate a higher level of fishing is possible which could lead increased impacts on the environment. This measure could lead to changes in fishing effort, spatial changes in effort and or displacement to currently unfished areas or to other species. Any increase in fishing activity could put pressure on marine systems resulting in increased bycatch and seabed disturbance as well as potentially increasing carbon dioxide emissions

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.

Measure 6

Management framework: assess and mitigate the effects of queen scallop fishing on seafloor integrity.

Positive effects:

- improving the understanding of the footprint of the fishery and working with the Benthic Impact Working Group to consider different methods, and opportunities for innovations in catching methods may lead to the development of measures that could mitigate the damaging environmental effects of scallop fishing on benthic habitats
- better understanding the interactions between scallop fishing other fisheries, non-target species and the wider environment, may lead to the development of measures that could mitigate the damaging environmental effects of scallop fishing on the marine environment
- this measure could have a positive benefit on marine ecosystem function 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); Climatic factors; Cultural Heritage; Seascapes.

Negative effects:

- this measure could lead to changes in fishing effort, spatial changes in effort and or displacement to currently unfished areas, if fishing effort is limited in certain areas. This could lead to increased fishing pressure and potential damage to the marine ecosystem and 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, Cultural Heritage, Seascapes.

Overview of potential positive environmental effects of the FMP

Biodiversity, flora, fauna, geology and sediments (soil), water quality, climatic factors, landscape and seascape

The overarching aim of the queen scallop FMP is to effectively manage the harvesting of queen scallop stocks within sustainable limits while focusing on improving the sustainability of the fishery over the long-term.

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

- help reduce the risk of queen scallop stocks being over-exploited

- reduce fishing-related mortality which may help queen scallop populations become more resilient to environmental change which could benefit marine ecosystem function and biodiversity
- help control species removal from food webs

The queen scallop FMP includes policies seeking to better assess the interactions with the marine environment and potential impacts associated with scallop fisheries and develop an action plan to reduce damaging impacts. This will allow evidence-based measures to be developed to mitigate existing impacts.

The queen scallop FMP acknowledges the impact scallop dredging has on achieving UKMS descriptor D6 seafloor integrity and recognises the need for strong engagement in a strategic approach to reducing the impacts of fishing on the seafloor. The FMP aims to support a partnership approach to delivering a reduction in benthic impacts around England from queen scallop fisheries.

The queen scallop FMP includes policies seeking to better assess bycatch associated with the fishery, which should allow the introduction of measures to reduce bycatch of non-target and sensitive species over the long-term if required.

The queen scallop FMP includes policies to better assess the contribution of scallop fishing to marine litter and identifies strategic actions to help reduce fishing related marine litter.

Contribution of measures to manage the harvesting of queen scallop within sustainable limits in England as set out on in section 1 and assessed in section 5, will help 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 queen scallop FMP's proposed interventions to address seabed disturbance should positively contribute to achieving GES for descriptors D6 over time. The FMP's proposed interventions to develop better evidence on bycatch and the contribution of scallop fishing related litter should positively contribute to achieving GES for descriptors D1, D4, D6 and D10.

Defra considered advice from SNCBs on the risks posed by fishing for queen scallop when developing and implementing the management measures 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 queen scallop FMP adopts an ecosystem-based approach to fisheries management to help deliver environmental, social, and economic benefits beyond those accrued just from achieving the sustainable harvesting of stocks.

The queen scallop FMP supports policy development to reduce the contribution of fisheries activities to climate change, contributing to achieving the climate change objective in Fisheries Act 2020. Such policies will help identify opportunities to

decarbonise the fleet and move towards net zero, making vessels more fuel efficient and generally less polluting.

The queen scallop FMP will contribute to building an improved understanding of the potential impacts that scallop fishing can have on blue carbon habitats.

The queen scallop FMP will contribute to building an improved understanding of how climate change is influencing the queen scallop stock range and the physical and biological characteristics of queen scallop species. This will help the queen scallop fishery adapt to climate driven changes in the distribution of stocks, contributing to the climate objective in the Fisheries Act 2020.

The queen scallop FMP acknowledges the climate change impacts on queen scallop stocks and fisheries and signposts to existing national programmes that collect data on the effects of climate change. In addition, the FMP sets out policies to address existing evidence gaps related to climate changes on scallops and how it proposes to move towards climate adaptive management.

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.

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 scallop 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 scallop 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, measures, 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, climatic factors, cultural heritage, and landscape and seascape from implementing individual policies, measures, 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 queen scallop FMP.

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

There is the potential for factors such as the spatial footprint, intensity, type of gear and fishing methods, and gear interactions with marine species and habitats of the queen scallop fishery to alter through publication of the queen scallop FMP and implementation of its policies and actions. We recognise that management interventions brought in through FMPs may solve one issue, but unintended and unpredictable issues could arise due to the measures being implemented. For example, some of the proposed precautionary management measures and 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 for example, the 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.

Section 5 has identified potential negative effects that could arise from the implementation of the FMP's policies, actions, and measures. Due to the policies, actions and measures being at an early stage of development it is difficult to systematically set out their magnitude and significance, without further detail on the nature, timing, duration, scale or location of the proposed actions or measures. Changes to fishing activity resulting from the implementation of the FMP goals and measures 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 measures 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 queen scallop FMP could potentially have positive, or negative in-combination effects with other programmes to deliver sustainable fisheries (see section 4). Whilst these other programmes focus on different topics, there are common themes that positively link them together. For example, FMPs and the Marine Plans share the common principles of managing marine resources sustainably and reducing the impact of anthropogenic pressure on the marine environment. Having due regard to the Environmental Principles for England during policy development will further ensure the environment is appropriately considered throughout the FMP process. More broadly, we anticipate the cumulative positive effect of these programmes will result in helping to meet sustainability objectives and achieving long-term improvements to the marine environment. There is particular potential for the queen scallop FMP to have positive in-combination effects with the King Scallop FMP.

Undertaking the in-combination assessment at this stage in the production cycle of the FMP proved difficult due to the policies and measures being at an early stage of development. The assessment of the likely negative effects of the individual policies, measures and actions in section 5 identified a low risk of significant adverse effects on the environment 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 queen scallop FMP, where necessary, all new measures will be subject to Habitats Regulations Assessments and Marine Conservation Zone assessments. Such assessments will consider the potential in-combination effects with other plans and projects that are occurring or will occur within in an MPA. These assessments will also identify where any specific interactions exist.

The combined effect of implementing the policies 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

Scallop fishing is an ongoing activity that poses some risks to the quality status of the marine environment. The queen scallop FMP focuses on achieving the sustainable harvesting of queen scallop stocks and therefore will reduce the risks to the future status of queen scallop stocks in the long-term giving positive benefits to the environment. Nevertheless, we acknowledge that fishing for queen scallops within sustainable limits may not remove all the associated negative effects of that fishing on the wider marine environment.

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

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

The queen scallop FMP 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 queen scallop FMP sets out how the issues of seabed disturbance, bycatch and litter will be addressed through the FMP.

The queen scallop FMP does not specifically consider the impacts of fishing on marine heritage assets. However, fisheries management aimed at reducing wider environmental effects could indirectly help to conserve both known and unknown marine heritage assets. This iteration of the FMP focuses on setting out measures to

achieve sustainable harvesting of queen scallop stocks but there is scope for future iterations of the FMP to address this wider issue.

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

6. Proposed measures to reduce significant negative effects

Existing negative effects of queen scallop 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.

The known impacts of queen scallop fishing include the impact on benthic habitats and seabed integrity, litter and ghost gear affecting habitats and species, vessel emissions on climate, and the impact on cultural heritage sites.

Biodiversity, flora, fauna, geology and sediments (soil), water quality

Measures currently being implemented to manage queen scallop fishing in English waters include days at sea effort limits for 15m and over vessels, protection of juvenile and spawning scallops through Minimum Conservation Reference Sizes (MCRS), and a seasonal closure. These measures will be part of the overall management strategy and will contribute to the conservation of stocks and the wider environment.

ICES do not assess or provide advice for queen scallops and no formal stock assessment units have been agreed for queen scallops in English waters or around the UK. The queen scallop fishery in UK waters is considered data poor with the only published stock assessment for this region being in Isle of Man territorial seas. Despite a lack of formal stock assessment, there are both fishery-dependent and independent data sources available for queen scallops around the UK, which provides some information on the stock.

Further evidence is required to accurately estimate the available biomass that can be sustainably removed from the fishery. The queen scallop FMP combines a long-term vision to achieve MSY with clear measures required to reach and maintain this goal. This plan brings together all existing management measures for queen scallops along with all available science and evidence, and highlights where gaps exist and what is

required to fill those gaps to enable the necessary protection for stocks now, and in the long term. This approach aims to achieve sustainable harvesting of queen scallop stock, which will benefit the wider marine environment.

The queen scallop FMP has considered advice from SNCBs with respect to the impacts from scallop fishing activity on MPA features and the wider marine environment in relation to UK MS descriptors. The FMP has set out the following proposed measures to reduce those known negative effects.

Impacts within MPAs

The MPA network (Appendix C) is protected through the existing MPA management process by managing human activities such as fishing to avoid likely significant effects on the environment. In England, these activities are mainly managed through the powers vested in the IFCAs and the MMO to make byelaws.

IFCAs and the MMO were involved in the development of the FMP to ensure measures proposed through the FMP are compatible with existing MPA management.

Before Defra implement any new management interventions proposed in the queen scallop FMP, these interventions will be screened for likely significant effects on any European sites or European offshore marine sites that overlap with the geographical scope of the measure and, where necessary, a further appropriate assessment 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, an MCZ Assessment will also be completed before any new management measure is implemented that may significantly hinder the conservation objectives of an MCZ.

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

Impacts outside MPAs

The queen scallop fishery poses a moderate risk of bycatch of mobile species that are designated features of MPAs in queen scallop fisheries using otter trawls. There is a low risk of bycatch of important prey species that designated species depend on in queen scallop fisheries. Potential impacts will be considered via a bycatch monitoring plan to be set out in future iterations of the FMP. See UKMS Descriptors Impacts – bycatch section below for further details.

UK MS Descriptors Impacts

Marine litter

The queen scallop FMP will support existing UK policies to protect the marine environment from marine litter, by taking a whole-life cycle approach to prevent and divert material from becoming a source of litter. The FMP will review evidence being generated through existing marine litter monitoring programmes over the next 2 years. An evidence plan will be set out in a future iteration of the FMP to assess the scale of impact generated by queen scallop fishing, along with any required research to support mitigating any risks identified.

These proposed measures should help the queen scallop FMP support the achievement of GES for UKMS Descriptor 10 – marine litter, thereby have a positive effect on the current baseline status.

Bycatch

Considering the moderate risk of bycatch of mobile species associated with the queen scallop fishery, the queen scallop FMP proposes to improve reporting of bycatch to enable bycatch of sensitive species particularly fish and seabird species caught in otter trawls to be properly understood, and effective management measures put in place, where required. The FMP proposes the following action:

- an improved monitoring regime on benthic trawlers will help fill the current data gaps and therefore reduce the uncertainties. This could potentially be done by adapting or expanding existing observer programmes, or through the appropriate use of REM. These actions are incorporated in Goal 3

Seabed integrity

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

The queen scallop FMP seeks to contribute to the implementation and co-ordination of the Benthic Impact Working Group. The FMP seeks to facilitate the involvement and alignment across scallop fisheries to support the scale of the action required to mitigate the seafloor integrity impacts. This will include working in partnership to map current fished areas alongside areas where scallop fishing in not permitted or feasible, such as in some MPAs and offshore windfarms. This will improve the understanding of the overall footprint of the fishery. The work will also consider where further changes to scallop fishing grounds may occur in the future, for example new offshore developments, or an increased MPA network. An evidence-based assessment of the interactions between the scallop fishery and the marine environment will be carried out to inform the development of an action plan for reducing damaging impacts of scallop

fishing on seabed integrity and consider these impacts within the wider context of spatial squeeze.

These proposed measures should help the queen scallop FMP contribute to a reduction in benthic impacts, advancing the achievement of GES for UKMS Descriptor 6 seafloor integrity, thereby have a positive effect on the current baseline status.

Climate change

Vessel emissions

The queen scallop FMP will set out a series of evidence requirements needed to analyse the carbon dioxide emissions generated by both king and queen scallop fisheries in England. This work will be aligned with the other FMPs in setting out set an emissions baseline to support the industry reaching the Net Zero targets.

Blue carbon

The evidence around the risks and impacts of scallop dredging on blue carbon habitats within English waters remains uncertain, but existing research and development, and evidence partnerships have the potential to address gaps in these areas The FMP will collate relevant evidence generated from these existing projects over the next two years to inform climate adaptive management approaches.

Climate change impacts on queen scallop stocks and fisheries

During every FMP review cycle, new evidence around climate change impacts requiring adaptation of the queen scallop fishery will be integrated into the specific FMP affected. Where evidence on the risks and opportunities afforded by Climate Change are absent, the precautionary objective will be enacted until such as time as the evidence can be collected.

Cultural heritage

The queen scallop FMP does not explicitly consider the potential impacts of scallop 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 queen scallop FMP does not explicitly consider the potential impacts of scallop fishing activity on submerged prehistoric landscapes or seascapes.

The FMP has considered the impact of scallop 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 queen scallops 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, measures and actions in section 5 identified a low risk of significant adverse effects on the environment from implementing individual policies, measures, and actions. However, there is a degree of uncertainty surrounding the full range of effects, both positive and negative. The FMP includes a range of goals and measures which proposed additional evidence gathering to support the development of more detailed proposals which will address potential adverse effects. Therefore, at this stage in the development of the FMP no changes to the proposed goals, policies and measures are needed ahead of publishing the FMP. Where appropriate, the policies, measures 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 section 8), to ensure that any negative effects of the of the FMP's policies, measures, and actions individually or combined can be further reduced. Given the uncertainty as to the negative effects of implementing the individual policies, measures 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 can be implemented to reduce to any negative environmental effects developing.

General

The UK is committed to using marine resources sustainably and reducing the impacts of fishing on the marine environment to comply with its international and domestic obligations. The queen scallop FMP seeks to support these commitments by providing the tools i.e. FMP policies and measures to deliver the sustainable harvesting of queen scallop stocks.

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

This ER considers that the FMP has proposed all necessary actions to address existing issues and has appropriately considered how it will address potential issues arising from the implementation of the FMP's policies, measures, 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 queen scallop 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'[25].

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 queen scallop FMP. This listing creates a legal requirement to prepare and publish the queen scallop 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)[26] of the Fisheries Act applies; we are not aware of any information that would invoke these circumstances.

The queen scallop FMP, alongside the other 43 FMPs was agreed by the fisheries policy authorities through the JFS publication process. Engagement across

25 Reasonable alternatives definition

26 Fisheries Act 2020 (legislation.gov.uk)

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 FMPs, that included an FMP for queen scallop, 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 queen scallops.

The queen scallop fishery is an ongoing activity and management already exists. Continuing with the current approach without strengthened or new management alongside further evidence collection was judged to increase the likelihood of stocks being overexploited with insufficient protection for the wider marine environment. Therefore, additional and/or amended management was required. The queen scallop 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 queen scallop FMP policies and measures were developed to specifically address those fisheries management issues identified within the queen scallop 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, evidence relating to climatic change impacts) have been considered during the development of the current proposed policies and measures to ensure they have minimal negative environmental effects and where applicable maximum positive environmental gain. Stakeholder input, including that from the environmental sector has been considered during the development of policies and measures. 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.

Assessment of alternatives to proposed policy goals.

Policy goal 1

Develop proposals for a comprehensive data collection programme for UK wide queen scallop fisheries, which supports a data-rich future and results in the establishment of a reliable time series that facilitates well-informed, sustainable management.

Alternative to proposed goal:

- base future management decisions on data collected from existing programmes outside of English waters e.g. Isle of Man queen scallop stock assessments, which would likely inform more precautionary type measures (given more evidence required). Management would be unlikely to be as effective
- increased use of existing data gathered by fishers. Management would improve but unlikely to be as effective as coverage is not comprehensive

Policy goal 2

Seek opportunities for strengthening existing measures in English waters to increase stock protection whilst the evidence base improves.

Alternative to proposed goal:

- not seeking opportunities to strengthen English measures and focus on developing proposals for wider management/ data collection. This option is less desirable as it will take time to develop new measures and could leave the stocks vulnerable to increased fishing pressure

Policy goal 3

Assess the interactions with the marine environment and potential impacts associated with queen scallop fisheries and develop an action plan setting out appropriate measures to reduce damaging impacts.

Alternative to proposed goal:

- better understanding how scallop fishing activity impacts the marine environment is required to minimise negative interactions and ensure the fishery is sustainable
- no reasonable alternative is available

Policy goal 4

Explore the impacts of changes in marine spatial use on queen scallop fisheries from an environmental, economic and social perspective.

Alternative to proposed goal:

- exploring marine spatial use is required to promote sustainable use of the marine environment and reduce the wider environmental impacts of the fishery
- no reasonable alternative is available

Policy goal 5

Develop climate change mitigation and adaptation measures for shared UK queen scallop fisheries.

Alternative to proposed goal:

- considering climate change issues is required to ensure the industry contributes to reducing its impact on the environment and is ready to adapt to the environmental impacts of climate change
- no reasonable alternative is available

Assessment of alternatives to proposed management measures

Measure 1

Review existing queen scallop data collection programmes and approaches applied across the UK and identify key information gaps and evidence requirements.

Alternative to proposed measure:

- this proposed measure seeks to increase understanding of the type, scope and purpose of existing queen scallop stock data around the UK. This work is required to understand where the key evidence gaps may lie and inform future data collection and/or evidence gathering
- no reasonable alternative is available

Measure 2

Consider increasing MCRS for queen scallops in English waters from 40mm to 55mm.

Alternative to proposed measure:

- increased MCRS, possibly alongside parallel technical gear specifications, is the one available management tool identified that could be effective at providing increased protection to stocks at an England only level
- no reasonable alternatives have been identified at this stage

Measure 3

Consider exploring potential options for introducing gear specifications for queen scallop fishing in English waters.

Alternative to proposed measure:

- this proposed measure seeks to explore and develop appropriate technical specifications that could be applied to queen scallop fishing, both to minimise bycatch of undersized queen scallops (particularly if MCRS is increased, as proposed above) or of other species, as well as minimising the potential impact of gear on the wider environment
- no reasonable alternatives have been identified at this stage

Measure 4

Review existing queen scallop management measures applied across the UK and consider replicating measures in English waters to increase stock protection.

Alternative to proposed measure:

- replication and broad alignment of measures with some areas is one available management tool which could provide increased protection of stocks located in English waters
- no reasonable alternatives have been identified at this stage. Other alternatives that will achieve sustainable harvesting of stocks could be considered at a wider, UK level

Measure 5

Consider developing a scientifically based fisheries management framework, based on output or input controls.

Alternative to proposed measure:

- this proposed measure sets out the process to develop a management framework to establish what the most appropriate output and input control or mechanism to manage the proportion of the queen scallop stocks that can be removed sustainably through fishing effort. The framework at its current stage of development, does not propose any specific management measures that can be assessed for alternatives

Measure 6

Management framework: assess and mitigate the effects of queen scallop fishing on seafloor integrity.

Alternative to proposed measure:

- better understanding how scallop fishing activity impacts seafloor integrity is required to minimise negative interactions and ensure the fishery is sustainable
- no reasonable alternative is available

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

The queen scallop 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 measures will be developed as options for more targeted management become available to tackle a wider range of fisheries management issues over the longer-term.

The public will be consulted on the queen scallop FMP, alongside the consultation of this ER. These consultations will provide stakeholders with the opportunity to review proposed measures 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 queen scallop 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 fall by the FMP into two types:

- monitoring the effectiveness of FMP
- monitoring environmental impacts

Monitoring effectiveness of the FMP

This is the first version of this FMP, which sets out the first steps and longer-term vision necessary for sustainable management of this fishery. These plans will take time to develop and implement. They are intended to allow an adaptive approach and will be reviewed and improved over time as we collect more evidence and collaborate with the fishing sector and wider interests on the sustainable management of these fisheries. Delivery of the actions and measures for this queen scallop FMP will be monitored.

At present there is insufficient evidence to determine MSY, or a proxy for MSY, for some queen scallop stocks in English Waters. This FMP sets out the proposed steps to begin developing an evidence base for these data limited stocks to support progress towards defining and measuring stock status and reporting on stock sustainability. Identification of the available evidence to define and measure stock status will be an indicator of the effectiveness of this plan for these stocks.

Other indicators to measure the effectiveness of the policies for restoring or maintaining queen scallop stock at sustainable levels are:

- a completed review of existing measures, within and outside of the FMP area, and opportunities for strengthening and aligning measures identified
- a completed review of an overarching management framework based on input and/or output controls, which will develop fisheries management measures that are responsive to signals and trends in stock levels as well as contribute to the evidence base for the queen scallop fishery

In addition to the monitoring set out in the FMP, monitoring of the environmental effects of implementing the FMP's policies, actions and measures 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 within the remit of the FMP, fisheries managers should consider adjusting queen scallop 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 scallop 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 measures to reduce or avoid these risks or impacts. Findings from these monitoring activities could also be used to indicate where FMP policies and measures are having a positive effect.

UK MS

The UK MS monitors and assesses the state of the marine environment against 11 descriptors. See Level 1 Overarching Outcomes 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 scallop fishing fleet has been considered in this SEA and would continue to be reviewed against the FMP goals as part of monitoring.

Review

The Fisheries Act 2020 requires the queen scallop 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 queen scallop fishery harvesting within sustainable limits and the Fisheries Act objectives.

The results of monitoring the effectiveness of the queen scallop 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 queen scallop FMP. As part of the reporting and wider review processes, alternatives to management can be identified to ensure the queen scallop FMP delivers on its objectives and wider environmental obligations.

The SEA Environmental Report will be periodically updated, as required, to reflect how the implementation of 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)[27], it is specifically net fisheries (for example, gill nets, tangle nets etc) that are largely responsible for both harbour porpoise and common dolphin bycatch.

Cetacean abundance and range targets

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

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

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[28] the authors were fairly confident that all seals observed in gillnets were greys. Harbour seals (referred to as common seals in the report) are rarely caught and numbers are too low to generate a useful bycatch estimate separately. The gears that pose the most risk to grey seals appears to be tangle and trammel nets, which was estimated to account for over 90% of seal bycatch in 2019[29].

The most recent OSPAR quality status reports assessment on marine mammal bycatch[30] (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.

Seals summary

Grey seal populations and productivity continue 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

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28 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).

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

30 Marine Mammal By-catch

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

Target	Indicator	North Sea	Celtic Seas
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[31]	GES not achieved	Not assessed
There is no significant change or reduction in population distribution caused by human activities.	Distribution of breeding and non-breeding marine birds	Not assessed	Not assessed
There is no significant change or reduction in population distribution caused by human activities.	Invasive mammal presence on island seabird colonies	Not assessed	Not assessed

Current impact of fisheries on the baseline condition

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

31 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.

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[32] (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

32 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.

(Northridge et al 2020[33] and Miles et al 2020[34]). However, these estimates have high uncertainty in part because sample sizes are low and possibly unrepresentative of the fleet.

Bird summary

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

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

Demersal fish biodiversity is recovering from a history of over-exploitation, but GES has not yet been achieved in either the Greater North Sea or the Celtic Seas. A partial assessment of pelagic shelf fish status did not provide a clear result.

The UK has achieved its aim of GES for some commercially exploited fish. Most national shellfish stocks have either not yet achieved GES or their status is uncertain. The percentage of quota stocks fished below MSY and the proportion of marine fish spawning stock biomasses capable of producing MSY have increased significantly since 1990.

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

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

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33 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

34 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).

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

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

Table A4b. Detail from the 2019 UK MS assessment D3: commercial fish and shellfish. Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status 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

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

Current impact of fisheries on the baseline condition

The status of commercial fish stocks (D3) primarily relates to exploitation rates so is predominantly influenced by fishing activities. For commercial fish some (53% of quota stocks) were being exploited at or below MSY in 2015, but this was not the case for all stocks. Out of a suite of 79 TACs which can be reported across multiple years, 32 of the 79 baseline TACs were consistent with ICES' advice (40%) in 2023 compared to 27 TACs (34%) in 2022 (Bell et al.2023[35]). 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.

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

35 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.

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 Tool.
Table 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

Target	Indicator	North Sea	Celtic Seas
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
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

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.	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

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

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 partially achieved
Productivity of the representative feeding guilds, characterised by key species, is indicative of a healthy marine food web.	Grey seal pup production	GES achieved	GES achieved
Productivity of the representative feeding guilds, characterised by key species, is indicative of a healthy marine food web.	Marine bird breeding success/failure	GES not achieved	GES partially achieved
Productivity of the representative feeding guilds, characterised by key species, is indicative of a healthy marine food web.	Kittiwake breeding success[36]	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

36 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.

rest of the food web. More detail is given under the individual faunal group sections. For more information, read UK MS food webs assessment.

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
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 Marine Management Organisation (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

Horizon House Bristol
Deanery Rd
Bristol BS1 5AH

By email only **28/02/2024**

Re: Strategic Environmental Assessments – Queen Scallop Fisheries Management Plan

Thank you for your consultation email dated 26th January 2024 seeking our views on whether the proposed scope and level of detail in Defra's Strategic Environmental Assessments (SEA) for the Queen Scallop Fisheries Management Plan are appropriate. We are considering your email under Section 13 of The Environmental Assessment of Plans and Programmes Regulations 2004 (SEA regulations 2004).

On reviewing the document provided - Queen Scallop Fisheries Management Plan Strategic Environmental Assessment Scoping Report, Natural England agrees that the proposed scoping outlined in Section 5.2 includes the key aspects we consider essential for assessing the likely environmental effects associate with the proposed FMP. Whilst the information in the scoping report is very high-level, we welcome the commitment to progress an Environmental Report for this FMP in line with the SEA Regulations 2004.

The decision on DEFRA's behalf to scope out of the assessment and environmental report; population, human health, air, and material assets is sufficiently justified. We provide minor comments in an Annex below.

Annex 1 Additional comments

Section 5.3, paragraph 4. The text refers to the completed revised approach programme. This process is ongoing and is not yet completed and NE would advise that the wording should be updated to reflect this.

How the consultation response was considered

Point #	How point was considered
1. On reviewing the document provided - Queen Scallop Fisheries Management Plan Strategic Environmental Assessment Scoping Report, Natural England agrees that the proposed scoping outlined in Section 5.2 includes the key aspects we consider essential for assessing the likely environmental effects associate with the proposed FMP. Whilst the information in the scoping report is very high-level, we welcome the commitment to progress an Environmental Report for this FMP in line with the SEA Regulations 2004.	Point noted.
2. The decision on DEFRA's behalf to scope out of the assessment and environmental report; population, human health, air, and material assets is sufficiently justified. We provide minor comments in an Annex below.	Point noted.
3. Section 5.3, paragraph 4. The text refers to the completed revised approach programme. This process is ongoing and is not yet completed and NE would advise that the wording should be updated to reflect this.	Future Scoping Reports will be updated to reflect this revised wording.

JNCC response

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

29th February 2024.

BY EMAIL ONLY

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

Thank you for your email on 26th January 2024 inviting JNCC's view on the proposed scope and detail included in the SEA Scoping Report for the Queen Scallop Fisheries Management, in accordance with section 13 of The Environmental Assessment of Plans and Programmes Regulations 2004.

Our review of the report indicates a comprehensive approach to identifying the potential environmental effects of the fishery and the methodologies outlined for assessing these effects. JNCC agree that the proposed scope of the assessment covers the key aspects that we would consider essential for assessing the likely environmental effects associated with the Fisheries Management Plan.

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

1. **Detail 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.
2. **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.

How the consultation response was considered

Point #	How point was considered
1. Our review of the report indicates a comprehensive approach to identifying the potential environmental effects of the fishery and the methodologies outlined for assessing these effects. JNCC agree that the proposed scope of the assessment covers the key aspects that we would consider essential for assessing the likely environmental effects associated with the Fisheries Management Plan.	Point noted.
2. **Detail 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.	Where appropriate future Scoping Reports will consider including information on reasonable alternatives.
3. **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.	Where appropriate future Scoping Reports will consider including information on mitigation and monitoring.

Historic England response

Dear Sir/Madam

Historic England is pleased to offer its comments in response to Defra seeking views on the Scoping Report for Strategic Environmental Assessment (SEA) of the Queen Scallop Fisheries Management Plan (FMP), dated January 2024.

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 the SEA. We note that fishing activities targeted at queen scallops are likely to cause physical disturbance to the seabed and, therefore, 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 fishing activity targeting queen scallops.

We also note the acknowledgement that fishing activity targeting queen scallops has the potential to cause input of litter. As we have flagged in previous responses, 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). 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 the SEA because of the interaction between fishing gear and seabed formations, notably now-submerged prehistoric land surfaces that often comprise organic deposits (such as peat) and other former terrestrial fine-grained deposits (muds and silts) containing organic material. Accordingly, we concur that fishing activity targeting queen scallops has the potential to disturb blue carbon habitats and affect seabed carbon dynamics. Archaeological records and approaches are attuned to identifying organic and other fine-grained deposits, hence there may be scope for heritage to contribute to the assessment of fishing impacts on these key seabed formations and blue carbon. We think that this aspect of the impact of fisheries on landscapes should receive particular attention in the SEA.

We have underlined previously the positive interactions that arise between fishing and cultural heritage, including the importance of the cultural heritage of fishing acknowledged in the opening sentence of the Joint Fisheries Statement (JFS). We note also that section 1.2 of this Scoping Report states that fisheries management

decisions should recognise the cultural importance of fishing through maintaining and strengthening coastal communities. With these requirements in mind, we have previously suggested that FMPs be given a specific objective on developing the cultural heritage of the fisheries to which they refer.

Unfortunately, the language of the objectives in the Scoping Report does not reflect the otherwise evident concern for the cultural importance of fishing. At best, Objective 5 includes a 'social perspective' of the impact on queen scallop fisheries of changes in marine spatial use; potential actions under Objective 5 do not reflect even this point. The lack of objectives and potential actions relating to the cultural heritage of queen scallop fisheries is a notable gap. As a minimum – noting the weight placed on culture in the JFS and section 1.2 – we would welcome an express objective that makes direct refence to enhancing the cultural heritage of the queen scallop fishery and the contribution it makes to coastal communities and places.

We look forward to the Environmental Report evaluating the potential effects (negative and positive) of fishing for queen scallops on cultural heritage and landscape/seascape. In light of comments above, we would expect the Environmental Report to address:

- Interactions between fishing gear and marine heritage assets on the seabed.
- Impacts on heritage arising from physical disturbance to the seabed.
- Impacts on heritage from the input of litter (ALDFG).
- Impacts on landscape/seascape including prehistoric seabed formations, blue carbon habitats, and seabed carbon dynamics.
- Potential to enhance the cultural heritage of the queen scallop fishery and the contribution it makes to coastal communities and places.

We note that the SEA 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 d) 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 welcome acknowledgement that harvesting within sustainable limits may not remove all potential negative impacts of fishing for queen scallops on the wider environment – including heritage – and agree that additional measures will be required to address risks and impacts. We note also that the Environmental Report will

acknowledge pressures not currently being managed, which we presume will include pressures from fishing on cultural heritage and landscape/seascape.

We look forward to the FMP proposing new measures and interventions to mitigate negative effects (and enhance positive effects) arising from interactions between the queen scallop fishery and cultural heritage and landscape/seascape. We also look forward to proposals for future monitoring of the effects of the queen scallop FMP on cultural heritage and landscape/seascape. We would, of course, be very pleased to discuss with Defra these new measures, interventions, and monitoring proposals in the course of their development.

Thank you again for seeking HE's views on this Scoping Report. HE would be very pleased to continue conversations with Defra about how cultural heritage can best strengthen the effectiveness of the FMP in contributing to a sustainable and well managed queen scallop fishery.

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. Archaeological records and approaches are attuned to identifying organic and other fine-grained deposits, hence there may be scope for heritage to contribute to the assessment of fishing impacts on these key seabed formations and blue carbon. We think that this aspect of the impact of fisheries on landscapes should receive particular attention in the SEA.	The FMPs will consider the impact the effects of fishing on the seabed and blue carbon habitats.

Point	How point was considered
2. Unfortunately, the language of the objectives in the Scoping Report does not reflect the otherwise evident concern for the cultural importance of fishing. At best, Objective 5 includes a 'social perspective' of the impact on queen scallop fisheries of changes in marine spatial use; potential actions under Objective 5 do not reflect even this point. The lack of objectives and potential actions relating to the cultural heritage of queen scallop fisheries is a notable gap. As a minimum – noting the weight placed on culture in the JFS and section 1.2 – we would welcome an express objective that makes direct refence to enhancing the cultural heritage of the queen scallop fishery and the contribution it makes to coastal communities and places.	Defra will consider including an action related to the cultural importance of queen scallop fishing. Defra will consider the suggestion for developing a specific objective for cultural heritage of each fishery, in future iterations of the FMP.
3. We note that the SEA 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 d) 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.
3. 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
4. We look forward to the FMP proposing new measures and interventions to mitigate negative effects (and enhance positive effects) arising from interactions between the queen scallop fishery and cultural heritage and landscape/seascape. We also look forward to proposals for future monitoring of the effects of the queen scallop FMP on cultural heritage and landscape/seascape. We would, of course, be very pleased to discuss with Defra these new measures, interventions, and monitoring proposals in the course of their development.	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