Department for Environment Food & Rural Affairs

Llywodraeth Cymru
Welsh Government

Fisheries Management Plan for King Scallops in English and Welsh Waters

Strategic Environmental Assessment: Environmental Report

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Contents

Non-technical summary

The king 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 and the Welsh Government will use to manage scallop fishing activity in their waters, so stocks are harvested within sustainable levels. Alongside these measures, the king scallop FMP also sets out management approaches to help support wider social, economic and environmental aspects of the fishery.

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

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

This assessment focuses on how the policies and actions in the king 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 set out in updated UK Marine Strategy (UKMS) Part 1, published in 2019. Additional sources of evidence were used to establish the current 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 king scallop FMP.

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

The report considers and acknowledges the existing environmental effects of king 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, and climatic factors. The potential positive and negative environmental effects of the king 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 king 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 and Welsh 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 king scallop FMP has considered these impacts and sets out proposals to monitor and, where required, introduce mitigation to address these impacts.

The assessment of the policies, measures and actions did not identify any negative effects that posed a significant risk to the environment. 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 king scallop FMP policies and measures will also be monitored to identify unforeseen adverse effects at an early stage, so appropriate remedial action can be undertaken.

This assessment recommends that the king scallop FMP should consider the following additional points.

1. Future iterations of the 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.
2. Future iterations of the FMP should consider how fisheries management can contribute to reducing potential negative interactions with submerged prehistoric landscapes or seascapes.
3. The king scallop FMP would benefit from providing more specific detail on how it will interact with Marine Plans. Describing how the FMP could positively or negatively interact with this programme would improve the in-combination assessment (a component of the SEA which evaluates the potential impacts of the plan in combination with other plans or projects).

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, a 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 (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.

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.

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

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

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

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

The policies and actions proposed by a 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

This FMP applies to king scallop (Pecten maximus) fisheries in English and Welsh waters. The king scallop fisheries covered by this FMP occur in ICES areas 4b & c (North Sea), 7a (Irish Sea) and 7d-h (English Channel and Celtic Sea).

The King Scallop FMP applies to English waters[2] and Welsh waters[3], covering inshore and offshore areas where fishing activity for king 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.

3 Welsh waters refer to the Welsh inshore and Welsh offshore regions as set out in Section 322 of the Marine and Coastal Access Act 2009.

King Scallop FMP Objectives

Management of king scallop fisheries in English and Welsh waters aims to achieve environmental, social and economic sustainability, benefitting coastal communities and wider society. A key priority of the FMP is to ensure that king scallop stocks in English and Welsh waters are being fished sustainably, to ensure they reach and maintain MSY or an alternative measure which reflects the health of the stock. Table 1 sets out the King Scallop FMP objectives.

Table 1. The King Scallop FMP objectives.

Objective number	FMP Objective	Rationale	Actions
1	Develop a science evidence base to inform the development of harvest strategies and harvest control rules for individual scallop stocks	Provision of better data allows for improved fisheries management as scientists, regulators, management community and industry have access to the information they need to make evidence-based decisions. Better data moves us away from precautionary management. This will support the sustainability objective outlined in the Fisheries Act 2020.	Support long-term time series of data suitable for sustainable fishery management, developed in partnership with, and trusted by, stakeholders. Explore potential funding packages to support ongoing stock assessments, through a combination of industry (through an industry science levy), government and other funding streams. Identify key information gaps and evidence requirements for example, larval settlement areas and larval connectivity to other stock areas. Develop and agree an Evidence Research Plan (ERP) to fill current gaps in evidence base. Encourage and support review of UK stock boundaries based on biological evidence. Encourage further investment in development of evidence bases required to take appropriate management decisions.

Objective number	FMP Objective	Rationale	Actions
			Encourage and support establishment of biological and fishing mortality reference points for UK scallop stocks where this is not already established. Seek more evidence of the wider impact the king scallop fishery has on the wider marine environment, including the benthic habitats to work towards mitigating the risk to seafloor integrity and achieving good environmental status (GES).

2	Develop Harvest Strategies and Harvest Control Rules (HCRs) to ensure fishing effort is responsive to status of stocks by developing appropriate fisheries management measures.	Aligning fishing effort with stock status is fundamental to sustainable fisheries management by ensuring that pressure on a stock does not exceed the ability of the stock to regenerate.	Develop fisheries management measures responsive to signals and trends in stock levels (stock-based management).
			
			Consider one or more of the following:
			
			• a management framework based on:
			  ○ input controls
			  ○ output controls
			• management measures to complement the framework:
			  ○ area-based closures for example, to protect spawning stocks and or seabed during settlement phase.
			  ○ where there are benefits (environmental, social or economic) to doing so, broad alignment of measures should be considered, applying across management borders where appropriate.
			
			Development of limit and target reference points by stock is seen as a key need to deliver sustainable fisheries management.

Objective number	FMP Objective	Rationale	Actions
3	Avoid the risk of overfishing while establishing the necessary conditions to allow effective management measures (Harvest Control Rules) to be developed and introduced.	Assess fishing effort (including latent capacity) on stock sustainability and if necessary, recommend appropriate measures to manage effort.	Assess the likely impact of fishing effort (including latent capacity) on fishing pressure and stock sustainability and consider measures to manage the risk of increased fishing pressure on stock sustainability. Consider one or more of the following: • introduce appropriate regulation of the under 15m vessels scallop sector. • currently no regulatory barrier to growth for the under 10m vessels sector and limited regulatory barrier to growth for the under 15m sector (despite largest expansion seen to date in the 10m to 15m sector). There is the potential for unexpected growth from the under 15m sector to undermine future management decisions. • consider whether a 'freeze' on latent king scallop permits for over 10m vessels is required and the appropriate method and criteria that could be applied – including an established approach for releasing 'frozen' entitlements if scientific evidence supports this. • develop specific caveats to ensure that genuine new entrants are not prevented from entering the fishery. • encourage all UK administrations to periodically review latent capacity across the UK fleet.
4	To seek opportunities for the broad alignment of measures (where	Reduce financial burdens on the industry as well as reducing further displacement of effort which impacts	Define clear roles and responsibilities for delivering all nations FMPs to ensure coordinated approach around the UK where appropriate.

Objective number	FMP Objective	Rationale	Actions
	appropriate) such as gear requirements, to safeguard stocks and avoid unnecessary differences in measures applying across administrative management borders.	remaining accessible king scallop stocks.	Assess the benefits (environmental, social or economic) of broadly aligning management approaches. Promote effective engagement with all fisheries policy authorities through respective management groups. Review of existing measures to take place across all areas. Spatial planning process developed to take account of accessible king scallop stocks.
5	Assess the interactions with the marine environment and potential impacts associated with king scallop fisheries and develop an action plan setting out appropriate measures to reduce damaging impacts.	Improved understanding of the wider environmental interactions of king scallop fishing activities, in particular: • the footprint of the fishery allows for more sustainable management • supporting the achievement of GES • adoption of best practice • improved industry reputation	Improve understanding of the impact that king scallop vessels have on the marine environment (including seabed, food webs, other commercial species, Blue Carbon, CO2 emissions, marine litter) through collaborate studies. Identify barriers and workable solutions to reduce the environmental footprint of the king scallop sector whilst also considering economic sustainability. 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 MPAs and ecosystem management for all sectors (acknowledging potential confidentiality issues).

Objective number	FMP Objective	Rationale	Actions
6	Explore ways to address gear and other inefficiencies that currently exist within king scallop fisheries, in order to reduce environmental impacts.	Current technical specifications for scalloping gears are specified in national and local regulations. This inflexibility has been sighted as a key barrier preventing industry and the research community from exploring ways of reducing environmental impacts and CO2 emissions in their commercial fishing operations and research studies.	Review current technical measures and overarching policies (for example, licensing) which impact the king scallop industry. Identify key constraints in current rules that impede innovation for environmental improvements within the UK king scallop industry. Explore changes which support innovation which leads to more environmentally sustainable practises, reducing environmental impacts on the seabed, fishing times, fishery footprint and CO2 emissions while also considering the economic viability of the king scallop sector. Facilitate the development of alternative scallop gears to reduce environmental impacts on the marine environment including supporting the use of dispensations for academic studies to build evidence on their effectiveness. Consider hand in hand with suitable controls, to prevent over exploitation of stocks with more efficient gear operating within a sustainable and well managed harvest strategy.
7	Explore the impacts of changes in marine spatial use, including the potential impact of nomadic larger scallop vessels, on the UK king scallop fisheries from an environmental,	Increased displacement of king scallop effort, as a result of: • the highly nomadic nature of the larger scallop vessels • loss of fishing grounds due to renewables	The following are potential actions to be further explored by authorities working with SICG, other management groups and wider stakeholders. Undertake a desk-based review of current and proposed future marine space use.

Objective number	FMP Objective	Rationale	Actions
	economic and social perspective.	• fisheries regulations, MPA and where applicable, HPMA management measures • gear conflict • TCA tonnages, negatively impacts remaining accessible stocks Maintaining constructive engagement and communications between UK king scallop sector and other potential marine users ensures the overall impacts (economic, environment and social) of displaced king scallop fishing is limited.	Ensure outputs of the king 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 king scallop sector when developing management measures within MPAs or HPMAs, offshore renewables. Identify and address evidence gaps to ensure the king 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 king 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). Address changes in marine spatial use by using available information on current patterns of king scallop fishing activity, identify and pilot ‘king scallop fishing areas’, legislative drivers of competition for marine space, and opportunities for minimising spatial conflict with other fishing sectors and environmental designations. To avoid gear conflict with other fishing sectors:

Objective number	FMP Objective	Rationale	Actions
			• establish and maintain good communication with static gear sector. • develop good practise code for avoiding gear conflict. • maintain up-to-date register of permanent, seasonal and temporary restricted gear zones. • consider developing zonal management to allow both scallop dredge and static gear sectors to work the same grounds at different times of year, if deemed necessary.
8	Develop climate change mitigation and adaptation measures for UK king scallop fisheries.	Compliance with the climate change objective in the Fisheries Act.	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. Use and develop carbon hot spot and climate 'refugia' maps to identify and reduce potential overlap with king scallop fishing footprint. Develop understanding of the likely impacts of climate change on king scallop status (plus ecosystem links) and fisheries to inform adaptive management and long-term sustainability for the environment and industry.

King Scallop FMP Measures

Table 2. King Scallop FMP Measures

Measure	Estimated timeline	Desired outcome	Action stages
Management framework: scientifically based output or input controls	Short to medium term	The desired outcomes are 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) • inform consultations on proposals for the implementation of new king scallop fisheries management measures.	There are 3 main stages that have been identified, along with additional ongoing and implementation actions. Stage 1 actions: • identify and collate existing information on output and input control measures applied to other fisheries (including king scallop fisheries) and associated environmental, social and economic benefits or issues. Significant work has been collated on this already and this will be expanded on. Stage 2 actions: • develop a potential approach to how output or input controls could be applied to king scallop fisheries – including options for the method by which limits may be set, allocation method and criteria for fishing opportunities, 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

Measure	Estimated timeline	Desired outcome	Action stages
			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 powers. Ongoing actions: • seek wider stakeholder views on approach to inform development and assess benefits and impacts. Implementation actions: • to be informed by 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	Estimated timeline	Desired outcome	Action stages
Measure: consideration of broad alignment of measures where there are environmental, social or economic benefits of doing so.	Short to medium term	The desired outcomes are to: • consider current and new measures 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 set out later in this section which will enable this work to progress	There are 3 main stages that have been identified. Stage 1 actions: • collate information on existing measures relating to dredge specifications and limits, and how they vary across the UK • identify where measures differ across areas and explore opportunities for broad alignment • assess where there may be social, economic and environmental impacts of broadly aligning 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:

Measure	Estimated timeline	Desired outcome	Action stages
			• continuing to develop and maintain a log of all existing management measures applied to king scallops in English and Welsh waters, as a source of up-to-date information • ongoing consideration of where there are benefits to broadly aligning new management approaches or if measures should be regional specific • ongoing consideration of the potential for existing management measures to be strengthened in parallel to the development of new measures The timeline for these measures is: 1. complete existing measures log – short term, 6 months 2. report of review of existing measures to be developed in the short term 3. other actions will be ongoing
Management framework: assess and mitigate the effects of king scallop fishing on seafloor integrity	Short to medium term	The desired outcomes are: • the FMP will influence the formation of a Benthic Impact Working Group, in which evidence will be used to develop further recommendations on how to manage the potential effects of	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

Measure	Estimated timeline	Desired outcome	Action stages
		fishing activities (alongside other activities) on seafloor integrity and the state of benthic habitats • an improved understanding of the wider environmental interactions of king scallop fishing activities, in particular the environmental and carbon footprint of the fishery • to develop and implement an action plan for reducing damaging impacts	achievement of the FMP and wider objectives relating to king scallop fishing impacts, • map current fished areas alongside areas where king 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 king 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 king scallops, the evidence required to assess the environmental impacts of the different methods, and opportunities for innovations in catching methods, We will use the Benthic Impact Working Group as a route to support and drive further stages and actions. We will work with the Benthic Impact Working Group to ensure there are tangible mechanisms for delivering identified actions exists

Measure	Estimated timeline	Desired outcome	Action stages
			and a comprehensive action plan is developed and implemented in due course.
Measure: area-based closures and management	Short to medium term	The desired outcomes are to: • provide a sound evidence base for the use of closures as a measure to protect stocks and principles or criteria around when and where this measure may be appropriate • create a guidance document summarising the analysis and criteria to be applied when considering or implementing seasonal and area closures	Stage 1 actions: • identify and collate information on existing seasonal closures applied to fisheries (including king scallop fisheries), their intended aims for example, to protect spawning stocks and associated benefits or issues • develop a set of principles to underpin the use of closures as a stock protection measure, including the purpose and aims of closures, when and where closures may be effective, criteria for determining the length and timing of closures to achieve its aims (a closure strategy) Stage 2 actions: • identify relevant data required, including appropriate time series of data, to underpin and inform the scope and effectiveness of closures and their impact on other fisheries and areas, and understand if this is being collected already or if new methods for data collection are required

Measure	Estimated timeline	Desired outcome	Action stages
			• identify and prioritise potential stock areas for which new closures could be applied, and the likely scope, duration and benefits (including interaction with other existing or proposed closures) Stage 3 actions: • assess the environmental, social and economic impacts of applying closures in various areas, for example, inshore or offshore • estimate how measures will contribute to achieving stock sustainability and overarching FMP goals, and likely timeframes • assess possible displacement effects of area-based management measures • scope potential implementation options and timing, for example, legislation, use of existing powers Ongoing actions: • seek wider stakeholder views to inform the development of an approach • assess possible primary and secondary displacement effects of area-based management measures Implementation actions:

Measure	Estimated timeline	Desired outcome	Action stages
			• continuation of existing seasonal closures which will be reviewed to ensure measures are fit for purpose and opportunities for strengthening identified, based on above analysis and stakeholder input • creating a guidance document (closure strategy) to be produced in the short term • where necessary, area-based closures will be introduced over the short to medium term
Management framework: partnership working	Throughout the life of the plan	The desired outcomes are: • a collaborative approach with key stakeholders to support the development and implementation of this plan and, where appropriate, support progress towards co-management • the SICG (and appropriate management groups in Wales) will continue to act as a forum through which industry, regulators, and the research community can engage and work collaboratively on scallop fisheries management • consider the current membership of the relevant scallop management groups for the implementation of	There are 3 main stages that have been identified, along with other additional sets of actions. Stage 1 actions: • carry out an analysis regarding the interpretation and application of the term ‘co-management’, including how it can be practically applied (to be actioned in the short term) • identify and collate existing information on global co-managed fisheries (including king scallop fisheries) and associated benefits and issues – work has been collated on this already and will be expanded on • review the structure and operation of the SICGWG and relevant scallop management groups to ensure they are well-placed to

Measure	Estimated timeline	Desired outcome	Action stages
		the plan, and how the groups will work together to prioritise and develop measures and subsequent iterations of the plan. Membership of the groups will be reviewed and updated where required, to ensure they are inclusive and representative of all sectors and interest groups, and consider how future engagement will work to generate a broader stakeholder view • make progress on key actions to review the structure of the SICGWG and relevant king scallop management groups in Wales, and carry out an analysis of the term co-management in the short term to identify an agreed definition across the management groups	contribute to the co-management of king scallop fisheries • review the structure of the SICGWG to ensure there is effective representation from the king scallop supply chain, businesses of any size, fisheries authorities and other interested stakeholders where appropriate, to create a focal point of engagement on king scallop fisheries and their management (to be reviewed in the short to medium term) • consider representation on or wider engagement with the relevant scallop management groups from those who expressed a desire to be more closely involved in future FMP development and implementation through the consultation process (to be considered in the short to medium term) • consider how the different stakeholder groups will be integrated and coordinated to deliver FMP actions develop and implement a comprehensive communication plan, including timings, to ensure all membership groups and interested wider stakeholders are aware of the FMP, its priorities and progress against these priorities

Measure	Estimated timeline	Desired outcome	Action stages
			• explore opportunities for enabling greater transparency around the work of the SICGWG and relevant scallop management groups, including developing and publishing terms of reference and sharing information from group discussion outcomes more widely, so their remit is clearly understood Stage 2 actions: • boost management 'literacy' within scallop sector, which will lead to more informed, productive discussions as co-management process evolves • facilitate targeted fisheries learning exchanges, bringing together representatives from different fisheries to share knowledge and expertise in fisheries co-management • share best practice with already established co-management groups for other fisheries to generate ideas for the implementation of an English and Welsh approach for king scallops Stage 3 actions: • develop potential implementation options and timing, for example legislation, use of existing powers • identify the potential structure, function and governance of new co-management in relation

Measure	Estimated timeline	Desired outcome	Action stages
			to developing management measures and commissioning of future research Ongoing actions: • regularly seek wider stakeholder views and input to inform the development of an approach and incorporate views gathered through formal consultation • work with wider stakeholders to identify the most effective methods and timings to engage with them

2. Approach to Strategic Environmental Assessment

Screening

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

Defra and the Welsh Government consider that Regulation 3(2)(b) of the SEA Regulations 2004 applies to the King Scallop FMP as the plan relates to England and Wales.

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

Based on the outcome of the screening, Defra and the Welsh Government 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

Defra and the Welsh Government 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 King Scallop FMP was provided to the following Consultation Bodies;

- Historic England
- Natural England
- Environment Agency
- Natural Resources Wales
- Cadw (Welsh Historic Monuments)
- Joint Nature Conservation Committee (JNCC)

Section(s) of this Report	Corresponding Paragraph in Schedule 2
Sections: 1 and 4	Paragraph 1: An outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes.
Sections: 3 and 7	Paragraph 2: The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.
Section: 3	Paragraph 3: The environmental characteristics of areas likely to be significantly affected.
Section: 3	Paragraph 4: Any existing environmental problems which are relevant to the plan or programme including, in particular, 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(s) of this Report	Corresponding Paragraph in Schedule 2
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.
Section: 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.

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

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

Table 3. Section(s) of this report and the corresponding paragraph of Schedule 2 of the SEA Regulations 2004.

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 and the Welsh Government 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 / seascape
- Including the following sub-sections: interactions between fishing gear and seabed formations, benthic habitats

Defra and the Welsh Government 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 King 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 King Scallop FMP. Table 4 provides the justification behind this decision.

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 / 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.

Table 4 shows the results of the scoping exercise on the King Scallop FMP.

Table 4. Results of the scoping exercise to determine those environmental issues likely to be significantly affected by the King Scallop FMP and thus scoped into the SEA. Where relevant, the relationship between the issue and the UK MS descriptor of GES is shown as 'D#' where # represents the number of the descriptor, as shown in Appendix A.

Issue	Potential to cause impacts	Justification
Biodiversity, fauna and flora (UK MS descriptors D1, D3, D4, D6)	Yes	Fishing activity for king scallops has the potential to result in the extraction of, or mortality/injury to/disturbance to, both target and non-target wild species and cause physical disturbance of benthic habitats. These issues are within the scope of this SEA.
Population (Human)	No	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	No	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.
Geology and sediments (soil) (UK MS descriptor D6)	Yes	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)	Yes	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.
Air	No	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.

Issue	Potential to cause impacts	Justification
Climatic factors	Yes	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.
Material assets	No	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.
Cultural heritage	Yes	Fishing activity for king 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 Seascape	Yes	Scallop fishing through physical disturbance of the seabed has the potential to affect seascape features. This issue is within 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 objectives of the King Scallop FMP and the measures (section 1) it sets out to achieve these objectives. It is the King Scallop FMP, as a plan of management that has been assessed, rather than any scallop fishing activity.

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 King 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 Table 4.

As the FMP is a strategic programme of work, the SEA will consider the potential positive and negative environmental effects of management options in the context of the UK MS descriptors.

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 completed Revised Approach to fisheries management programme (inside six nautical miles).
- The Marine Management Organisation's (MMO) ongoing Fishery Assessment programme (outside six nautical miles) in England.
- The annual Habitats Regulation Assessment (HRA) under Regulation 63 of the Conservation of Habitats and Species Regulations (CHSR) assessing for scallop fishing in Wales.

Future delivery of the goals and objectives 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.

Nevertheless, this ER acknowledges the likely significant effects associated with fishing activity being managed through the King 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 King Scallop FMP, advice from Statutory Nature Conservation Bodies (SNCBs) (Natural England, JNCC, NRW) 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 King 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 King Scallop FMP sets out objectives to develop the evidence base around the king scallop fishery. Our assessment used the best available evidence at the present time to reach a judgement on the environmental effects of the King 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 (Table 4). 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 Strategy Part 1, published in 2019. The impact of fishing has been considered as part of the assessment on the UK MS descriptors, therefore information on the impact of fishing activity on the marine environment has been included in the sections below as part of the baseline. For further information on the baseline related to UK MS descriptors see Appendix B.

D1 and D4 – Cetaceans

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

The current status of cetaceans for both the North Sea and Celtic Sea is mixed. While there are some aspects that are in line with the achievement of GES, much of the picture

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.

is unclear. The impact of various net fisheries is leading to bycatch that, in places, might be impacting long term population viability of harbour porpoise.

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

D1 and D4 – Seals

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

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

D1 and D4 – Birds

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

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

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

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

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

D1 & D6 – Benthic Habitats

Benthic habitats are an important ecosystem component that contributes to overall levels of biodiversity (D1). It is also important to ensure the structure and function of 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. However, achieving GES for underwater noise will require better understanding and monitoring of the issue, as well as the development and implementation of strategies to manage noise pollution from various sources.

Climatic Factors

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

Vessel Emissions

For 2019, estimated emissions by the UK fishing fleet (802 kt CO_2e) would have represented 0.18% of the UK's total territorial emissions (455 Mt CO_2e)[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).

Between 2016 to 2021, more than 95% of king scallop fisheries across England and Wales used dredges to catch king scallops. Currently, scallop fisheries specific vessel emissions are not known for England and Wales. However, recent analysis has shown that the total UK scallop dredge fishing fleet segment (which comprises of 209 vessels) produced 10.2% (85kt CO_2e) of the total carbon emissions at sea each year across the UK's fishing fleet[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, are able to capture and store carbon and therefore these are known as blue carbon habitats. Currently there is no comprehensive assessment of the impact of 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,

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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.

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 king 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 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].

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.

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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. doi: 10.14465/2020.arc12.ith

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). DOI: 10.1371/journal.pone.0203536

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]:

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

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 or Welsh waters. Conserving moorlog, as potential blue carbon habitats might contribute to climate change mitigation and adaptation.

Existing Environmental Effects of King 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 King 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 King Scallop FMP are likely to give rise to both significant positive and negative environmental effects. This assessment does not consider all the risks and impacts of fishing activity per se. Such assessments have already been conducted as part of the UK's obligations under legislation relating to a) Marine Protected Areas (MPAs), which includes Defra's Revised Approach to fisheries management programme (inside six nautical miles) and the MMO's ongoing Fishery Assessment programme (outside six nautical miles) in England; the Assessing of Welsh Fishing Activities Project and b) the wider marine environment (UK MS). It is the policies, measures and actions of the King Scallop FMP, as a plan of management that has been assessed, rather than the fishing activities themselves.

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

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 and Welsh Government by our SNCBs gives more detail on the pressures[20] scallop fishing could have on the marine environment in relation to MPAs.

The main environmental pressures on MPA features are associated with scallop dredge fishing activity. These include the removal of target and non-target species, abrasion/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 (water clarity).

In England the assessments of the impact of scallop fishing activities inside MPAs are undertaken by the Inshore Fisheries Conservation Associations (IFCAs) within six nautical miles and the MMO outside six nautical miles. Figure 1 shows the distribution of English MPAs relevant to the King Scallop FMP. Stakeholders have worked closely with regulators to help develop measures to mitigate impacts within inshore and offshore MPAs. Appropriate management is 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.

20A pressure is the mechanism through which an activity has an effect on any part of the ecosystem. The nature of the pressure is determined by activity type, intensity and duration. For more information, see MarLIN - The Marine Life Information Network - Marine Evidence based Sensitivity Assessment (MarESA)

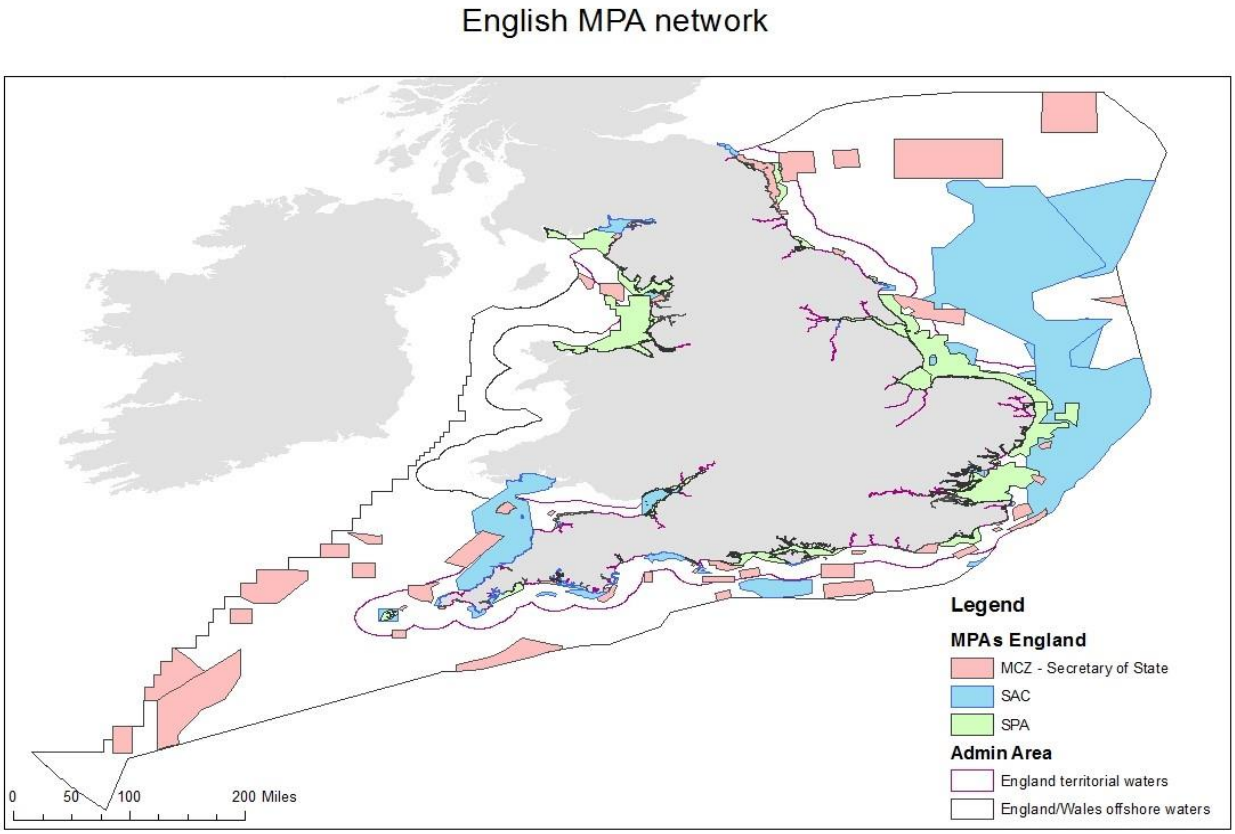

Figure 1. England's MPA network

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.

In Wales the assessments of the impact of scallop fishing activities inside MPAs within six nautical miles and outside six nautical miles are undertaken by the Welsh Government. Figure 2 shows the distribution of MPAs relevant to the King Scallop FMP. In Wales, the king scallop fishery is subject to an annual HRA under Regulation 63 of the CHSR 2017 before the issuing of permits under the former North Western and North Wales Sea Fisheries Committee (NWNWSFC) Byelaw 12 by Welsh Government. The HRA includes all the relevant fisheries management measures within the Scallop Fishing (Wales) (No.2) Order 2010. The HRA considers the potential impacts from the king scallop fishery on the features of Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites both within and outside sites. The assessment and management measures only relate to the Welsh inshore area (inside 12 nautical miles). Due to ongoing Welsh scallop management and the annual Welsh Government HRA, Natural Resources Wales (NRW) consider no further FMP risk assessment is required inside 12 nautical miles for the purposes of the scallop FMP.

There is currently no formal consideration of the impacts from scallop fishing on features within or outside sites in the Welsh offshore area (outside 12 nautical miles) such as Croker Carbonate Slabs SAC or mobile features of SACs or SPAs. While English and Welsh legislation controls the effort and seasonality of scallop dredge fishing in the

offshore Irish Sea area there is a pathway for offshore scallop dredging to impact habitat features of offshore sites and protected mobile species features wherever they are.

Welsh Government have requested NRW complete 13 medium risk benthic habitat and king scallop dredge fishing assessments within the 23/24 AWFA work plan.

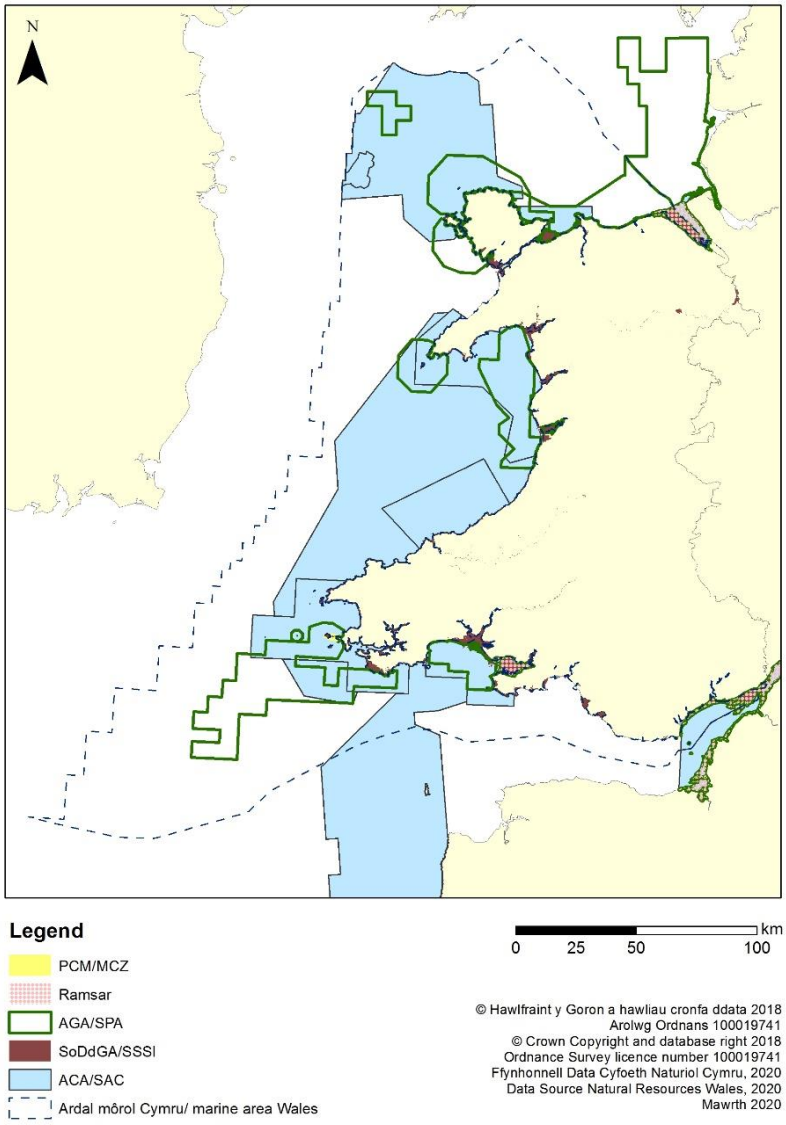

Figure 2. Wales's MPA network

Figure 2 description: a map showing the location of marine protected areas within Welsh waters. The map includes marine conservation zones, special areas of conservation, special protection areas, Ramsar sites, and Sites of Special Scientific Interest (SSSIs).

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, noise) or when the feature of an MPA is mobile and travels outside the site.

Advice provided to Defra and the Welsh Government by the SNCBs on outside MPA boundary impacts of scallop fishing activities concluded that the king scallop fishery does

not pose a significant risk of bycatch of mobile species that are designated features of MPAs, or important prey species that they depend on. However, gaps in available evidence mean there is a degree of uncertainty on the number and exact extent of fish species bycaught across the fishery as a whole. Increasing our understanding of fish species bycatch would allow more robust conclusions to be drawn. One further risk was identified which relates to the potential for scallop dredge fishing to disturb sensitive rafting species such as common scoter or red-throated diver, should fishing occur within SPAs designated for those species. The only site which extends into the offshore area that contains these species features is Liverpool Bay SPA.

Environmental effects associated with UK MS Descriptors

Advice provided to Defra and the Welsh Government by SNCBs gives more detail on how the key issues[21] identified by The updated UK Marine Strategy Part 1, apply to scallop fishing and their likely impact on achieving Good Environmental Status (GES) (Appendix A).

The following potential issues and their associated risk level[22] 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 D4 food webs. This is considered a high-risk issue as there is a clear link between activity and failure to meet GES indicator targets[23].
- **The impact of bycatch of species on D1 biodiversity and its relation to D4 food webs:** Bycatch in the king scallop fishery 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, incidental catches of sensitive species, particularly fish species, should still be minimised and, where possible, eliminated to meet part b) of the ecosystem objective. Better evidence of bycatch incidents would be beneficial for understanding the scale of this issue and would improve our ability to assess risk.

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

22 Draft 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, 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.

23 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.

- **The contribution to fishing related litter (D10):** Due to the nature of the gear used, which is largely metal, scallop dredging is unlikely to be a major contributor compared to other fisheries and is considered a low risk. 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.

Developing and implementing measures to achieve sustainable harvesting of king 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.

Environmental effects associated with the wider marine environment

Additional environmental considerations related to Welsh waters have been provided by NRW.

- The potential effect of scallop fishing on the Favourable Conservation Status of Annex 1 habitats outside of sites at a national level should also be considered in relation to Regulation 9 of CHSR 2017.
- Sites of Special Scientific Interest (SSSIs) are intertidal and should not be affected by scallop dredging activity as the Scallop Fishing (Wales) Order 2010 prohibits all scallop dredging within one 1nm of the coast.
- The Water Environment (Water Framework Directive) (England & Wales) Regulations 2017 waterbodies should not be affected by scallop dredging as they only extend to 1nm from the coast.
- Skomer is the only Marine Conservation Zone (MCZ) in Wales. Scallop dredging is currently prohibited from the Skomer MCZ through former South Wales Sea Fisheries Committee (SWSFC) Byelaws 29 and 28 and by the Scallop Fishing (Wales) Order 2010.
- Welsh Government have recently announced an MCZ pre-consultation engagement process to select and designate new MCZs in Wales. At some point new MCZ sites for example, for burrowing megafauna or seapens may become protected and require assessment and management from potentially damaging activities such as scallop dredging.

Climatic Factors

Vessels fishing for king 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 king 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 (aka Eastbourne Wreck, LEN 1464317) and the Rooswijk (LEN 1000085).

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

Landscape and Seascape

Fishing activity above the surface is considered a feature of the marine seascape, therefore the presence of 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[24].

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

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

4. Relevant Plans, Programmes and Environmental Protection Objectives

The King Scallop FMP has broad application since it covers an activity that occurs across English and Welsh 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 King Scallop FMP applies to English and Welsh 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 and Welsh Government consider relevant to the implementation of the King Scallop FMP. The King 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.

International

The King 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 King 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. SACs and 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 King 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 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 (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 Highly Protected Marine Areas (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

The Conservation of Habitats and Species Regulations 2017 include provisions for: protecting sites that are internationally important for threatened habitats and species

(European marine sites) and provide a legal framework for species requiring protection (European protected species). The King 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 King 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 Good Environmental Status (GES) in UK waters. The UK Marine Strategy (UK MS) is a key pillar of marine policy in the UK. There is a clear link between the UK MS and the 'ecosystem objective' of the Fisheries Act 2020 – sections 1(4) and 1(10).

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 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 King 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 and Wales 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 King 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) for England. The EIP published in 2023 builds on the 25 Year Environment Plan by setting out how the government in England will work with landowners, communities and businesses to deliver goals for improving the environment. FMP policy supports the EIP by enabling the development of fisheries management tools that will contribute to securing clean, healthy, productive and biologically diverse oceans and seas. Through implementing a sustainable domestic fisheries policy, the King 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 King Scallop FMP will comply with the biodiversity duty.

The Environmental Targets (Biodiversity) (England) Regulations 2023

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

The Environmental Targets (Marine Protected Areas) Regulations 2022 – England

These Regulations 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 King 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 King 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 King 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 and Wales

The Water Environment (Water Framework Directive) (England & Wales) Regulations 2017 (referred to as the WFD Regulations) provide a framework for assessing and managing the water environment, which includes estuaries and coastal waters in England. The King 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[25]. The 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 King Scallop FMP will support the UK Channel King Scallop FIP and the UK North Sea, West of Scotland and Irish Sea King Scallop FIP.

King scallop Multi-Year Strategies being developed with the EU through the Specialised Committee on Fisheries

The UK and EU have committed to exploring the development of Multi-Year Strategies (MYSts) for shared non-quota stocks, including King Scallops. The MYSt will consider existing measures in English and EU waters, and the FMP process will feed into the development of MYSts.

[25] 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)

Well-being of Future Generations (Wales) Act 2015

All activities undertaken as part of the development of the King Scallop FMP have been in line with the Well-being of Future Generations (Wales) Act 2015. Under the Act, Welsh Ministers, as a public body, must carry out sustainable development. Sustainable development means the process of improving the economic, social, environmental and cultural well-being of Wales by taking action, in accordance with the sustainable development principle, aimed at achieving the well-being goals.

Section 5 defines the sustainable development principle as acting in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs considering the five ways of working. Section 4 of the Act describes the 7 well-being goals which public bodies must work towards.

Environment (Wales) Act 2016

This Act sets out the principles of the 'sustainable management of natural resources' in Wales. The King Scallop FMP supports the policies set out in the Act to manage natural resources sustainably, considering the effect of the King Scallop FMP on ecosystem services and ecosystem resilience.

All activities undertaken as part of the development of the King Scallop FMP were intended to be in line with the Environment (Wales) Act 2016.

Section 6 of the Environment (Wales) Act 2016 requires that public authorities must seek to maintain and enhance biodiversity [of the Section 7 habitats and species] so far as consistent with the proper exercise of their functions and in so doing promote the resilience of ecosystems. The King Scallop FMP seeks to support the requirements of the Act.

Welsh National Marine plan 2019

Welsh National Marine plan 2019 provides a statutory policy framework to help guide the development of the Welsh Marine area includes cross-cutting socio-economic environmental policies under specific areas of the Marine and Coastal Access Act.

Assessing Welsh Fishing Activities (AWFA)-Evaluation of fishing activity interactions with features of Welsh Marine Protected Areas (MPAs).

Welsh Government are working in partnership with NRW, its statutory nature conservation advisor, to undertake a structured evaluation of fishing activity interactions with features of Welsh Marine Protected Areas (MPAs).

Other FMPs

There are no other FMPs published at the present time so we are unable to make any formal assessment of how the King Scallop FMP will interact with other plans. Defra, the Welsh Government and our delivery partners considered the interaction between the

current tranche of plans whilst drafting the FMP. We will review interactions again as the final versions are prepared and adjust the FMP as appropriate. The interaction between FMPs will be considered when monitoring the effectiveness of plans. Any necessary adaptations would be built into the plan's ongoing implementation and adjusted in future revisions of the FMP.

Other Localised Plans

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

The King 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 King Scallop FMP in relation to the environmental issues screened into this SEA, and where applicable their associated UK MS descriptors (Table 4).

Overview of the Potential Positive and Negative Environmental Effects of the Objectives and Measures of the King Scallop FMP

The potential positive and negative environmental effects of implementing the objectives and management measures (section 1) of the King Scallop FMP have been identified in Tables 5 and 6 below.

Table 5. High-level assessment of the positive and negative environmental effects of the King Scallop-specific Objectives

#	Objective	Positive Effects	Negative Effects
1	Develop a science evidence base to inform the development of harvest strategies and harvest control rules for individual scallop stocks.	This objective will develop evidence to inform the development of a UK wide harvest strategy and harvest control rules for individual UK scallop stocks. The provision of better data will contribute to the sustainable management of king scallop fisheries; 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 objective may contribute to king scallop stocks being sustainably harvested. Relevant SEA Issues; • Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) • Water (UK MS descriptors D10, D11)	Any dedicated field surveys (for monitoring and data collection) could result in unwanted effects on the marine environment if environmental impacts are not considered during the development of the data collection programme. Relevant SEA Issues; • Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) • Seascapes

#	Objective	Positive Effects	Negative Effects
		• Climatic factors • Cultural Heritage • Seascapes	
2	Develop Harvest Strategies and Harvest Control Rules (HCRs) to ensure fishing effort is responsive to status of stocks by developing appropriate fisheries management measures.	Aligning fishing effort with stock status will contribute to the sustainable management of king scallop fisheries by ensuring that fishing pressure does not exceed the ability of the stock to regenerate. HCRs such as input and output controls could improve recruitment and provide greater resilience in the stock. HCRs that consider natural fluctuations in recruitment could provide greater resilience in the stock. The policies and actions arising from this objective should contribute to king scallop stocks being sustainably harvested. Relevant SEA Issues; • Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) • Seascapes	Stock assessments could indicate a higher level of fishing is sustainable for stocks which could lead to increased impacts on the environment. This objective 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. 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) • Water (UK MS descriptors D10, D11) • Climatic factors • Seascapes

#	Objective	Positive Effects	Negative Effects
3	Avoid the risk of overfishing while establishing the necessary conditions to allow effective management measures (Harvest Control Rules) to be developed and introduced.	This objective will develop measures to avoid the risk of overfishing through controlling the potential impacts of latent capacity. These measures will seek to manage the risk of increased fishing pressure on stock sustainability. The policies and actions arising from this objective may contribute to king scallop stocks being sustainably harvested and reduce the risk of overexploitation. Relevant SEA Issues; • Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6)	This objective could restrict fishing, which 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) • Water (UK MS descriptors D10, D11) • Climatic factors

#	Objective	Positive Effects	Negative Effects
4	To seek opportunities for the broad alignment of measures (where appropriate) such as gear requirements, to safeguard stocks and avoid unnecessary differences in measures applying across administrative management borders.	Broad alignment of management regimes/ technical measures across UK Fisheries Administrations reduces financial burdens on the industry and may reduce displacement of effort which impacts remaining accessible scallop stocks. The policies and actions arising from this objective may contribute to king scallop stocks being sustainably harvested. Relevant SEA Issues; • Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) • Climatic factors • Seascapes	This objective could result in changes in management across the UK, that could be beneficial for one area but detrimental to another. This could also lead to a reduction in management standards across all jurisdictions if not managed correctly. Not considering local or regional differences in ecological or environmental factors could result in negative effects on the marine environment. Relevant SEA Issues; • Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) • Climatic factors • Seascapes

#	Objective	Positive Effects	Negative Effects
5	Assess the interactions with the marine environment and potential impacts associated with king scallop fisheries and develop an action plan setting out appropriate measures to reduce damaging impacts.	This objective will assess the interactions with the marine environment and potential impacts associated with scallop fisheries and develop an action plan to reduce damaging impacts. Actions under this objective will improve understanding of the wider environmental interactions of 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) • Water (UK MS descriptors D10, D11) • Climatic factors	This objective 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) • Water (UK MS descriptors D10, D11) • Climatic factors

#	Objective	Positive Effects	Negative Effects
6	Explore ways to address gear and other inefficiencies that currently exist within king scallop fisheries, in order to reduce environmental impacts.	This objective will explore ways to address gear and other inefficiencies that currently exist within king scallop fisheries to reduce environmental impacts. The policies and actions arising from this objective may contribute to king scallop stocks being sustainably harvested, protect the marine environment and reduce the wider environmental impacts of the fishery. Relevant SEA Issues; • Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) • Water (UK MS descriptors D10, D11) • Climatic factors • Cultural Heritage • Seascapes	Making gear more efficient could result in more target species being caught. Removal of more target species without appropriate output controls in place, could impact stocks, which could in turn have a detrimental effect on marine ecosystem function and biodiversity. Also, if existing gear regulations were lifted to allow for innovation without robust reasoning and evidence, 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) • Seascapes

#	Objective	Positive Effects	Negative Effects
7	Explore the impacts of changes in marine spatial use, including the potential impact of nomadic larger scallop vessels, on the UK king scallop fisheries from an environmental, economic and social perspective.	This objective will explore the impacts of marine spatial squeeze, including the potential impact of nomadic larger UK scallop vessels. The policies and actions arising from this objective may contribute to king 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) • Water (UK MS descriptors D10, D11) • Climatic factors • Seascapes	This objective 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

#	Objective	Positive Effects	Negative Effects
8	Develop climate change mitigation and adaptation measures for UK king scallop fisheries.	This objective will develop climate change mitigation and adaptation measures for UK scallop fisheries. This will improve understanding of the contribution to climate change impacts the king scallop fishery has, helping to reduce the impact that king scallop vessels have on the marine environment. Relevant SEA Issues; • Climatic factors	No negative effects are anticipated. There this objective is considered to pose a low risk.

Table 6. High-level assessment of the positive and negative environmental effects of the possible King Scallop Fishery Management Measures

Measure	Positive Effects	Negative Effects
Scientifically based output or input controls	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 king 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/ 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)	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) • Water (UK MS descriptors D10, D11) • Climatic factors • Cultural Heritage • Seascapes

Measure	Positive Effects	Negative Effects
Consideration of broad alignment of measures where there are environmental, social or economic benefits of doing so.	This proposed measure sets out the process to align fisheries management measures, where appropriate, to avoid unnecessary differences in measures applying across management borders. Broad alignment of measures could contribute to achieving stock sustainability and may help king 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) • Climatic factors	This measure could result in changes in management across the UK, that could be beneficial for one area but detrimental to another. This could also lead to a reduction in management standards across all jurisdictions if not managed correctly. Not considering local or regional differences in ecological or environmental factors could result in negative effects on the marine environment. Relevant SEA Issues; • Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) • Water (UK MS descriptors D10, D11) • Climatic factors • Cultural Heritage • Seascapes

Measure	Positive Effects	Negative Effects
Assess and mitigate the effects of king scallop fishing on seafloor integrity.	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) • Water (UK MS descriptors D10, D11) • Climatic factors • Cultural Heritage • Seascapes	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. Also, if existing gear regulations were lifted to allow for innovation without robust reasoning and evidence, 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) • Water (UK MS descriptors D10, D11) • Climatic factors • Cultural Heritage • Seascapes

Measure	Positive Effects	Negative Effects
Area based closures and management.	This proposed measure sets out the process to develop area-based closures/management to manage the extraction of king scallop through the fishery. Through delivering this process and achieving the desired outcome such as producing a guidance document summarising the analysis of existing seasonal closures applied to English, Welsh and other fisheries and criteria to be applied when considering/ implementing seasonal closures; for inclusion in a formal government consultation, this will contribute to achieving the sustainable harvesting of king scallops and the overarching FMP goals on wider environmental sustainability. Area based closures can help reduce fishing pressure on spawning stocks and could improve reproductive success of king scallop populations. Protecting the spawning stock may help 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) • Climatic factors • Seascapes	Spatial closures could result in spatial changes in effort, including displacement of activity that could increase fishing pressure on habitats not currently fished or fished infrequently. 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 • Cultural Heritage • Seascapes

Measure	Positive Effects	Negative Effects
Partnership working	This proposed measure sets out the process to further develop the co-management process through the establishment of a co-management group to help prioritise and commission future research. Further developing the co-management process will not likely have direct environmental effects. However, the outcomes developed through the co-management approach such as, commissioning future research, have the potential to develop the evidence base, allowing evidence-based decisions to be made, which could improve the overall sustainability of the fishery. Relevant SEA Issues; • Biodiversity, fauna, flora (UK MS - D1, D3, D4, D6) • Water (UK MS descriptors D10, D11) • Climatic factors	No negative effects are anticipated. Therefore, this objective is considered to pose a low risk.

Overview of Potential Positive Environmental Effects of the FMP

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

The overarching aim of the King Scallop FMP is to effectively manage the harvesting of king 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 king scallop stocks across English and Welsh waters, with the long-term aim of fishing within sustainable limits (MSY or appropriate proxies) could:

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

The King 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 impacts.

The King 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 and Wales from king scallop fisheries.

The King 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 King 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 king scallop within sustainable limits in England and Wales (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 King 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.

The authors of the King Scallop FMP considered advice from SNCBs on the risks posed by fishing for king 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 King 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.

Climatic Factors

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

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

The King Scallop FMP acknowledges the climate change impacts on king scallop stocks and fisheries and signposts to existing national programmes to 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.

Cultural Heritage

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

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.

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.

Landscapes and Seascapes

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

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

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

Overview of Potential Negative Environmental Effects of the FMP

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

It is difficult at this stage to be certain whether the King Scallop FMP will result in any significant negative effects on the marine environment, as the proposed policies and fisheries management measures are at the beginning stages of their development. Therefore, we do not yet know the potential environmental effects of implementing the combination of policies and fisheries management measures set out in the King Scallop FMP. However, the fisheries objectives which will guide our actions should deliver improved environmental protection, so although it is difficult at this stage to anticipate 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 king scallop fishery to alter through publication of the King 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 objectives may lead to displacement of fishing activity to other locations or into fisheries. This change may result in negative environmental effects that fall outside the scope (geographic area or species) of this FMP. Where an FMP cannot solve an issue, it may be appropriate for other FMPs to consider this issue. Or, if areas beyond English waters are affected, it may be appropriate for this issue to be considered through wider UK or international fisheries management fora.

Section 5 has identified potential negative effects that could arise from the implementation of the FMP's policies, 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. Changes to fishing activity resulting from the implementation of the FMP objectives 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 King 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) and the Sustainable Management of Natural Resources (for Wales) 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.

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. From the analysis of the potential environmental effects (section 5) of the policies and measures set out in the King Scallop FMP, the potential negative effects are not considered significant enough at this stage to require the policies and measures to be amended. When considering other potential policies, we are not aware at this stage that any other regimes/activities are going to change that position. The 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.

Before there are any changes to fisheries management as a result of the King 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 King Scallop FMP focuses on achieving the sustainable harvesting of king scallop stocks and therefore will reduce the risks to the future status of king scallop stocks in the long-term giving positive benefits to the environment.

Nevertheless, we acknowledge that fishing for king 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 King Scallop FMP takes a precautionary approach to fisheries management and adopts a balanced and proportionate approach towards delivering the fisheries objectives.

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

The King 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 king scallop stocks but there is scope for future iterations of the FMP to address this wider issue.

The King 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 king 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 King 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 king scallop fishing include the impact on benthic habitats and seabed integrity, litter/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 scallop fishing (set out in the King Scallop FMP Annex 6 - Current management and enforcement) include: fishing activity/effort limits, scallop dredge technical measures, licenses to fish scallops, protection of juvenile/ spawning scallops through Minimum Conservation Reference Sizes (MCRS), and seasonal closures. These measures will be part of the overall management strategy and will make a contribution to the conservation of stocks and the wider environment.

Stock assessments are carried out for king scallop stocks to assess the harvestable biomass and exploitation rate experienced by harvestable scallops; however, these have only been in place since 2016. This means that king scallops are data limited. Further information and data are required to supplement the existing stock assessments to accurately estimate the available biomass that can be sustainably removed from the fishery. The King Scallop FMP combines a long-term vision to achieve maximum sustainable yield (MSY) with clear measures required to reach and maintain this goal. This plan brings together all existing management measures for king 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 scallop stock, which will benefit the wider marine environment.

The King 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. In Wales, these activities are mainly managed through statutory instruments.

IFCAs, the MMO and relevant advisors within Welsh Government were involved in the development of the FMP to ensure measures proposed through the FMP are compatible with existing MPA management.

Before DEFRA or Welsh Government implement any new management interventions proposed in the King 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, a 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 king 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 (Marine Protected Areas) Regulations 2022.

Impacts outside MPAs

The king scallop fishery does not pose a significant risk of bycatch of mobile species that are designated features of MPAs or important prey species that designated species depend on. Nevertheless, potential impacts will be considered via a bycatch monitoring plan to be set out in future iterations of the FMP. See UK MS Descriptors Impacts **–** bycatch section below for further details.

UK MS Descriptors Impacts

Litter: The King 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 scallop dredge litter, along with any required research to support mitigating any risks identified.
These proposed measures should help the King Scallop FMP support the achievement of GES for UKMS Descriptor 11 – Litter, thereby have a positive effect on the current baseline status.

Bycatch: Despite the anticipated low risk of bycatch of sensitive and/or non-target species associated with the king scallop fishery, the King Scallop FMP proposes to improve reporting of any bycatch via a monitoring and reporting plan to enable listed mobile species bycatch to be properly understood and effective management measures put in place. Details of the monitoring plan are as follows:

- Improve the understanding of bycatch of sensitive mobile species in scallop fisheries through existing data collection, monitoring, and R&D.
- The FMP will encourage participation amongst scallop fishers to:
    - Collect data on recording accidental bycatches along with the geographical location of these bycatches.
    - Accept observers on board to support independent surveys.
    - Discuss barriers and challenges with existing self-reporting processes.

Evidence generated on bycatch will be reviewed after two years, and detailed next steps will be set out in an updated FMP, after the next review. This will include the identification of hotspots/high risk areas, as well as an assessment of additional evidence requirements to support the uptake of effective management measures, and the evaluation steps required to measure their effectiveness.

The FMP could set out how the objectives of the FMP will contribute to achieving GES for the relevant UKMS descriptors.

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 Good Environmental Status. 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 King Scallop FMP seeks to make a significant contribution 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 (as set out in FMP objective 5) and consider these impacts within the wider context of spatial squeeze.

The FMP seeks to help drive the formation of a Benthic Impact Working Group and contribute significantly to a partnership approach to delivering a reduction in benthic impacts around England and Wales from king scallop fisheries.

These proposed measures should help the King 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 King Scallop FMP will set out a research plan to analyse the carbon dioxide emissions generated by the scallop fisheries in England and Wales. The outcome of this research will identify where efforts can be made to reduce carbon emissions on the fishing activity itself or through the supply chain. Where appropriate, the FMP identifies policies that reduce both carbon emissions and the impact of scallop fishing on seabed integrity.

Blue Carbon: The evidence around the risks and impacts of scallop dredging on blue carbon habitats within English and Welsh 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 2 years. An evidence plan will be set out in the next FMP to assess the scale of

impact generated by scallop dredging, along with any required research to support mitigating the risk identified.

Climate change impacts king scallop stocks and fisheries: The King Scallop FMP will collate relevant evidence generated from existing climate change impact monitoring and research programmes over the next 2 years. An evidence plan will be set out in the next FMP to assess the scale of impact generated by a changing climate to both the scallop stocks and the fisheries. The FMP will propose an evidence strategy to address existing evidence gaps and set out how it proposed to move towards climate adaptive management.

Cultural Heritage

The King 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 and Welsh Government should work with agencies such as Historic England and Cadw 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 King 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 and Welsh Government should work with agencies such as Natural England, JNCC, NRW, Historic England and Cadw 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 king 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 policies, measures and actions in section 5 did not identify any negative effects that posed a significant risk to the

environment. Therefore, no changes to the proposed objectives, 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 can be reduced. Monitoring changes to fishing activity resulting from the implementation of the FMP will help identify any unintended consequences on the environment that could lead to significant negative environmental effects. Where likely unintended environmental consequences are identified, appropriate changes to management or mitigation can be implemented to reduce to any negative environmental effects developing.

General

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

The range of environmental issues identified through this assessment have been largely considered by the King 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 king 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 King Scallop FMP. A reasonable alternative has been defined as 'an activity that could feasibly attain or approximate the FMP's objectives at a lower environmental cost or decreased level of environmental degradation'[26].

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 King Scallop FMP. This listing

26 Reasonable alternatives definition

creates a legal requirement to prepare and publish the King 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)[27] of the Fisheries Act applies; we are not aware of any information that would invoke these circumstances.

The King Scallop FMP, alongside the other 42 FMPs was agreed by the fisheries policy authorities through the JFS publication process. Engagement across administrations took place via the processes outlined in the Fisheries Framework. Regular scrutiny of the emerging list of FMPs was built into every step of the JFS policy formation, and through this process credible alternatives to managing stocks without an FMP were considered. The list of FMPs, that included an FMP for king 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 king scallops.

The king 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 King 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 King Scallop FMP policies and measures were developed to specifically address those fisheries management issues identified within the king 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 in Tables 7, and 8.

Table 7. Assessment of alternatives to proposed objectives.

27 Fisheries Act 2020 (legislation.gov.uk)

#	Objective	Alternative to proposed objective
1	Develop a science evidence base to inform the development of harvest strategies and harvest control rules for individual scallop stocks.	Possible alternatives: • Continue to base management decisions on data collected from existing programmes e.g., national/ local 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.
2	Develop Harvest Strategies and Harvest Control Rules (HCRs) to ensure fishing effort is responsive to status of stocks by developing appropriate fisheries management measures.	Possible alternatives: • Continue to base management decisions on data collected from existing programmes e.g., national/ local stock assessments, which would likely inform more precautionary type measures (given more evidence required). Management would unlikely be as effective.
3	Avoid the risk of overfishing while establishing the necessary conditions to allow effective management measures (Harvest Control Rules) to be developed and introduced.	This objective will utilise existing powers to introduce tighter or extended controls on fishing activity of the active fishing fleet, based on current available evidence. No reasonable alternative is available.

#	Objective	Alternative to proposed objective
4	To seek opportunities for the broad alignment of measures (where appropriate) such as gear requirements, to safeguard stocks and avoid unnecessary differences in measures applying across administrative management borders.	Possible alternatives: • Ensure industry have the necessary information to understand where differing measures apply and the details of requirements; although, this is likely already the case and not working for the industry. • Explore the impacts of existing variations in measures and look to tackle issues using other existing powers. A more joined up approach is possible through the FMP process; however, this remains an option if required.
5	Assess the interactions with the marine environment and potential impacts associated with king scallop fisheries and develop an action plan setting out appropriate measures to reduce damaging impacts.	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.
6	Explore ways to address gear and other inefficiencies that currently exist within king scallop fisheries, in order to reduce environmental impacts.	Ensuring gear is as efficient as possible is required to reduce environmental effects. No reasonable alternative is available.
7	Explore the impacts of changes in marine spatial use, including the potential impact of nomadic larger scallop vessels, on the UK king scallop fisheries from an environmental, economic and social perspective.	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.

#	Objective	Alternative to proposed objective
8	Develop climate change mitigation and adaptation measures for UK king scallop fisheries.	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.

Table 8. Assessment of alternatives to proposed management measures.

Measure	Alternative to proposed measure
Scientifically based output or input controls	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 king 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.
Consideration of broad alignment of measures where there are environmental, social or economic benefits of doing so.	Broad alignment of measures is one available management tool to achieve sustainable harvesting of stocks. No alternatives have identified at this stage. Other alternatives that will achieve sustainable harvesting of stocks will be considered in future iterations of the FMP as the evidence base develops.
Assess and mitigate the effects of king scallop fishing on seafloor integrity.	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.

Measure	Alternative to proposed measure
Area based closures/management	Area based closures/management is one available management tool to increase stock protection and reduce the impact on the wider environment. No alternatives have identified at this stage. Other alternatives to protecting stocks will be considered in future iterations of the FMP as the evidence base develops.
Partnership working	This measure will develop the co-management process through the establishment of a co-management group to help prioritise and commission future research and develop/ implement the FMP. 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 King 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 King 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 King 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 king scallop FMP will be monitored.

At present, there is insufficient evidence to determine MSY, or a proxy for MSY, for some king scallop stocks in English Waters (Eastern English Channel South, Dogger Bank, North of Cornwall, Yorkshire/Durham) and all stocks in Welsh Waters.

This FMP sets out the proposed steps to build the evidence base for these data limited stocks to support progress towards defining and measuring stock status and reporting on stock sustainability. An increase in the available evidence to define and measure stock status will be an indicator of the effectiveness of this plan for these stocks.

For other king scallop stocks in English waters (Lyme Bay, Western English Channel Offshore, Western English Channel Inshore, Eastern English Channel North) there is sufficient evidence to determine a proxy for MSY and to assess the sustainability of the stock, with some stocks fished within and some stocks fished above sustainable limits.

An increase or maintenance of the number of stocks fished at sustainable levels will indicate the effectiveness of this plan for these stocks.

This FMP sets out the proposed steps to build the evidence base to improve stock assessment calculations for all stocks. An increase in the available evidence with improved stock assessments 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 king scallop stock at sustainable levels are:

- 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 king scallop fishery
- a completed review of existing measures to ensure they are fit for purpose to achieve stock sustainability under the new management framework
- implemented or where appropriate aligned, measures that enable more cohesive management across boundaries and provide increased protection to stocks to help maintain or increase their levels

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 and Welsh Government) These actions may include;

- Monitoring changes in fishing activity e.g. changes in effort or the spatial and/or temporal patterns of fishing, resulting from the implementation of the FMP.

If any negative impacts are identified, fisheries managers should consider adjusting king 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 objectives as part of monitoring.

Review

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

The results of monitoring the effectiveness of the King 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 King Scallop FMP. As part of the reporting and wider review processes, alternatives to

management can be identified to ensure the King Scallop FMP delivers on its objectives and wider environmental obligations.

The SEA Environmental Report will be periodically updated 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 health populations that are not significantly affected by human activities'. However, according to the 2019 UKMS updated part 1 assessment (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf), the overall status of cetaceans in the North Sea and Celtic Seas is currently uncertain. The baseline environmental condition with respect to cetaceans is therefore one where some degree of recovery is potentially required to meet GES. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/cetaceans/.

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

Target	Indicator	North Sea	Celtic Seas
The long-term viability of cetacean populations is not threatened by incidental bycatch	Harbour porpoise bycatch	GES achieved	GES status uncertain
There should be no significant decrease in abundance caused by human activities	Abundance and distribution of coastal bottlenose dolphins	GES achieved	GES status uncertain

Target	Indicator	North Sea	Celtic Seas
There should be no significant decrease in abundance caused by human activities	Abundance and distribution of cetaceans other than coastal bottlenose dolphins	GES partially achieved	GES status uncertain
Population range is not significantly lower than the favourable reference value for the species	Abundance and distribution of coastal bottlenose dolphins	GES achieved	GES status uncertain
Population range is not significantly lower than the favourable reference value for the species	Abundance and distribution of cetaceans other than coastal bottlenose dolphins	GES partially achieved	GES status uncertain

Current impact of fisheries on the baseline condition

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

Cetacean bycatch

There is a specific target associated with the impact of bycatch from fisheries on the viability of cetacean populations. In the 2019 UKMS assessment, only data on the bycatch of Harbour Porpoise was used. This estimated that bycatch in the North Sea was below the precautionary threshold of 1% of the population estimate (and therefore meeting the indicator target), but above this threshold for the Celtic Seas. It was, however, below the less precautionary 1.7% of population estimate. Whether the target was being met in the Celtic Seas was therefore uncertain. For more detail on the assessment, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/cetaceans/harbour-porpoise-bycatch/.

More recent analysis for the 2023 OSPAR quality status report (which uses the same indicator as the UKMS) shows that bycatch of harbour porpoise in the Greater North Sea and Irish & Celtic seas are exceeding the threshold. Bycatch of common dolphin is also exceeding the threshold. For more details, see https://oap.ospar.org/en/ospar-assessments/quality-status-reports/qsr-2023/indicator-assessments/marine-mammal-

bycatch/. As this is a common indicator for both OSPAR and UKMS, that suggests that an updated UKMS 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)[28], it is specifically net fisheries (for example, gill nets, tangle nets etc) that are largely responsible for both harbour porpoise and common dolphin bycatch.

Cetacean abundance and range targets

For coastal bottlenose dolphins, the indicator target of 'no statistically significant decrease in abundance' was met in the Greater North Sea and for the largest group in the Celtic Seas (in the Coastal Wales assessment unit). No assessment has been possible for the other two smaller Celtic Seas Groups (in the West Coast assessment unit and Coastal Southwest assessment unit). For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/cetaceans/abundance-and-distribution-of-coastal-bottlenose-dolphins/

For species other than coastal bottlenose dolphins, the indicator target of 'no significant decline' was met for some species in some areas (minke whale in the Greater North Sea), but for most species and all of the Celtic Seas, there was insufficient evidence to make an assessment. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/cetaceans/abundance-and-distribution-of-cetaceans-other-than-coastal-bottlenose-dolphins/

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.

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

D1 and D4 – Seals

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

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

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

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

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

Target	Indicator	North Sea	Celtic Seas
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 (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status).

Seal bycatch

The 2019 UKMS 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[29] 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[30].

The most recent OSPAR quality status reports assessment on marine mammal bycatch[31] (which is likely to feed into the next round of UKMS 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 UKMS

29 7 Northridge, S., Kingston, A. and Thomas, l. (2019) Annual report on the implementation of Council Regulation (EC) No 812/2004 during 2018. Sea Mammal Research Unit. Available at Science Search (defra.gov.uk)

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

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

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

Seals summary

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

D1 and D4 – Birds

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

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

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

A summary of the current status is shown in Table A3. It should be noted that the current indicators used do not always cover the entire breadth of what is set out in the targets. For

instance, although there are plans for target about bycatch, there was no indicator developed or used as part of the 2019 assessment.

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

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

Current impact of fisheries on the baseline condition

Fishing is one of several anthropogenic activities that are considered relevant to this ecosystem component, including incidental bycatch and competition for resources (for example, sandeel fishing). Other pressures include mortality due to renewables, disturbance from a range of activities, oil pollution, and transfer of non-indigenous species

to islands from ships. More information on relevant pressures is provided in section 2.6.1 of the Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status).

Bird populations size and breeding success

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

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

Bird bycatch

The 2019 UKMS 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 (Northridge et al 2020[33] and

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. https://hub.jncc.gov.uk/assets/dbed3ea2-1c2a-40cf-b0f8-437372f1a036

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

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 objective is that ’Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock’.

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

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).

protected-areas/fish/ and https://moat.cefas.co.uk/pressures-from-human-activities/commercial-fish-and-shellfish/.

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

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

Target	Indicator	North Sea	Celtic Seas
The size structure of fish communities is indicative of a healthy marine food web.	Size composition in fish communities.	GES not achieved	GES not achieved
The size structure of fish communities is indicative of a healthy marine food web.	Proportion of large fish (Large Fish Index).	GES not achieved	GES partially achieved
The size structure of fish communities is indicative of a healthy marine food web.	Mean maximum length of fish.	GES not achieved	GES not achieved
Incidental bycatch is below levels which threaten long-term viability and recovery of fish populations.	Under development.	Not assessed	Not assessed
The population abundance of sensitive species is not decreasing due to anthropogenic activities and long-term viability is ensured.	Recovery in the population abundance of sensitive fish species.	GES not achieved	GES achieved
For fish species in the Habitats and Birds Directive population abundance and geographic distribution meets established favourable reference values.	UK assessments of listed fish species.	Not assessed	Not assessed
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 UKMS assessment D3: commercial fish and shellfish. Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UKMS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/).

Target	Indicator	North Sea	Celtic Seas
The Fishing mortality rate of populations of commercially exploited species is at or below levels which can produce the maximum sustainable yield.	Commercial fishing pressure for stocks of UK interest.	GES partially achieved	GES partially achieved
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, see https://moat.cefas.co.uk/pressures-from-human-activities/commercial-fish-and-shellfish/

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.

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

Recovery from past over-exploitation by fisheries does appear to be occurring in some areas. Demersal fish biodiversity is recovering from a history of over-exploitation, but GES has not been achieved in either the Greater North Sea or the Celtic Sea. A partial assessment of pelagic shelf fish status did not provide a clear result. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/fish/

Fish summary

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

D1 & D6 – Benthic Habitats

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

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

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

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

Table A5. Detail from the 2019 UKMS assessment on D1; D6: Benthic habitats. Taken from Marine Strategy Part One: UK updated assessment and Good Environmental Status (available at https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status) and the UKMS Marine Online Assessment Tool (available at https://moat.cefas.co.uk/). *The benthic communities' indicator (OSPAR BH2) is currently in the pilot stage of development.

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

Target	Indicator	North Sea	Celtic Seas
The extent of adverse effects caused by human activities on the condition, function and ecosystem processes of habitats is minimised.	Aggregated Saltmarsh Tool	GES not achieved	GES achieved
The extent of adverse effects caused by human activities on the condition, function and ecosystem processes of habitats is minimised.	Aggregated Rocky Shore Macroalgal Index	GES achieved	GES achieved
The extent of adverse effects caused by human activities on the condition, function and ecosystem processes of habitats is minimised.	Aggregated Intertidal Seagrass Tool	GES achieved	GES achieved
The extent of adverse effects caused by human activities on the condition, function and ecosystem processes of habitats is minimised.	Intertidal rock community change indicator (MarClim)	GES status uncertain	GES status uncertain

Current impact of fisheries on the baseline condition

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

Physical disturbance of seabed

Fishing is considered to be the main driver of physical disturbance and occurs when gear is towed across the seafloor. The degree of disturbance depends on factors such as the size of the gear, the activity level (for example, number of tows per year) how fragile the benthic species present are and how quickly they can recover. The use of demersal towed gears is widely distributed. Using available VMS data and benthic habitat data available, the 2019 UKMS assessment concluded that seabed disturbance targets were not being

met within the Greater North Sea and Celtic Seas. As the analysis combined the VMS of all towed gear metiers together, it is not yet possible to determine the relative contribution of different gear types to the current levels of seabed disturbance. Other activities, such as aggregate extraction, have yet to be included within the analysis, but the spatial extents of these are considerably smaller than fishing activity. For more information and detail of the analysis, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/benthic-habitats/physical-damage/ and https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/biodiversity-status/habitats/extent-physical-damage-predominant-and-special-habitats/

Habitat loss

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

Benthic habitat summary

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

D4 – Food webs

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

To meet Good Environmental Status, the high-level objective for food webs is that 'the health of the marine food web is not significantly affected by human activities'. According to the 2019 UKMS updated part 1 assessment (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf), the extent to which good environmental status has been achieved is uncertain. Plankton communities are changing, some fish communities are recovering from past overexploitation, but others are not, breeding seabirds are in decline, and grey seal numbers are increasing. It is known that the components of the marine food webs are changing but it is not always clear how they are affecting each other. For more information, see https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/food-webs/

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

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

Target	Indicator	North Sea	Celtic Seas
The species composition and relative abundance of representative feeding guilds are indicative of a healthy marine food web.	Mean maximum length of fish.	GES not achieved	GES not achieved
The species composition and relative abundance of representative feeding guilds are indicative of a healthy marine food web.	Selected plankton lifeforms pairs (for example, large vs small zooplankton).	GES status uncertain	GES status uncertain
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.	GES achieved	Not assessed

Current impact of fisheries on the baseline condition

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

Food webs summary

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

D10 – Marine Litter

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

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

Target	Indicator	North Sea	Celtic Seas
A decrease in the total amount of the most common categories of litter found on surveyed beaches.	Presence of litter (beaches).	GES not achieved	GES not achieved
A decrease in the number of items of litter on the seabed.	Presence of litter (seabed).	GES status uncertain	GES status uncertain
A downward trend in the number of northern fulmars with more than 0.1g of plastic particles in their stomach.	Presence of floating litter.	GES status uncertain	GES status uncertain
Develop an appropriate indicator to measure micro-litter in the marine environment.	In development.	Not assessed	Not assessed

Current impact of fisheries on the baseline condition

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

Marine litter summary

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

D11 – Underwater noise

To achieve Good Environmental Status for underwater noise, the high-level objective is that 'loud, low and mid frequency impulsive sounds and continuous low frequency sounds introduced into the marine environment through human activities are managed to the extent that they do not have adverse effects on marine ecosystems and animals at the population level.' The 2019 UKMS updated part 1 assessment (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf), indicates that data on underwater noise is limited, making it difficult to determine whether GES has been achieved. However, increasing awareness of the issue has led to further research and monitoring efforts. For more information, see https://moat.cefas.co.uk/pressures-from-human-activities/underwater-noise/. A summary of the current status is shown in Table A8.

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

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

Current impact of fisheries on the baseline condition

Fishing activities can generate underwater noise through the use of engines, sonar, and other equipment. Although fisheries are not the primary source of anthropogenic

underwater noise (shipping, construction, and energy production are major contributors), they can still contribute to the overall noise pollution in the marine environment. This noise can impact marine species that rely on sound for communication, navigation, and foraging, leading to changes in behaviour, stress, and potential displacement from preferred habitats.

Summary

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

Appendix C: UK MPA designations

1. 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
2. Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)
    - Special Protection Areas (SPAs) – Northern Ireland
    - Special Areas of Conservation (SACs) – Northern Ireland
3. Marine and Coastal Access Act 2009
    - Marine Conservation Zones (MCZs) – England, Wales
    - Nature Conservation Marine Protected Areas (NCMPAs), offshore waters – Scotland
4. Marine (Scotland) Act 2010
    - Nature Conservation Marine Protected Areas (NCMPAs), inshore waters – Scotland
5. Marine Act (Northern Ireland) 2013
    - Marine Conservation Zones (MCZs) – Northern Ireland
6. Natural Environment and Rural Communities Act 2006 (Part 4)
    - Sites of Special Scientific Interest (SSSI) – England, Scotland, Wales
7. The Environment (Northern Ireland) Order 2002
    - Coastal Areas of Special Scientific Interest (ASSIs)–- Northern Ireland
8. 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 objectives for the marine environment that are identified in the MPS alongside the National Planning Policy Framework (NPPF) and the Localism Act 2011. The Marine Management Organisation (MMO) is responsible for preparing marine plans in England, and published the North East, North West, South West, South East marine plans by 2021. The marine plans include policies to support a sustainable fishing industry and a healthy marine environment.

Wales

The first Welsh National Marine Plan was introduced in 2019, providing a statutory policy framework to help guide the sustainable development of the Welsh marine area. It was prepared and adopted under the MCAA to conform with the UK MPS. Under the MCAA, the Welsh Ministers are the marine plan authority for the Welsh marine planning area and the Welsh Marine Plan covers both the inshore and offshore areas. The Marine Plan includes specific policies in relation to commercial fisheries alongside cross-cutting environmental and socio-economic policies.

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

31/03/23

Our refs: 426388, 426389,426390

By email only

Re: Strategic Environmental Assessments – Scallop Fisheries Management Plan, Whelk Fisheries Management Plan, Crab and Lobster Fisheries Management Plan

Thank you for your consultation email dated the 17th of March seeking our views on whether the proposed scope and level detail of your Strategic Environmental Assessments are appropriate.

We have reviewed the reports provided. In all three documents, the proposed scope includes the main high-level topics we would want to see covered within the SEAs (section 5.36). While we largely agree with what has been scoped out (section 5.37), some of the issues are beyond the remit of Natural England and advice should be sought from appropriate bodies such as Historic England.

In terms of whether the level of detail of the proposed assessment is appropriate, that is more difficult to say with certainty at this stage as the scoping document is relatively high-level. However, the approach set out in section 5.3.8. that suggests linking to UK Marine Strategy descriptors (and presumably drafting the Environmental Report accordingly) does appear to be sensible and should make the assessment both logical and contain a suitable level of detail. We can provide ongoing advice and support on what we consider to be an appropriate level of detail as you progress the drafting of the Environmental Reports.

Natural England agree that the SEA should focus on the positive and negative effects of FMP rather than the fishing activity *per se*, as set out in 5.3.2. However, we also see value in the SEA acknowledging the pressures resulting from current fishing activity. For this purpose it isn't clear from section 5.3.3 exactly what you propose to include; for instance, will pressures from current activity that are not being managed be acknowledged, or only those where management exists? We would welcome further discussion on this important point.

We have several other comments that we wish to raise at this stage. These can be found in a table appended to this letter below. We would welcome further discussion on these issues.

Table 1. Full list of Natural England comments

Ref	Document / section	Comment
1	All documents, section 1.2.3	It is good see more or less verbatim reference to the definition of sustainable fishing in this section (from old EAF work). Would you want to maybe include the sentence on trade-offs?
2	All documents, Section 1.3.	In each of the scoping reports, the draft FMP objectives have been included. We have been asked to provide comment on these through other channels. We will not be providing further comment here.
3	All documents, section 3.1.1.	Linking to the work done in the UK Marine Strategy to describe the baseline seems sensible as it avoids unnecessary repetition of work. The link provided gives the link original 11 descriptors as set out in the Marine Strategy Framework Directive. Presumably this work will follow the UK approach to date that has separated certain descriptors into their faunal groups? This approach would make the Environmental Report easier to follow.
4	All documents, section 3.2.3	This is a standard line across all documents. It appears to be a high-level statement about all fisheries rather than the individual fisheries that are the subject of each SEA. That is fine for scoping as long as the relative risks are considered within the Environmental Report in more detail. For instance, physical disturbance will be much more relevant to the Scallop FMP than the two potting FMPs.
5	All documents, section 3.2.3	In this high-level statement, we suggest including disturbance to species. E.g. *'Fishing activity that targets […] has the potential to cause physical disturbance to the seabed and the mortality of/injury to/**disturbance to**, wild species, both target and non-target species'*. While this may well turn out not be an issue of concern, it should be scoped in at this stage.
6	Crab & Lobster / Whelk, section 3.2.4	This appears to be a standard line that is across all documents. While that is fine for scoping, the impact of static gear on blue carbon habitats is much less of a concern than the impact of mobile benthic gear. This needs to be clear within the Environmental Report i.e., that differentiation.

Ref	Document / section	Comment
7	All documents, section 3.3.2	This states that '*the draft […] FMP objectives set out in section 1.3. above, indicate how the plan will consider wider fisheries management issues including those relating to the environment, to reduce negative impacts from the fishery.'* This does not seem to be correct – the FMP objectives presented say **what** they will do rather than explain **how**. For the Crab & Lobster and Whelk FMPs, the objective only goes as far as '*Assess the impact of […] fishing activity on the wider environment.*'
8	All documents, section 4	More detail is needed in areas where there are linked plans / programmes. For instance, Defra's Bycatch Mitigation Initiative is a highly relevant programme of work with related objectives. In addition, the proposed working group on managing the effects of fishing on seafloor integrity, a measure proposed within the 2021 UK programme of measures consultation document should also be included. As the Environmental Report looks like it will be built around UKMS descriptors, the detail contained within the programme of measures are highly relevant. It is our understanding that the updated report will be published soon, so this should be used.
9	All documents, section 4.3	As stated in our email on 24th March, the following new legislation will need to be included: The Environmental Targets (Biodiversity) (England) Regulations 2023 and The Environmental Targets (Marine Protected Areas) Regulations 2023.
10	All documents, section 5.3.3	We also see value in the SEA acknowledging the pressures resulting from current fishing activity, but it isn't clear from section 5.3.3 exactly what you propose to include. It states '*.. the SEA will acknowledge these pressures resulting from current fishing activity **already being managed** and explain how the FMP will support existing mitigation. The plan will also propose new interventions to further mitigate negative environmental effects where necessary.*' If only the pressures resulting from current fishing activity already being managed will be acknowledged, what about those pressures that are not being managed? For instance, outside MPAs, the impact on seabed integrity is not managed (other than by accident rather than by design). It is important to also acknowledge these pressures, even if there is a gap in management that the FMP will not fill.

Ref	Document / section	Comment
11	All documents, sections 5.3.7 / 5.3.10	The justification for the issues scoped out of the assessment largely seem justified. However, cultural heritage may need further consideration. As the risk from fisheries on cultural heritage is outside the scope of Natural England's remit, we suggest seeking advice from Historic England.
12	All documents, section 5.3.8	We agree with structuring the Environment Report around UKMS descriptors. The text mentions the 11 descriptors. Following the UK approach of splitting some descriptors into their faunal groups will make the Environmental report easier to follow (this is similar to comment 3)
13	All documents, section 5.3.9	This provides a link to the Marine Strategy assessment tool. Some of the information within this may now be out of date. For instance, there have been new outputs from the BH3 model which assesses seabed disturbance from bottom towed gears. Where possible, using the most up to date information available would be preferred. Where this is not possible, the Environmental Report should note when updates are expected if it is relevant.

How the consultation response was considered

Point #	How point was considered
1	Sentence referring to balancing environmental, economic, and social considerations included.
2	No amendment required
3	Sub-sections added
4	Point acknowledged Environmental Report will consider in more detail
5	Suggested text added
6	Point acknowledged Environmental Report will consider in more detail
7	Text amended to reflect to point,

Point #	How point was considered
8	Further detail on linked plans/programmes added to ER. Link to Marine strategy part three: UK programme of measures added to scoping report.
9	Regulations added
10	Text amended to make clear FMP will acknowledge/consider activity being managed, and activity not being managed.
11	Further explanation of why issues have been scoped in/out has been included in scoping report and ER.
12	Text added, splitting descriptors into faunal groups.
13	Point acknowledged most up to date information will be used where possible.

JNCC Response

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

14th April 2023

Strategic Environmental Assessments – Scallop Fisheries Management Plan, Whelk Fisheries Management Plan, Crab and Lobster Fisheries Management Plan

Thank you for your consultation email regarding the above scoping reports which JNCC received on 17th March 2023. JNCC are pleased to provide advice on whether the proposed scope and level of detail of the assessment is appropriate. The advice presented below is provided by JNCC as part of our statutory advisory role to the UK Government and devolved administrations on issues relating to nature conservation in UK offshore waters.

We have reviewed all three Strategic Environmental Assessment (SEA) Scoping Reports and given the similarities between them, we have decided to provide a single response to cover all 3 scoping reports as, for the most part, our comments relate to them all. We note where any comment refers to a specific scoping report.

JNCC agree that the SEAs will assess the environmental effects of the specific fisheries management plan, rather than the existing fishing activities. For this purpose, the proposed scope of the SEAs described in sections 5.3 demonstrates a suitable breadth and covers the environmental receptors that JNCC would expect to be included in such an assessment. The approach of framing the assessment around UK MS descriptors is sensible, covering the range of environmental pressures associated with both the FMPs and existing fishing activity, and can establish an appropriate environmental baseline.

Regarding the report for the Scallop FMP SEA, we note that there is a requirement under the Environment (Wales) Act 2016 to consider ecosystem services and ecosystem resilience and therefore this consideration should be reflected in the scoping report. Welsh Government and statutory advisors can provide more detail on these requirements.

Considering the level of detail presented in the Scoping Reports, as noted in 5.3.4, the evolving nature of the fisheries management plans make it difficult to assess the precise level of detail that will be required in the Environmental Report during this scoping stage. Nevertheless, our review has identified several areas where the inclusion of greater detail would strengthen the assessment. A summary of our primary observations and

comments can be found in Table 1 below. We welcome any further discussion on these matters and are keen to provide further support where appropriate.

Table 1: JNCC comments on FMP SEA scoping reports

Comment ref	Relevant section	Comment
JNCC 1	General Particularly for sections 5.3.6., 5.3.1.0 (Table 2), 6. and 7.	Enhancing the level of detail during the initial scoping phase would allow for a more comprehensive understanding of various aspects, enabling the identification and resolution of potential concerns early on. By providing stakeholders and consultees with the opportunity to comment on specific elements, such as thoroughly exploring all available alternatives and mitigation options, potential issues can be addressed to avoid them being raised during the later stages of the environmental report drafting process.
JNCC 2	3.1.1 Environmental baseline	Using the framework of UK Marine Strategy descriptors to establish an environmental baseline for the FMPs is a sensible approach that makes effective use of existing programmes.
JNCC 2	3.2.3. Fishing activity that targets [fishery] has the potential to cause physical disturbance to the seabed and the mortality of/injury to, wild species, both target and non-target species.	To improve this paragraph, it is recommended to include more detailed information on the different pressures tailored to each fishery, which will provide a more in-depth understanding of their distinct characteristics and factors to be considered. The SNCB advice provided as part of the FMP drafting process provides a suitable basis for this description.
JNCC 3	4.3 Relevant plans, programmes and environmental protection objectives - Domestic	This section should be expanded to include a much wider range of relevant plans, programmes and environmental objectives, including those at local level. It would be helpful to identify the specific components of the related plans/programmes that are relevant to the SEA. The UK Marine Strategy Programme of Measures can help identifying linkages.
		It may also be appropriate to include reference to other FMPs.

Comment ref	Relevant section	Comment
JNCC 4	5.3 Scope of the assessment	This section would benefit from a definition of the levels of significance used when considering the scope of the assessment
	5.3.2. The SEA will not assess all the risks and impacts of fishing activity per se. Such assessments have already been conducted as part of the UK's obligations under legislation relating to Marine Protected Areas (MPAs) and the wider marine environment (UK MS).	It is important to recognise that the assessment is of the effects of the FMP and not of the existing fishing activity per se. Whilst the text refers to assessments of fishing activity already conducted as part of the UK's obligations relating to MPAs and the UK Marine Strategy, it is important to note that these are based on broad fishing gear types rather than being fishery specific. We consider these assessments adequate for the purposes of SEA.
JNCC 5	5.3.4. The level of detail possible for the environmental assessment will depend upon the stage of development of the polices and measures of the FMP, noting these will evolve over time.	Given the evolving nature of the FMPs and possible further amendments (currently version two draft FMP awaiting public consultation and update), the SEA is likely to require periodic reviews. It would be good practise for the Environmental Report to identify what these triggers might be to ensure that the assessment remains up-to-date throughout the FMP process.
JNCC 6	5.3.6. Environmental issues	It would be beneficial to include sub-sections for the receptors scoped-in to the assessment detailing which elements will be covered to ensure adequate coverage.
JNCC 7	5.3.10. Table 2	It would be advantageous to enhance the justification column by providing specific details, presenting a more comprehensive description of the unique aspects and environmental effects associated with each fishery. It would be helpful if this description detailed the range of anticipated effects (short, medium, long-term; temporary, permanent; positive and negative; and secondary, cumulative and synergistic). We would also expect to see a more detailed consideration supporting those receptors that have been scoped out.

Comment ref	Relevant section	Comment
JNCC 8	6. Reasonable Alternatives	This section lacks the inclusion of specific alternatives. We recommend the consideration of a “business as usual” approach of continuing existing fisheries management i.e. no change to baseline.
JNCC 9	7. Mitigation and Monitoring	It is recommended to list the potential mitigation options in this section, enabling consultees to share their input at the scoping phase.

How the consultation response was considered

Point #	How point was considered
JNCC 1	Further explanation of why issues have been scoped in/out has been included in scoping report and ER.
JNCC 2	No amendment required.
JNCC 2	Further detail from SNCB advice to include in scoping reports. This will be covered in greater details in the ERs.
JNCC 3	More relevant plans, programmes, and environmental objectives to be added in scoping report. Further detail on linked plans/programmes added to ER. Reference to other FMPs to be included.
JNCC 4	Further explanation of why issues have been scoped in/out has been included in scoping report and ER.
	No amendment required.
JNCC 5	Text added to ER to make clear how the SEA will be kept up to date.

Point #	How point was considered
JNCC 6	Sub-sections added.
JNCC 7	Further explanation of why issues have been scoped in/out has been included in scoping report and ER.
JNCC 8	Business as usual approach references in text in ER. Further text that considers reasonable alternatives added to ER.
JNCC 9	List/description of mitigation measures will be included in ER as assessment of effects is required first.
10. From letter: Regarding the report for the Scallop FMP SEA, we note that there is a requirement under the Environment (Wales) Act 2016 to consider ecosystem services and ecosystem resilience and therefore this consideration should be reflected in the scoping report. Welsh Government and statutory advisors can provide more detail on these requirements.	The Environment (Wales) Act 2016 will be considered from an ecosystem services and ecosystem resilience perspective for joint FMPs with Wales.

Historic England Response

Email only

Dear Sir/Madam

Historic England is pleased to offer its comments in response to Defra seeking views on the scope and level of detail of Strategic Environmental Assessment (SEA) of three Fisheries Management Plans (FMPs) for scallop, whelk, and crab and lobster fisheries.

Noting that the scallop FMP is joint with Welsh Government, it would be helpful to know if Defra has also sought views from Cadw and the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW)?

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's principal comment in respect of the scoping reports is that we do not agree that cultural heritage should be regarded as beyond the scope of the SEAs. If the SEAs do not cover cultural heritage, then they may be challenged on the basis that they have not identified, described and evaluated likely significant effects of an issue – cultural heritage, including architectural and archaeological heritage – set out in Schedule 2 of the Regulations.

Each of the scoping reports acknowledges that fishing activity for the three fisheries has the potential to cause physical disturbance to the seabed. Accordingly, fishing activity for the three fisheries also has the potential to cause physical disturbance to cultural heritage on and within the seabed. Physical disturbance is often detrimental to the conservation of cultural heritage, harms its significance, and compromises its enjoyment by future generations.

The impact on heritage assets of fishing activity – including the use of towed gear and traps – has been repeatedly observed. This includes damage to heritage assets whose significance is recognised through their statutory protection. HE continues to deal with active cases of damage to designated heritage assets attributable to fishing activity causing physical disturbance to the seabed.

Evidence relating to two recent instances of damage from fishing activity to designated heritage assets – the Klein Hollandia (aka Eastbourne Wreck, LEN 1464317) and the Rooswijk (LEN 1000085) – is attached. In the case of the Klein Hollandia, photographic evidence suggests that the damage is from scallop dredges or similar gear. Both instances are being investigated as heritage crimes. Further examples of impacts from fishing on heritage assets is set out in the following report: Fishing and the Historic Environment | Historic England.

Whilst HE acknowledges that FMPs are not intended to focus on mitigating all impacts of fishing on cultural heritage, implementation of FMP objectives is likely to alter factors such as the spatial distribution, intensity, gear, and methods of each fishery. Consequently, the FMPs are likely to change patterns of physical disturbance and therefore the potential for significant effects of these fisheries on cultural heritage. Moreover, FMP objectives on potential damaging impacts and the reduction of environmental impacts are directly relevant to cultural heritage. As such, HE regards cultural heritage as an issue that clearly lies within the scope of the three SEAs.

HE notes that landscape and seascape are also regarded as beyond the scope of the three SEAs. Again, we believe this could invite challenges. HE would like to underline the potential for the physical disturbance of the seabed by these fishing activities to impact deposits associated with prehistoric landscapes that are now submerged by sea-level rise. These former landscapes are extensive and are often represented by peaty horizons and other fine-grained deposits. Impacts from fishing to these peaty and other deposits are well attested: historically, such deposits were referred to by fishers as moorlog. As well as impacting landscape deposits, fishing is known to disturb prehistoric artefacts associated with these landscape features, disrupting their distributions, causing damage to the artefacts themselves, and causing artefacts to be removed. Evidence of fishing impacts on submerged prehistoric landscapes is demonstrated by widespread examples of artefacts in museum and other collections: the impact of shellfish dredging in particular is attested by material from the Solent (see Catalogue of the Michael White Collection). As above, HE regards submerged prehistoric landscapes as an issue that should be in scope of the three SEAs.

The potentially significant impact of fisheries – especially those using towed gear such as scallop dredgers – on prehistoric landscapes has a further effect pertaining to FMP objectives, namely climate change mitigation and adaptation. As is increasingly recognised on land, peat deposits represent an important carbon store. The role as a carbon store of submerged peats and other prehistoric organic-rich deposits warrants attention also, as do activities such as certain fisheries that degrade these carbon stores and remobilise the carbon within them. FMP objectives on climate change are, therefore, of direct relevance to cultural heritage; and cultural heritage is a potential source of data and understanding of the extent of these important deposits, how they are changing, and how their conservation might contribute to climate change mitigation and adaptation.

HE is clear that the FMPs are likely to influence fishing activities that have significant negative impacts on cultural heritage. However, HE would like to underline that there are also positive interactions between fishing and cultural heritage. For example, many fishers have been conscientious in reporting impacts to cultural heritage and artefacts caught by their gear, and these reports have been a source of important discoveries leading – in some cases – to statutory designation of historic shipwrecks. Heritage specialists have collaborated very positively with the fishing sector on numerous occasions, both through IFCAs and with individual fishers. This does not diminish the seriousness of impacts to cultural heritage from fishing activity, but HE recognises that the overall picture includes positive as well as negative aspects.

Among the positive interactions between fishing and cultural heritage are the cultural heritage of fishing itself, ranging from the wrecks of fishing vessels to historic harbours and infrastructure, their associated settlements and communities, and the wide range of tangible and intangible cultural heritage associated with fishing. As the opening sentence of the Joint Fisheries Statement (JFS) notes, 'The UK's seafood sector is an important part of the economy of coastal communities and has a rich cultural heritage from which many of those communities draw a sense of place and identity' (emphasis added). The JFS also notes at numerous points that fisheries and fishing have cultural importance, value and benefits. FMP objectives set out in the scoping reports on social and economic sustainability, and on promotion of opportunities could benefit from positive engagement with the cultural heritage of fisheries – especially where these are as long-established historically as the three fisheries addressed in the scoping reports. The potential positive interactions between FMPs and cultural heritage are a further source of (beneficial) impacts and add yet more weight to the need for cultural heritage to be within the scope of the SEAs. HE would go further to suggest that each FMP be given a specific objective on developing the cultural heritage of each fishery: otherwise, the importance of cultural heritage acknowledged in the JFS will be unsupported by FMPs and their objectives.

HE would like to draw attention to a PhD that it has initiated and is co-supervising on 'Mobilising Cultural Heritage in UK Marine Fisheries' through the Centre for Doctoral Training in Sustainable Management of UK Marine Resources (CDT SuMMeR). The PhD is due to commence in September 2023 based at Heriot-Watt and Exeter Penrhyn. HE would be pleased to serve as a conduit between this important research and Defra.

HE would like to note that for the purposes of the Fisheries Act 2020, the 'marine and aquatic environment' includes features of archaeological or historic interest in marine or coastal areas (s. 52). The Act provides that financial assistance, regulatory provisions and sea fish licensing can be applied for the purposes of conserving or enhancing the marine and aquatic environment, including features of archaeological or historic interest. The capacity to apply measures in the Act to features of archaeological or historic interest was confirmed by the Minister during the Committee Stage of the Bill in September 2020.

In contrast, it should be noted that cultural heritage / features of archaeological or historic interest are not among the descriptors used by the UK Marine Strategy to provide a framework to assess Good Environmental Status (GES). Consequently, GES does not cover all the issues encompassed by SEA or by the marine and aquatic environment for the purpose of the Fishing Act and other fisheries legislation. Too closely linking the FMPs and SEAs to GES and the UK Marine Strategy is flawed in this respect. HE would ask Defra to address this flaw expressly in the SEAs, including in proposals for monitoring the effects of FMPs set out in the Environmental Reports.

HE would also like to note that the UK has other international commitments not referenced in the scoping reports that relate to cultural heritage and are relevant to FMPs, namely:

- Convention for the Protection of the Archaeological Heritage of Europe (revised) (Valletta, 1992)
- Council of Europe Landscape Convention (Florence, 2000)

Thank you again for seeking HE’s views on the FMP SEAs. HE would be very pleased to discuss further with Defra how cultural heritage can be satisfactorily addressed by the SEAs, and how this can best strengthen the effectiveness of the FMPs in contributing to sustainable and well managed UK fisheries. Any queries regarding this response or further dialogue can be addressed to me via the contact details below.

Historic England

How the consultation response was considered

Point #	How point was considered
1. Noting that the scallop FMP is joint with Welsh Government, it would be helpful to know if Defra has also sought views from Cadw and the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW)?	The Welsh Government have consulted their statutory consultees which includes Cadw.
2. HE's principal comment in respect of the scoping reports is that we do not agree that cultural heritage should be regarded as beyond the scope of the SEAs. If the SEAs do not cover cultural heritage, then they may be challenged on the basis that they have not identified, described, and evaluated likely significant effects of an issue – cultural heritage, including architectural and archaeological heritage – set out in Schedule 2 of the Regulations.	Cultural heritage has been scoped into the King Scallop FMP ER.
3. Whilst HE acknowledges that FMPs are not intended to focus on mitigating all impacts of fishing on cultural heritage, implementation of FMP objectives is likely to alter factors such as the spatial distribution, intensity, gear, and methods of each fishery. Consequently, the FMPs are likely to change patterns of physical disturbance and therefore the potential for significant effects of these fisheries on cultural heritage.	Point acknowledged, Environmental Report (ER) will consider how the FMPs are likely to change patterns of physical disturbance and therefore the potential for significant effects of these fisheries on cultural heritage.

Point #	How point was considered
4. HE notes that landscape and seascape are also regarded as beyond the scope of the three SEAs. Again, we believe this could invite challenges.	The impact fishing activity being managed through FMPs will be considered at the scoping stage. Where it is considered there is a significant effect, this issue will be scoped in.
5. The role as a carbon store of submerged peats and other prehistoric organic-rich deposits warrants attention also, as do activities such as certain fisheries that degrade these carbon stores and remobilise the carbon within them.	Point acknowledged; Environmental Reports (ER) will consider this issue.
6. HE is clear that the FMPs are likely to influence fishing activities that have significant negative impacts on cultural heritage. However, HE would like to underline that there are also positive interactions between fishing and cultural heritage.	Point acknowledged, Environmental Reports (ER) will consider positive interactions between fishing and cultural heritage.
7. HE would go further to suggest that each FMP be given a specific objective on developing the cultural heritage of each fishery: otherwise, the importance of cultural heritage acknowledged in the JFS will be unsupported by FMPs and their objectives.	Point acknowledged, Environmental Reports (ER) will provide recommendations on how FMPs could consider fishing and cultural heritage.

Point #	How point was considered
8. HE would like to draw attention to a PhD that it has initiated and is co-supervising on 'Mobilising Cultural Heritage in UK Marine Fisheries' through the Centre for Doctoral Training in Sustainable Management of UK Marine Resources (CDT SuMMeR). The PhD is due to commence in September 2023 based at Heriot-Watt and Exeter Penrhyn. HE would be pleased to serve as a conduit between this important research and Defra.	Defra would welcome further discussions with HE to consider this offer.
9. HE would like to note that for the purposes of the Fisheries Act 2020, the 'marine and aquatic environment' includes features of archaeological or historic interest in marine or coastal areas (s. 52).	This definition has been reflected in the relevant sections of the ERs.
10. In contrast, it should be noted that cultural heritage / features of archaeological or historic interest are not among the descriptors used by the UK Marine Strategy to provide a framework to assess Good Environmental Status (GES). Consequently, GES does not cover all the issues encompassed by SEA or by the marine and aquatic environment for the purpose of the Fishing Act and other fisheries legislation. Too closely linking the FMPs and SEAs to GES and the UK Marine Strategy is flawed in this respect. HE would ask Defra to address this flaw expressly in the SEAs, including in proposals for monitoring the effects of FMPs set out in the Environmental Reports.	Point acknowledged. Issues such as climatic factors and cultural heritage that are not part of UK MS will be considered outside of this framework.

Point #	How point was considered
11. HE would also like to note that the UK has other international commitments not referenced in the scoping reports that relate to cultural heritage and are relevant to FMPs, namely: 12. Convention for the Protection of the Archaeological Heritage of Europe (revised) (Valletta, 1992) 13. Council of Europe Landscape Convention (Florence, 2000)	These international commitments will be reflected as appropriate in the ERs.
14. HE would be very pleased to discuss further with Defra how cultural heritage can be satisfactorily addressed by the SEAs, and how this can best strengthen the effectiveness of the FMPs in contributing to sustainable and well managed UK fisheries.	Defra will instigate further discussions with HE to consider this point.

Environment Agency Response

Thank you for giving us an opportunity to review a selection of the 43 Fisheries Management Plans that are being put into action.

The main aim of the plans is to promote the sustainable management of the fisheries in question, including one that delivers ecosystem functionality, yet there appears to be no reference to the Water Environment Regulations (Water Framework Directive) or UK Marine Strategy indicators and the potential impact the fisheries will have on achieving Good Ecological/Environmental Status (GES/GEnS). This is particularly important for fisheries, such as scallop dredging, that may impact on the seabed and therefore benthic invertebrate communities.

We recommend having a clear objective within each of the plans that links to assessing the impact of the fishery on GES and GEnS to ensure the plans fully promote ecosystem functionality.

Environment Agency

How the consultation response was considered

Point #	How point was considered
1. The main aim of the plans is to promote the sustainable management of the fisheries in question, including one that delivers ecosystem functionality, yet there appears to be no reference to the Water Environment Regulations (Water Framework Directive) or UK Marine Strategy indicators and the potential impact the fisheries will have on achieving Good Ecological / Environmental Status (GES/GEnS).	Water Environment Regulations (Water Framework Directive) has now been added to the list of relevant plans, programmes, and environmental objectives. Further reference to UK MS descriptors and the potential impact the fisheries will have on achieving GES has been included in the scoping reports. The ERs will consider this in more detail.
2. We recommend having a clear objective within each of the plans that links to assessing the impact of the fishery on GES and GEnS to ensure the plans fully promote ecosystem functionality.	The ER will assess how the FMPs have considered the potential impacts of the fishery on UK MS descriptors and how proposed measures to mitigate them, set out in the FMP, could contribute to achieving GES.

Cadw Response

Please see Cadw’s comments:

Section 3.2.3. states that "Fishing activity that targets king scallops using towed gear has the potential to cause physical disturbance to the seabed and the mortality of/injury to, wild species, both target and non-target species". This statement is then used in Table 2 as a justification for Biodiversity, fauna, and flora to be "scoped in" to the SEA. However, if towed gear causes physical disturbance to the seabed than it can also cause damage to wrecks and palaeo-landscapes. Therefore, the explanation why cultural heritage can be "scoped out" of the SEA given in Table 2 is not valid. As such unless a fuller explanation why cultural heritage can be "scoped out" of the SEA is produced, it needs to be included. But the assessment would be confined to physical disturbance to the seabed and potential wrecks and palaeo-landscapes and not include other Cultural Heritage issues.

Cadw

How the consultation response was considered

Point #	How point was considered
1. However, if towed gear causes physical disturbance to the seabed than it can also cause damage to wrecks and palaeo-landscapes. Therefore, the explanation why cultural heritage can be "scoped out" of the SEA given in Table 2 is not valid. As such unless a fuller explanation why cultural heritage can be "scoped out" of the SEA is produced, it needs to be included.	Cultural heritage has been scoped into the King Scallop FMP ER.

Natural Resources Wales Response

Natural Resources Wales
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04 May 2023

By e-mail

STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) SCOPING REPORT FOR THE KING SCALLOP FISHERIES MANAGEMENT PLAN (FMP) FOR ENGLAND AND WALES

Thank you for consulting Natural Resources Wales (NRW) on the SEA Scoping Report for the King Scallop FMP.

The statutory purpose of NRW is set out by the Environment (Wales) Act 2016. In the exercise of its functions NRW must pursue sustainable management of natural resources in relation to all of its work in Wales and apply the principles of sustainable management of natural resources in so far as that is consistent with the proper exercise of its functions.

NRW's duty (in common with the other public bodies covered by the Well-Being of Future Generation (Wales) Act 2015) is to carry out sustainable development. This means, in general terms, looking after air, land, water, wildlife, plants, and soil to improve Wales' wellbeing, and provide a better future for everyone. NRW are also advisors to the Welsh Government on the natural heritage and resources of Wales and its coastal waters.

Under the Environmental Assessment of Plans and Programmes Regulations (EAPPR) 2004 (as amended), NRW is a statutory consultee for all plans, programmes & strategies (PPS) within Wales and for those outside Wales whose effects could extend in to and have effects upon the environment of Wales. Our comments are therefore provided in the context of this responsibility.

Proposed scope of the Environmental Report

NRW welcomes the principle of the FMP programme, and the opportunity this FMP provides to deliver sustainable management of the king scallop population and king scallop fishery in Welsh waters. The undertaking of the SEA (and Habitats Regulations Assessment) will be a key step in ensuring the FMP delivers sustainable management of

this marine natural resource, as it will allow a collective understanding of the effect of implementing the FMP on the environment, and the opportunity to mitigate and manage any negative effects.

NRW has concerns, however, about the proposed scope of the Environmental Report for the FMP as currently set out in section 5 of the Scoping Report. Following receipt of legal advice, NRW believe the scope is narrower than what is required by Regulation 12 of the EAPPR 2004.

Regulation 12(2) of the EAPPR 2004 states that "*The report shall identify, describe and evaluate the likely significant effects of:*

a) *implementing the plan or programme; and*
b) *reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme."*

Paragraph 5.3.2 of the Scoping Report states that "*The SEA will focus on assessing how the FMP is likely to give rise to significant positive and negative environmental effects"* and goes on to state "*It is the FMP itself, as a management plan, that will be assessed rather than the activities themselves"*.

NRW advises that the proposed scope does not satisfy the requirements of the EAPPR 2004. It is not sufficient to assess the effect of a plan on the environment rather than the effect of the activity considered by the plan on the environment. NRW therefore suggest paragraphs 5.3.2 and 5.3.3 of the SEA Scoping Report are amended as follows:

5.3.2 The Environmental Report will identify, describe and evaluate the likely significant effects on the environment of implementing the FMP and reasonable alternatives taking into account the objectives and the geographical scope of the FMP. The Environmental Report will also take into account assessments which have already been carried out in relation to the risks and impacts from fishing activities as part of the UK's obligations under legislation relating to Marine Protected Areas (MPAs) and the wider marine environment (UK MS).

5.3.3. The Environmental Report will acknowledge those pressures resulting from current fishing activity being managed and explain how the FMP will support existing mitigation. The Environmental Report will also set out measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the FMP.

NRW advises that the assessment of likely significant effects within the Environmental Report considers the potential changes in king scallop fishing activity from implementing the FMP. We have highlighted areas that may result in potential changes to king scallop fishing activity as a result of implementing the FMP in an Annex to this letter. The effects of the ongoing king scallop fisheries on the environment will therefore need to be established first, before any meaningful assessment of the changes resulting from implementing the FMP can be made.

The purpose of undertaking the SEA process is to prevent, reduce and as fully as possible offset any significant adverse impacts on the environment from the proposed objectives, policies and management interventions before the FMP is introduced. It is important therefore that Welsh Government scope this first Environmental Report correctly, as it will

inform the SEA process for each of the remaining FMPs including the required incombination assessment as each FMP will be a relevant PPS.

SEA scoping process

Without a detailed description of the actions that might arise from the implementation of the

FMP within the Scoping Report, it has been challenging for NRW to provide meaningful advice on the scope of the Report or to identify potential effects, mitigation or wider management that may be required in advance of the Environmental Report.

Due to the limited amount of detail provided within the Scoping Report, NRW does not believe the SEA scoping process has been fully taken advantage of. Investing in the SEA scoping process would have focussed the content of the Environmental Report and maximised the benefits of the process as a whole for sustainably managing and developing the king scallop fishery in Wales.

Requirements of the Conservation of Habitats and Species Regulations (CHSR) 2017 (as amended)

Section 5 of the SEA Scoping Report describes the process and results of undertaking the required test of likely significant effect of the FMP under Regulation 63 of the CHSR 2017. Welsh Government and Defra concluded that the FMP:

a. *is likely to have a significant effect on a European site or a European offshore marine site; and*

   b. has the potential to deteriorate or disturb the interest features of a European site or a European offshore marine site; and

c. *is not directly connected with or necessary to the management of such European sites.*

Therefore, before it can be introduced, the fisheries policy authorities (FPAs) must produce, and consult with the appropriate nature conservation bodies on, an appropriate assessment of the implications of the FMP on relevant European site(s) in view of their conservation objectives.

NRW advises that the potential changes in king scallop fishing activity resulting from implementing the FMP are considered within the appropriate assessment. The effects of the ongoing king scallop fisheries on the features of sites will therefore need to be established first, before any meaningful assessment of the changes resulting from implementing the FMP can be made.

Further advice

NRW has provided further detailed comments on the Scoping Report in an Annex to this letter.

Annex

Scoping Report approach

1. The Scoping Report provides a high-level overview of the FMP objectives and description of the Environmental Report process. However, it does not provide adequate information for consultees to make a meaningful response.
2. The draft FMP was not provided with the Scoping Report. Having sight of the current draft FMP would have assisted in understanding the approach to, content of, and scope of the Environmental Report.
3. Limited information has been provided in the Scoping Report to help understand why certain issues have been scoped out in paragraph 5.3.7.
4. No information on the location and scale of the existing or potential king scallop fisheries has been provided.
5. In terms of the EAPPR 2004, the FPAs correctly screened the FMP into the SEA process (section 5.1) due to the potential effects of the fishing activity and implementation of the FMP on the marine environment.
6. The Scoping Report in various places describes the impacts of king scallop fishing on the environment. For example, paragraph 3.2.3 states *'fishing activity that targets king scallops using towed gear has the potential to cause physical disturbance to the seabed and the mortality of/injury to, wild species, both target and non-target species'*. The Scoping Report goes on to say in paragraph 5.3.1. '*the SEA will take into account the objectives of the FMP…. and fishing activity covered by the plan*'.
7. In addition, Table 2 of the Scoping Report presents the scoping exercise to determine the environmental issues likely to be significantly affected by the FMP and thus scoped into the Environmental Report. These include *'Biodiversity, fauna and flora'* as *'Fishing activity for king scallop has the potential to cause physical disturbance to the seabed and result in the extraction of, or mortality/injury to, wild species. See paragraph 3.2.3. These issues are within the scope of this SEA'*.
8. Therefore, it is clear from the Scoping Report's description that the impacts from the activity of king scallop fishing on the environment will be considered in both the Environmental Report and plan level HRA (section 5.1). However, paragraph 5.2.3 states *'It is the FMP itself, as a management plan, that will be assessed rather than the activities themselves'*. This approach limits and confuses the scope of the SEA.
9. It is clear the FMP will set out objectives, policies and management interventions (for example, see paragraphs 1.2.2, 1.3.1, 3.3.1 and 5.3.3) that will geographically overlap with protected marine features. Therefore, an assessment of the effects of any change resulting from the implementation the FMP on those features must be considered in the Environmental Report (and plan level HRA).
10. NRW advises that the assessment of likely significant effects, within the Environmental Report, must also considers the potential changes in king scallop fishing activity from implementing the FMP on all the other issues identified in Table 2 wherever there is a spatial overlap or a pathway for effect.

Scoping Report content

11. NRW supports the inclusion of assessments, mentioned in paragraph 5.3.2, that have already been conducted as part of the UK's obligations under legislation relating to MPAs and the wider marine environment (UK MS). NRW understand this to include Defra's completed Revised Approach to fisheries management programme (inside 6nm) and the MMO's ongoing Fishery Assessment programme (outside 6nm).

12. NRW advises that Welsh Government and Defra cannot rely on either of these work programmes in relation to Welsh waters as they are both geographically limited to English waters.
13. It would have been beneficial to have included the detail and outputs of both these work programmes within the Scoping Report. This would help establish the coverage and scope of the assessments you are relying on to have already assessed and managed the impacts from king scallop fishing (dredge, diving, potting, trawling) within MPAs. Their inclusion would have provided confidence in the proposed approach to the Environmental Report.
14. It is unlikely that existing assessment and management programmes have sufficiently and comprehensively assessed all the pressures and impacts that will result from the FMP objectives, policies and management interventions in all MPAs.
15. The Scoping Report process could have been used to highlight gaps where you are unable to rely on existing assessments and requested advice and relevant information to support the Environmental Report's assessment of those gaps.
16. Welsh Government complete an annual HRA under Regulation 63 of the CHSR 2017 before the issuing of permits under the former North Western and North Wales Sea Fisheries Committee Byelaw 12. The HRA includes all the relevant fisheries management measures within the Scallop Fishing (Wales) (No.2) Order 2010. The HRA considers the potential impacts from the king scallop dredge fisheries on the features of SAC, SPA and Ramsar sites both within and outside of sites. The assessment and management measures only relate to the Welsh inshore area (inside 12nm).
17. In terms of European marine sites in Welsh waters, Welsh Government and Defra could concentrate on the impacts from the FMP on the area outside 12nm of the coast and on mobile species features wherever they are.
18. SSSIs are intertidal and are unlikely to be affected by king scallop dredging in Wales as the Scallop Fishing (Wales) Order 2010 prohibits these activities within one 1nm of the coast. However, you may need to consider any other relevant fishing methods not included within the Scallop Fishing (Wales) Order 2010 HRA.
19. WFD water bodies in Wales are unlikely to be affected by king scallop dredging as the activity does not currently occur within them. However, you may need to consider any other relevant fishing methods not included within the Scallop Fishing (Wales) Order 2010.
20. Skomer is the only Marine Conservation Zone (MCZ) in Wales. King scallop dredging is currently prohibited from Skomer MCZ through former South Wales Sea Fisheries Committee Byelaws 29 and 28 and by the Scallop Fishing (Wales) Order 2010. However, the impacts from the FMP objectives, policies and management interventions may still need to be assessed in relation to the MCZ.
21. NRW advises that Welsh Government and Defra also consider the Welsh MCZ preconsultation engagement process to select and designate new MCZs in Wales. At some point new MCZ sites, for example for burrowing megafauna or seapens, may become protected and require assessment and management from potentially damaging activities such as king scallop fishing.

22. NRW advises that Welsh Government and Defra also consider the impacts from king scallop fishing on Good Environmental Status under The Marine Strategy Regulations 2010. NRW advises that king scallop fishing could impact biodiversity (D1), potentially introduce marine invasive non-native species (INIS) (D2), affect commercial fish species (D3), affect food webs (D4), impact seafloor integrity (D6) and potentially introduce litter to the marine environment (D10).
23. NRW advises that the potential effects of king scallop fishing on the Favourable Conservation Status of Annex 1 habitats outside of sites at a national level are also be considered in the Environmental Report.
24. NRW advises that the assessments of impact relating to MPA legislation principally concern the ecological features for which the sites are designated. However, NRW advises that the Environmental Report also considers the effects of king scallop fishing on the other issues identified as relevant in Table 2 within MPAs.
25. Welsh Government should also consider their duties under the Environment Act (Wales) 2016. Section 6 of the Act requires that public authorities must seek to maintain and enhance biodiversity [of the Section 7 habitats and species] so far as consistent with the proper exercise of their functions and in so doing promote the resilience of ecosystems.
26. NRW advises that the Environmental Report also considers the Welsh Natural Resources Policy, relevant parts of Area Statements and the biodiversity and resilience of ecosystems under the Environment Act (Wales) 2016.
27. NRW advises that the Scoping Report also considers the impacts on ecosystem resilience through impacts on its 4 measurable attributes – Diversity, Extent, Condition & Connectivity of ecosystems Assessment (DECCA)[36].
28. There are other pressures on stocks of sea fish that may affect their ability to be maintained at, or restored to, sustainable levels, for example climate change, energy generation, aggregate dredging etc. It is not clear whether the FMPs will consider these wider pressures and implement objectives, policies or management to address them.
29. The Scoping Report does not include any of the relevant PPS relating to other marine sectors such as offshore energy (oil, gas, renewables), cabling, aggregate extraction etc. in section 4.
30. While presenting a list of PPS in section 4, the Scoping Report does not provide any further information on their links and interactions with the FMP, for example which PPS might affect, or be affected by, the FMP?
31. The Scoping Report does not consider the possibility of in-combination or cumulative impacts with other fisheries or other marine sectors such as offshore energy (oil, gas, renewables), cabling, aggregate extraction etc.
32. The Scoping Report does not consider the impacts from displacement of fisheries due to fisheries management or spatial squeeze from MPAs or offshore renewables.
33. No proposals for future monitoring have been provided in the Scoping Report.

[36] Ecosystem Resilience

34. The Scoping Report has not identified any key evidence gaps or needs to be considered when designing monitoring.
35. No explanation of how the FMP's objectives will be achieved has been provided in the Scoping Report.
36. The Scoping Report does not present an appropriate, relevant set of guide questions which will allow the assessment of significant effects.
37. The assessment criteria to be used in the Environmental Report have not been provided in the Scoping Report.
38. The Scoping Report does not define levels of significance.
39. The Scoping Report does not identify alternatives or describe a process for producing realistic and achievable alternatives.

Environmental Baseline

40. No baseline environmental information has been provided within the Scoping Report. This is a missed opportunity to scope the content before producing the Environmental Report.
41. The proposed use of the UKMS descriptors alone to define the baseline environment condition is likely to be insufficient. The UKMS descriptors are high level and broad. The Scoping Report does not describe the environmental baseline, at a scale and level of detail appropriate for the Environmental Report. The Scoping report does not identify any existing environmental issues, challenges or tensions with the proposed baseline.
42. Paragraph 3.2.1 acknowledges that the marine environment is subject to a range of pressures derived from multiple human activities. It is important that the environmental baseline differentiates between the influence of other marine activities and the fishing activities being considered.
43. In addition, the baseline needs to sufficiently reflect regional issues. The status of the marine environment or baseline in areas where king scallop fishing is occurring (or may occur in the future) may be significantly different to the UK-wide UKMS descriptor assessment, due to the effect of the fishing activity acting on the receptors in that area. This is not captured within the Scoping Report.
44. The Scoping Report does identify likely future trends in the environmental baseline in the absence of the FMP.

Receptor advice

45. The Scoping Report does not clearly identify receptors (for example types of birds, fish mammals, habitats etc.) where potential significant effects are possible. Currently all species and habitats are within scope of the Environmental Report.
46. The objectives included within section 1.3 of the FMP Scoping Report are high level and do not provide sufficient detail to be able to meaningfully consider what the potential effects of the FMP on relevant receptors will be.
47. NRW welcome the FMP Scoping Report scoping in the assessment of effects upon '*Biodiversity, fauna and flora'*. However, no detail of the methodologies to be used in the Environmental Report assessment have been provided and therefore it is not possible for NRW to advise on whether the report will sufficiently assess all the relevant effects of the FMP on the relevant receptors.

48. NRW advises that the Environmental Report fully considers and assesses the positive and negative effects that the FMP could have on relevant habitat and species features in Welsh waters.

49. These negative effects could occur from, for example, through changes to fishing effort (increased effort, spatial changes in effort, displacement of effort), or changes to fishing methods etc. from implementing the FMP.

50. Potential negative effects resulting from the FMP on species features in Welsh waters could include, for example, increased bycatch or collisions, increased disturbance, impacts to habitat, and reduced prey availability.

51. Potential negative effects resulting from the FMP on marine habitats features in Welsh waters could include, for example habitat loss, degradation or disturbance and impacts related to the ingress and spread of INIS.

52. No information has been provided on habitat resilience and recovery rates from disturbance.

53. In addition, it is not clear to what extent the fishing activities considered in the FMP would repeatedly affect the same areas of seabed, thereby limiting the footprint of the activity but increasing impacts.

54. Consideration within the Scoping Report in relation to cultural heritage is limited to architectural and archaeological heritage. Paragraph 5.3.7 and Table 2 scope cultural heritage out of the Environmental Report. This decision appears to be at odds with the emphasis placed on cultural importance in Paragraph 1.2.3 which states that *'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'.* 55. NRW advises that in relation to Wales and the Welsh Government's Well-being of Future Generations Act 2015 responsibilities, this view of cultural heritage is too narrow, and NRW advises that Welsh Government also considers the impacts of the FMP on Welsh coastal communities and language.

Additional Comments

56. The requirements of Section 6 of the Fisheries Act 2020 have not been summarised completely in paragraphs 1.2.4 and 1.2.5 of the Scoping Report. If there is insufficient evidence to assess the MSY of a stock, the Fisheries Act 2020 states that an FMP must also *'specify policies of the relevant authority or authorities for maintaining or increasing levels of the stock'*.

57. Paragraph 1.2.1 – NRW advises that the relevant fish species are important components of marine ecosystems, as well as being a 'resource' and 'asset'.

58. Paragraph 1.3.1 – NRW advises that the aim of the FMP *'to contribute to sustainable and well managed UK king scallop (Pecten maximus) fisheries'* seems to miss the requirement of the Fisheries Act 2020 for FMPs, which is *'to restore one or more stocks of sea fish to, or maintain them at, sustainable levels'*. Furthermore, it is not clear why the aim is only to *'contribute'* to, rather than *'achieve'*.

59. Paragraph 1.3.2 Objective 1.1 – NRW advises that if a robust evidence base is developed by field surveys, then the potential effects of the survey methods may need to be assessed.

60. Paragraph 1.3.2 Objective 1.3 – NRW advises this initiative could result in increased fishing effort which will need to be assessed.
61. Paragraph 1.3.2 Objective 1.4 – NRW advises this initiative could result in increased fishing effort which will need to be assessed.
62. Paragraph 1.3.2 Objective 2.1 – NRW advises this initiative could result in increased fishing effort, spatial changes in effort or displacement which will need to be assessed.
63. Paragraph 1.3.2 Objective 2.1 – It is not clear what the *'appropriate fisheries management measures'* stated could be, but changes in methods or closed areas could have impacts on the effort and distribution of king scallop fishing which NRW advises are assessed.
64. Paragraph 1.3.2 Objective 2.2 – It is not clear how the risk of overfishing will be avoided, but measures to restrict fishing may need to be assessed.
65. Paragraph 1.3.2. Objective 2.3 – NRW advises this objective could mean changes in management in Wales which would need to be assessed.
66. Paragraph 1.3.2 Objective 3.1 – NRW advises this objective could have a potentially beneficial effect on some receptors which would need to be assessed.

    NRW advises measures to 'avoid' or 'mitigate' damaging impacts from king scallop fishing are also included.
67. Paragraph 1.3.2 Objective 3.2 – It is not clear how this objective will reduce environmental impacts, but the methods may need to be assessed.
68. Paragraph 1.3.2 Objective 3.3 – NRW advises the impacts of displacement is assessed.
69. Paragraph 1.3.2 Objective 3.4 – NRW advises that the impacts of climate change is assessed from the activity of king scallop fishing and on the activity of king scallop fishing.
70. Paragraph 3.3.2 – NRW advises that harvesting king scallops within sustainable limits may not reduce or remove the negative impacts of king scallop fishing on the wider marine environment. In some areas, there could be increased effort, displacement or changes in gears which could increase negative impacts which will need to be assessed.
71. Paragraph 3.3.2 – It is not clear how additional measures to address risks or impacts will be determined, or how these will be secured and delivered. For example, whether mitigation identified through the Environmental Report (and plan level HRA) will be written into the final FMP as part of an iterative development process.
72. Paragraph 3.3.2 – NRW advises that the objectives do not indicate how the FMP will consider wider fisheries management issues including those related to the environment. FMP objectives relating to natural ecosystems (Objective 3.1) and climate (Objective 3.4) are listed but it is not indicated how the FMP will address potential negative impacts from the king scallop fishery on receptors.
73. Paragraph 5.3.3 – NRW advises that the FMP objectives do not include proposing new interventions (see paragraphs 1.2.8, 3.3.1, 5.3.3 and 5.3.4) to further mitigate negative environmental effects where necessary.

74. Table 2 Biodiversity, fauna and flora – NRW advises the disturbance of wild species is also relevant for this receptor.
75. Table 2 Biodiversity, fauna and flora – NRW advises that this issue also considers UK MS Descriptor D2, risks posed by introduction and/or spread of marine INIS.
76. Table 2 Population – Whilst it is beyond our remit, this topic covers economic and societal factors that could affect or change populations, so will be relevant given the focus of the FMP on coastal communities and economic benefits of king scallop fishing.
77. Table 2 Human health – Whilst it is beyond our remit, the JFS discussed policies for safety, so it is not clear why this topic is beyond the scope of the SEA.
78. Table 2 Geology and sediments (soil) – NRW advises that the justification for scoping this issue in appears not to be relevant. Impacts to the substrate are included in *'Biodiversity, fauna and flora'* whereby *'fishing activity for king scallop has the potential to cause physical disturbance to the seabed'*.
79. Paragraph 7.1.1 – NRW advises that the final FMP will need to consider and address any negative effects of the draft FMP assessed through the Environmental Report (and plan-level HRA).

How the consultation response was considered

Welsh Government and DEFRA have consulted with statutory nature conservation advisors including Natural Resources Wales (NRW) with regards to the scope and level of detail the king scallop SEA environmental report (ER). Some comments provided by NRW, as part of the consultation in preparation of the ER, have already been addressed by the ER. Outstanding comments/ advice including the timing of Habitats Regulations Assessments (HRA) are considered below.

The FMP follows a high-level strategic assessment framework using UKMS indicators as benchmarks for environmental assessment. FMP objectives are given in Table 5 of the King Scallop FMP ER. Many of the FMP objectives have the potential to recommend subsequent management measures which may change the characteristics of scallop fisheries in some way and a reasonable summary of positive and negative effects are provided. Changes to the fishery could be spatial, temporal or effort linked. However, it is important to draw the distinction between the possible effects of high-level strategic objectives being met and any resulting recommended management measure being adopted.

For example, objective 2 suggests Defra and Welsh Government "develop" a harvest strategy and harvest control rules (HCR) then goes on to summarise the possible effects of this action at a high level. In both statutory and practical terms, this presents an appropriate level of assessment at this point in the FMP process as until management measures are identified through this process any effects cannot be reliably identified and assessed, i.e., Objective 2 is to develop rather than to implement the HCR. Until the development of the HCR has been undertaken and suitable management actions identified it would not be possible to attempt to assess the type or scale of resultant impacts or effects on relevant MPAs and associated protected habitats and species.

Before any recommended management change is implemented, changes to fishery regulations controlling the existing fishery would be required. This legislative change would provide the appropriate opportunity to fully assess the then known scope and potential impacts or effects of the new management change in line with the Conservation of Habitats and Species Regulations 2017 and address any outstanding advice provided by NRW. Before this point, no real-world changes which may subsequently be caused (and assessed via HRA) as a result of a potential management change could be transmitted through to any protected Welsh MPAs, habitats or species because the FMP itself is not making any management changes or implementing new management measures.