

# **Changes to Marine Conservation Order provisions under the Marine (Scotland) Act 2010**

## **Strategic Environmental Assessment Environmental Report**

Report commissioned by the Scottish Government

March 2024

# Non-Technical Summary

## Introduction

The Scottish Government is committed to maintaining a healthy and biologically diverse marine and coastal environment that continues to provide economic, social and wider benefits to meet the long term needs of people and nature. The Scottish Biodiversity Strategy to 2045 sets out the vision to restore and regenerate biodiversity across Scotland's land, freshwater and seas by 2045, while ambitions under the Environment Strategy for Scotland include focus on the protection and restoration of Scotland's nature with flourishing biodiversity, clean and healthy air, water, seas and soils.

The Scottish Government's Marine Directorate is proposing to strengthen the current Marine Conservation Order (MCO) provisions under the Marine (Scotland) Act 2010 ("the 2010 Act") to enable Scottish Ministers to make MCOs under additional circumstances in Scottish inshore waters (0-12 NM).

## What is Strategic Environmental Assessment?

The Environmental Assessment (Scotland) Act 2005 ("the 2005 Act") requires that certain public plans, programmes and strategies be assessed for their potential effects on the environment. Strategic Environmental Assessment (SEA) is the process used to fulfil this requirement and includes consultation with the public and the Consultation Authorities.

SEA identifies the likely significant environmental impacts of plans and policies and proposed reasonable alternatives to them. SEA also identifies mitigation measures that are required to avoid or minimise any significant adverse effects and highlights opportunities for enhancements of beneficial effects. Taking place at an early stage in the plan or policy preparation process, it ensures that decision-making is informed by relevant environmental information. SEA provides opportunities for the public to consider this information and use it to inform their views on the draft plan or policy. In accordance with the 2005 Act and Scottish policy, Scottish Ministers are committed to applying the SEA process as part of the development of the MCO amendment proposals.

A screening and scoping exercise was undertaken by Scottish Government's Marine Directorate in accordance with the requirements of the 2005 Act. Comments were invited from the Scottish Consultation Authorities. The outcome from the Screening and Scoping Report and the consultation responses confirmed the need for an SEA as there is potential for significant environmental effects to occur as a direct result of the proposals. Their views are taken into account in this report which summarises the findings of the SEA.

Further details of SEA process is set out in section 1.2 of the main report.

## What are the proposed changes to Marine Conservation Order (MCO) provisions?

MCOs are a statutory mechanism under the 2010 Act which enables Scottish Ministers to ensure the conservation of nationally important marine heritage sites. Where there is a case for protection, and following consultation processes<sup>1</sup>, Scottish Ministers can apply an MCO to any area in Scottish territorial waters (out to twelve nautical miles), for the purpose of furthering the stated conservation objectives/purposes of MPAs designated under the 2010 Act, or for protecting European marine sites where they overlap an MPA. The proposed changes seek to enable the use of MCOs where appropriate for the purposes of:

- protecting standalone European marine Sites (i.e. those which do not overlap spatially with a Marine Protected Area (MPA)); and
- protecting locations that are undergoing or have undergone nature restoration and enhancement projects.

The proposals therefore extend existing powers in the 2010 Act, with the provisions remaining applicable only in Scottish territorial waters.

Further details of the proposed changes are set out in section 2 of the main report.

## How was the Strategic Environmental Assessment undertaken?

The SEA provides a high-level assessment of the potential environmental effects that are likely to result from the implementation of the proposed extension to MCO provisions, and consideration of a series of key questions ('SEA objectives'). These SEA objectives reflect the scope of the assessment as well the environmental protection objectives from relevant legislation. The assessment has identified the individual and overall (cumulative) beneficial and adverse effects of the proposals on a number of SEA topics, specifically Biodiversity, Flora and Fauna; Soil; Water; Climatic Factors; and Cultural Heritage. In order to recognise the interlinkages of these SEA topics, Soil and Water have collectively been given consideration under the overarching topic 'Biodiversity, Flora and Fauna'.

At this stage, it is only possible to undertake a high-level SEA to consider the type of impacts that could arise from the future application of MCOs under these proposed extended provisions, as no specific sites have been identified yet for future application of these provisions.

The potential economic and social impacts that may result from the implementation of the legislative reforms does not form part of the scope of this SEA. Additional assessments may be undertaken, as appropriate, to help estimate the socio-economic

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<sup>1</sup> As set out in section 87 of the Marine (Scotland) Act 2010.

benefits, costs, and risks associated with the proposed reforms. Section 91 of the Marine (Scotland) Act 2010 also sets out a duty on Scottish Ministers to assess the socio-economic and environmental impact of restricting activity when making an MCO.

Further details of the approach to the assessment are set out in section 3 of the main report.

## Which reasonable alternatives have been assessed?

Given that spatially specific areas to which MCOs will be applied under these proposed extended provisions have not yet been identified, reasonable alternatives are considered to be high level considerations of alternative management options that meet the aims of MCOs. Reasonable alternatives have been considered to include:

- “Do nothing”, i.e., keep the provisions of the 2010 Act as they are currently; and
- Seek to secure outcomes through voluntary mechanisms or guidance approaches.

Under the “Do nothing” scenario, the current disparity between protection mechanisms available for designated sites will continue: while there are alternative mechanisms available to introduce fisheries management measures, these cannot be used to manage other activities in these areas (including activities that do not require a licence or a permit such as recreation, diving, and anchoring in some instances). In terms of nature restoration and enhancement projects, Demonstration and Research MPAs offer a potential route of protection where it is required, but not all nature restoration and enhancement projects will be able to meet the requirements for Demonstration and Research MPA designation, therefore potentially leaving them vulnerable to damage. This can have the effect of disincentivising positive actions for nature recovery.

Voluntary mechanisms and guidance approaches, complementary to or *in lieu* of any legislative measures, can still be explored prior to the implementation of MCOs especially for restoration purposes under the proposed new provisions. The new proposed provisions however will enable the use of an existing, appropriate, and flexible regulatory mechanism if required. Given the increased spatial squeeze and competing use of the marine environment, sole reliance on voluntary mechanisms and guidance approaches is unlikely to achieve nature restoration ambitions.

Further details of reasonable alternatives are set out in section 3.4 of the main report.

## What is the current state of the environment?

The Scottish marine environment covers an area of over 462,000 km<sup>2</sup>, the territorial sea limit (Scotland’s inshore waters) of which is approximately 44,480 km<sup>2</sup>. The Scottish marine environment comprises a wide variety of habitats including intertidal rocky and sediment shores, subtidal rocky reefs and sandy / muddy sea bed to deep-sea sediment sea floor as well as the water column itself. Scotland has over 18,000 km of

coastline and its inshore and offshore areas are among the largest of any country in the European continent, representing 13% of all European seas.

Scotland's marine environment supports a diverse complex of different habitats, which in turn support a wide range of marine plants and animals. Estimates suggest there are around 6,500 species of animals and plants (excluding microbial flora and seabirds) in Scotland's seas. Many of these occur within Scotland's inshore waters (0 – 12 NM).

At a high level, key pressures to species and habitats in Scotland's inshore waters can be caused by climate change, coastal developments, dredging for sediments, pollution, marine litter, seabed abrasion, and the introduction and spread of invasive non-native species, in addition to localised pressures from specific activities in the area that particular species or habitats may be found. The effect of pressures is dependent on their intensity and the sensitivity and vulnerability of marine and coastal species and habitats to the pressures. The making of MCOs considers the local and specific need for any additional protection to minimise or remove a pressure on a habitat or species.

Benthic (seafloor) habitats are vital natural resources, as many marine species rely, directly or indirectly, on the seafloor to feed, hide, rest or reproduce. Generally benthic habitats are characterised by low mobility species. Benthic marine habitats within the Scottish marine environment can be characterised into three broad groups: intertidal habitats; subtidal (inshore and shelf sea); and deep sea habitats (found predominantly in offshore waters, and to a very limited extent inshore).

The pelagic environment/water column operates at a large scale in terms of physical, chemical, and biological processes, which can have consequences through the food chain and other habitat types<sup>2</sup>. As well as providing an important role in climate regulation, the pelagic environment provides vital habitat that supports a wide range of mobile species.

Scotland's marine environment has a range of mobile species with several populations considered to be either of international or national importance. Mobile species in Scottish waters include the following groups:

- Seals (grey and harbour seals);
- Cetaceans (23 species have been recorded in Scottish waters over the last 25 years; of these, 11 are regularly sighted<sup>3</sup>);
- Birds (both breeding seabirds and overwintering waterbirds);

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<sup>2</sup> Scottish Government (2020). Marine Scotland Assessment. Pelagic habitats [online] Available at: <https://marine.gov.scot/sma/content/pelagic-habitats> (Accessed 22/01/2024)

<sup>3</sup> Scottish Government (2011). Scotland's Marine Atlas: Information for The National Marine Plan [online] Available at: <https://www.gov.scot/publications/scotlands-marine-atlas-information-national-marine-plan/pages/36/> (Accessed 22/01/2024)

- Fish, incorporating marine and diadromous species, including sharks, rays and skates; and
- European otter (inshore waters only).

The importance of Scotland's marine ecosystems is reflected in the range of designations which protect them at international and national levels. The Scottish MPA network consists of 247 sites, 233 of these are for nature conservation purposes, covering 37% of Scotland's seas.

Scotland has a wide range of geological (rocks, minerals, fossils and structures), geomorphological (landforms and processes) and soil features that make up the marine and coastal landscape. The condition of these features influences the quality of habitats and in turn the viability and health of both flora and fauna populations.

Scotland's seas (out to 3 NM from territorial baseline) are mostly classed as being of high or good ecological status under the Water Framework Directive (WFD). There are some poorer quality waters in certain areas. In terms of Good Ecological Status (GES) under the Marine Strategy Regulations (which applies out to the limit of Scotland's Exclusive Economic Zone (EEZ)), GES has been achieved for 4 out of 15 descriptors. Environmental status has declined since 2012 for birds, and has remained stable for cetaceans, pelagic habitats, benthic habitats, non-indigenous species, eutrophication, changes in hydrological conditions, litter and input of anthropogenic sound. Environmental status has improved since 2012 for seals, fish, commercial fish and shellfish, food webs, contaminants, and contaminants in seafood.

The key pressures on the climate are derived from the continued global emission of greenhouse gases, including carbon dioxide. These emissions are recognised as leading to changes in the global climate (including changes in temperatures, precipitation, and storm density) in turn causing changes in the physical characteristics of the oceans, including potential changes in sea temperatures, circulation, salinity, pH and sea level rise.

Multiple habitats across Scottish seas and coastal areas can be termed blue carbon habitats due to their fixation and sequestration ability. Their effectiveness as carbon sinks is highly dependent upon their long-term capacity to store carbon. Inshore, key blue carbon habitats include seagrass, saltmarsh, kelp beds, and biogenic reefs.

There are numerous scheduled monuments and listed buildings along the Scottish coastline, with designated wrecks and military remains sites identified both inshore and offshore. Three of Scotland's six designated World Heritage Sites (WHS) are on the coast (St. Kilda; The Heart of Neolithic Orkney; The Forth Bridge). Other key coastal features include a number of Category A listed lighthouses, ecclesiastical remains, coastal heritage museums, military defences, harbours, forts and castles. There are 9 Historic MPAs designated within Scottish waters.

Further details of the environmental baseline are set out in section 4 of the main report.

## What are the likely significant environmental effects of the Plan?

This SEA has been undertaken as a high-level assessment of the potential environmental effects that are likely to result from the implementation of the proposed extension to MCO provisions.

The implementation of the proposed extension of MCO provisions to standalone European marine sites and to nature restoration and enhancement projects has been assessed to result in:

- Potential benefits to marine biodiversity and the marine ecosystem;
- Potential spillover benefits beyond MCO boundaries; and
- Potential adverse effects resulting from the displacement of activities from MCO boundaries into new areas and the intensification of activities in areas where these activities already occur.

### Potential benefits

In generic terms, the adoption of the proposed extensions to existing MCO provisions has been assessed to result in overall beneficial effects on the overarching topic Biodiversity, Flora and Fauna (including the topics Soil and Water) and contribute to the achievement of the SEA objectives. This is because it will be possible for MCOs to be made in evidenced circumstances to manage damaging marine activities in European marine sites and to protect nature restoration and enhancement projects. This will allow for ecosystem recovery and biodiversity enhancement.

MCOs offer a comprehensive protection mechanism. There are some existing mechanisms available for the management of fisheries activities (see section 2.2.5 for further details), but these offer less flexibility than MCOs. For certain activities (e.g., construction or deposition activities), management is also provided through the marine licensing regime<sup>4</sup>. Any potential impacts to an MCO from a proposed licensable activity would be considered in the determination of that licence application. This may help to reduce pressures associated with marine licensable activities in the areas of MCOs, particularly for restoration projects.

Change in pressures within MCO areas may also result in the potential for spillover benefits beyond the boundaries of the managed area. Spillover occurs when there is a population surplus in the newly protected area and the carrying capacity of that area is surpassed. It must be acknowledged however that there is variability in the success at which spillover benefits have been observed in other studies as they are influenced by site specific factors.

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<sup>4</sup> Scottish Government (2023). Marine environment: licensing and consenting requirements [online] Available at: <https://www.gov.scot/collections/marine-licensing-and-consent/> (Accessed 22/01/2024)

The management of areas that include habitats that are blue carbon habitats (such as seagrass, saltmarsh, kelp beds, and biogenic reefs) could contribute to the achievement of the Climatic Factors SEA objective.

### Neutral effects

The extended MCO provisions do not broaden the application of MCOs to other cultural heritage features. Effects to the SEA objective for the 'Cultural Heritage' topic have therefore been assessed as neutral.

### Potential adverse effects

Potential adverse effects may result from the displacement of activities from MCO boundaries into new areas and the intensification of activities in areas where these activities already occur. The scale of the impact and the sector impacted by the displacement would be dependent on the specifics of any management measures implemented using the proposed extended MCO provisions, and the ability of the sector to adapt given other potential restrictions they may be under. There is potential for trans-boundary effects for EU Member States if activities are displaced outwith areas under the Scottish jurisdiction.

### Summary

Overall, the environmental benefits of enhanced protection that will result from the extended MCO provisions are anticipated to be greater than the adverse environmental impacts associated with displacement of activities.

Further details of the environmental effects are set out in section 5.2 of the main report.

## What are the cumulative effects of the Plan?

In terms of cumulative effects, the benefits would be additive, the scale of which would depend on the number, spatial area, and details of the management brought forward from any MCOs made under the extended provisions. The scale of the displacement of activities to other areas as a result of any MCOs introduced under the proposed extended provisions would also depend on the spatial area of the MCOs and the level of 'spatial squeeze' from other activities occurring at the time.

It is important to consider how these proposals interact with other plans, programmes and strategies. There could be cumulative beneficial effects from enhanced protection as well as cumulative adverse effects from potential displacement of fishing activity (e.g., from fisheries management measures being considered for inshore MPAs and Priority Marine Features (PMFs), currently under SEA assessment).

Further details are set out in section 5.4 of the main report.



## How will significant environmental effects be mitigated?

Overall, there are no anticipated significant environmental adverse effects from the proposed extension to MCO provisions, with potential adverse effects related to displacement activities through implementation (i.e., the making of individual MCOs under secondary legislation) likely to be minor and less than the benefits of increased protection through the making of any MCOs.

Any MCOs proposed in future would be subject to the consultation processes set out under existing provisions of the 2010 Act and would need to include consideration of the socio-economic impacts of introducing an MCO.

The Environmental Report has not identified any additional factors beyond those addressed in policy-making that would need to be monitored.

Further details of mitigation and monitoring are set out in section 5.5 of the main report.

## How do I respond to the consultation?

We are inviting responses to this consultation by using the Scottish Government's consultation hub, Citizen Space (<http://consult.gov.scot>). Access and respond to this consultation online at <https://consult.gov.scot/marine-scotland/marine-restoration-and-marine-conservation-order>. You can save and return to your responses while the consultation is still open.

If you are unable to respond using our consultation hub please complete the Respondent Information Form and

Email to: [marinerestoration@gov.scot](mailto:marinerestoration@gov.scot)

Or send to:

Marine Nature Restoration policy team

Area 1B North

Scottish Government

Victoria Quay

Edinburgh

EH6 6QQ

## What happens next?

At the end of the consultation process, the views of stakeholders and the public on the proposals and Environmental Report will be analysed. In light of these comments, the proposals will be reviewed, updated and finalised. Following the public consultation, a Post-adoption Statement will be produced, demonstrating:

- how environmental considerations have been integrated into the proposals;
- how the environmental report has been taken into account;

- how the views of the consultation authorities have been taken into account;
- how the results of the consultation have been taken into account;
- the reason for choosing the proposals, as adopted, in the light of other reasonable alternatives considered; and
- the measures that are to be taken to monitor the significant environmental effects of the implementation of the proposals.

If significant changes are made to the proposed changes to MCO provisions, this SEA will be reviewed in order to consider whether any further assessment work will be required.

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# 1 Introduction

## 1.1 Background

- 1.1.1 The Scottish Government is committed to maintaining a healthy and biologically diverse marine and coastal environment that continues to provide economic, social and wider benefits to meet the long term needs of people and nature. The Scottish Biodiversity Strategy to 2045 sets out the vision to restore and regenerate biodiversity across Scotland's land, freshwater and seas by 2045, while ambitions under the Environment Strategy for Scotland include focus on the protection and restoration of Scotland's nature with flourishing biodiversity, clean and healthy air, water, seas and soils.
- 1.1.2 A wide range of mechanisms is available to help achieve these aims, including Marine Conservation Orders (MCOs). MCOs are a statutory mechanism under the Marine (Scotland) Act 2010 ("the 2010 Act") which enables Scottish Ministers to provide for the conservation of nationally important marine heritage sites. MCOs can be made by Scottish Ministers to any area in Scottish territorial waters (i.e., 0 – 12 NM).
- 1.1.3 In development of the policy proposals, Scottish Government's Marine Directorate has worked closely with key policy leads, legislation leads, and NatureScot representatives. Shortcomings in the current application of MCOs were identified, and proposals have been developed to broaden their application, thereby enhancing the protection of nationally important marine heritage sites in alignment with domestic and international biodiversity strategies and targets.
- 1.1.4 MCOs cannot currently be applied to standalone European marine sites (i.e. those which do not overlap or adjoin spatially with an MPA), which means that the powers available to Scottish Ministers to protect European marine sites are more limited than those available to protect MPAs.
- 1.1.5 In addition to better protecting existing sites, the growing interest and need for nature restoration projects to halt and reverse biodiversity loss means a suitable mechanism is required to safeguard suitable sites in the marine environment that have or are undergoing restoration and may need protection. Currently, restoration projects would need to follow the process to designate Demonstration and Research ("D&R") MPAs in order for the MCO provisions to become available to protect such areas. Not all restoration projects can meet the criteria for D&R MPA status meaning they may remain vulnerable to ongoing human activities. There is currently one D&R MPA, located in the waters surrounding Fair Isle. The site reaches out to sea 5 km from the island's

coastline (157 km<sup>2</sup>) and has been established to primarily research the relationship between healthy seas and the maintenance of a local island community<sup>5</sup>.

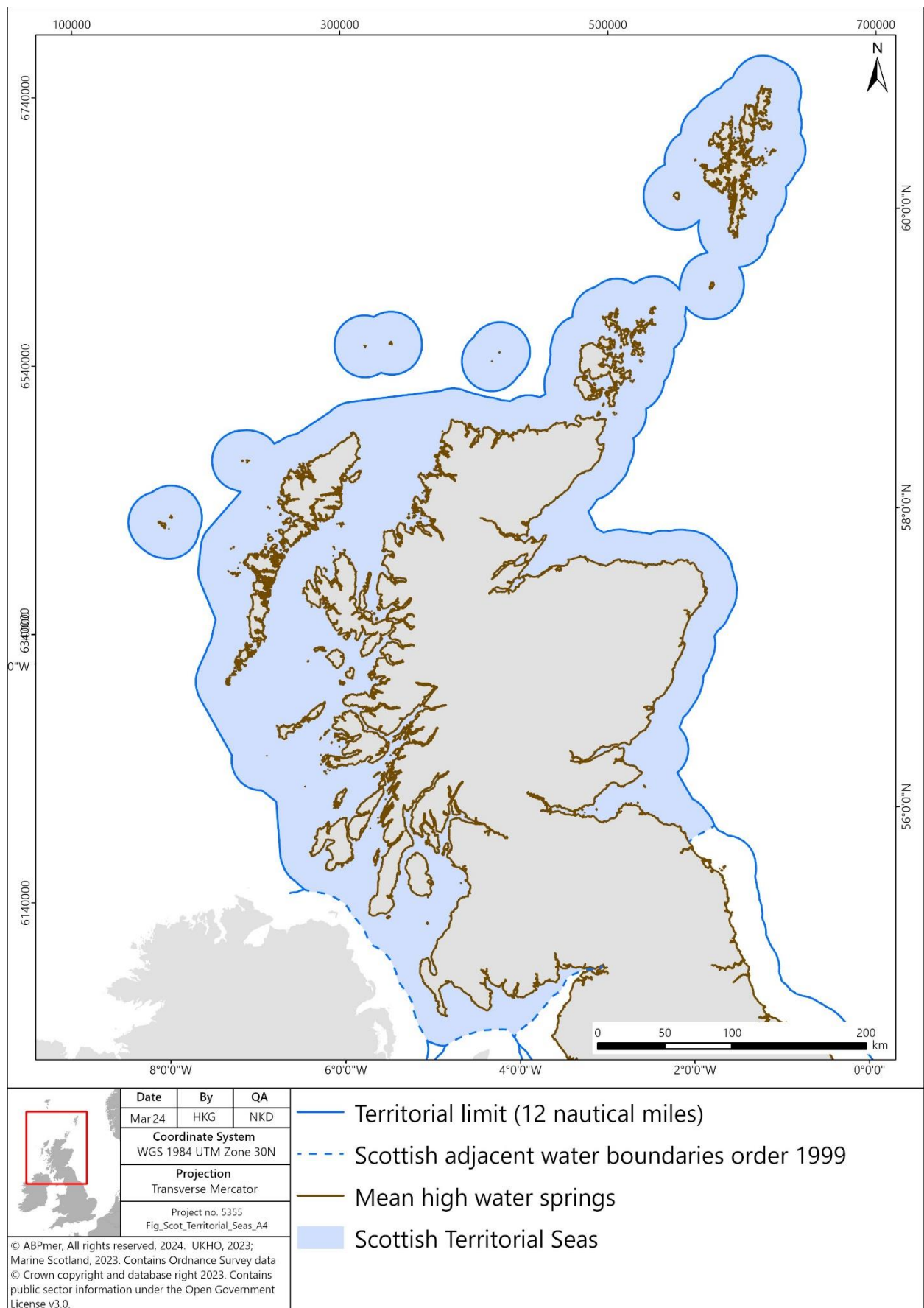
- 1.1.6 The Scottish Government's Marine Directorate has identified legislative proposals which would amend MCOs provisions under the 2010 Act<sup>6</sup> to strengthen the current approach by enabling Scottish Ministers to make MCOs under additional circumstances in Scottish inshore waters (0-12 NM) (Figure 1).
- 1.1.7 The proposed changes seek to enable the protection of nationally important marine heritage sites in alignment with domestic and international biodiversity strategies and targets, and to safeguard sites in the marine environment that have or are undergoing restoration. This would be achieved by enabling MCOs to be applied to:
- standalone European marine sites (i.e. those which do not overlap spatially with an MPA) in Scotland's inshore waters; and
  - nature restoration and enhancement projects in Scotland's inshore waters.
- 1.1.8 This SEA undertakes an environmental assessment of the proposals to extend where MCOs can be applied. This Environmental Report forms part of the material provided for a public consultation and identifies potential significant (positive and negative) environmental effects of the proposal.

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<sup>5</sup> Fauna & Flora International (FFI) (2021). A Case Study of Demonstration & Research Marine Protected Area development in Scotland. FFI, Edinburgh, UK [online] Available at: [https://www.fauna-flora.org/wp-content/uploads/2023/05/FFI\\_2020\\_Fair-Isle-DR-MPA-development-in-Scotland.pdf](https://www.fauna-flora.org/wp-content/uploads/2023/05/FFI_2020_Fair-Isle-DR-MPA-development-in-Scotland.pdf) (Accessed 22/01/2024)

<sup>6</sup> Marine (Scotland) Act 2010, section 85: Marine conservation orders [online] Available at: <https://www.legislation.gov.uk/asp/2010/5/section/85> (Accessed 22/01/2024)

**Figure 1 Scotland's territorial limits (12 nautical miles)**





“Figure showing a map of Scotland and the territorial limits of Scotland's waters (12 nautical miles away from the coast). Region of Mean High Water Springs, running around the coast, is also shown on the map.”

## 1.2 What is Strategic Environmental Assessment?

- 1.2.1 Strategic Environmental Assessment (SEA) identifies the likely significant environmental impacts of plans and policies and proposed reasonable alternatives to them. SEA also identifies mitigation measures that are required to avoid or minimise any significant adverse effects and highlights opportunities for enhancements of beneficial effects. Taking place at an early stage in the plan or policy preparation process, it ensures that decision-making is informed by relevant environmental information. SEA provides opportunities for the public to consider this information and use it to inform their views on the draft plan or policy. In accordance with the 2005 Act and Scottish policy, Scottish Ministers are committed to applying the SEA process as part of the development of the MCO amendment proposals.
- 1.2.2 The Environmental Assessment (Scotland) Act 2005<sup>7</sup> (“the 2005 Act”) requires Scottish public bodies or those exercising functions of a public character (Responsible Authorities) to undertake a SEA when preparing plans, programmes or strategies if it is likely to have significant environmental effects. This applies to both significant positive or negative environmental effects. The proposed amendment to existing MCO provisions under the 2010 Act falls under Section 5(4) of the 2005 Act and is therefore subject to SEA. The 2005 Act also sets out the information that is required to be provided in this Environmental Report.
- 1.2.3 A screening and scoping exercise was undertaken by Scottish Government’s Marine Directorate in accordance with the requirements of the 2005 Act. A combined Screening and Scoping Report was published in September 2023, setting out the proposed approach to the SEA, including the proposed scope and level of detail. Comments were invited from the Scottish Consultation Authorities<sup>8</sup>.
- 1.2.4 The outcome from the Screening and Scoping Report and the consultation responses confirmed the need for an SEA as there is potential for significant environmental effects to occur as a direct result of the proposals. Scottish Government’s Marine Directorate commissioned ABP Marine Environmental Research Ltd. (ABPmer) to undertake the assessment stage of the SEA and prepare this Environmental Report.

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<sup>7</sup> The Environmental Assessment (Scotland) Act 2005, asp 15 [online] Available at: <https://www.legislation.gov.uk/asp/2005/15/introduction> (Accessed: 22/01/2024).

<sup>8</sup> Historic Environment Scotland (HES), NatureScot and Scottish Environment Protection Agency (SEPA)

## 1.3 Purpose and Structure of this Report

- 1.3.1 This SEA provides a high-level and qualitative assessment of the potential environmental effects that are likely to result from any amendments to where MCOs can be applied in the inshore zone. This SEA builds on previous and ongoing SEAs that have been undertaken on marine conservation work by the Scottish Government.
- 1.3.1 The SEA identifies positive and negative effects. The assessment identifies the individual and cumulative effects of the proposed amendments to MCO provisions on the SEA topics that are scoped into the assessment, specifically Biodiversity, Flora and Fauna; Soil (benthic (seabed) substrates and habitats); Water; Climatic Factors; and Cultural Heritage. At a cumulative level the assessment considers the proposals in relation to other relevant plans, programmes, or strategies.
- 1.3.2 The assessment also considers the effects of development on a series of key statements ('SEA objectives'). These objectives reflect the scope of the assessment as well as the environmental protection objectives from relevant legislation.
- 1.3.3 The potential economic and social impacts that may result from the implementation of the legislative reforms does not form part of the scope of this SEA. Additional assessments may be undertaken, as appropriate, to help estimate the socio-economic benefits, costs, and risks associated with the proposed reform. Section 91 of the 2010 Act also sets out a duty on Scottish Ministers to assess the socio-economic and environmental impact of restricting activity when making an MCO.
- 1.3.4 Recognising duties under Section 14 of the UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021<sup>9</sup>, this report also considers the duty on Scottish Ministers to have due regard to the guiding principles on the environment in making policies (including proposals for legislation) and record how due regard has been given to the principles in preparing the Environmental Report. The guiding principles on the environment are set out in Section 13 of the UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021 and include:
- a) the principle that protecting the environment should be integrated into the making of policies;
  - b) the precautionary principle as it relates to the environment;

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<sup>9</sup> UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021 [online] Available at: <https://www.legislation.gov.uk/asp/2021/4/contents> (Accessed 22/01/2024)

- c) the principle that preventative action should be taken to avert environmental damage;
- d) the principle that environmental damage should as a priority be rectified at source; and
- e) the principle that the polluter should pay.

1.3.5 The views of the public and the Consultation Authorities on the proposed changes to MCO provisions and the findings of this Environmental Report are now being sought.

1.3.6 The remainder of this Environmental Report is structured as follows:

- Section 2 provides background information on the proposed changes to MCO provisions;
- Section 3 presents the approach to the SEA and the methods used;
- Section 4 describes the relevant components of the environment that could be affected by the proposed changes to MCO provisions;
- Section 5 sets out the results of the assessment;
- Section 6 considers the duty on Scottish Ministers to have due regard to the guiding principles on the environment; and
- Section 7 considers the next steps in the implementation of the MCO provisions and the SEA process.

1.3.7 The Non-Technical Summary precedes Section 1.

## 2 Proposals for Changes to MCO Provisions

### 2.1 Background to MCOs

2.1.1 MCOs are a statutory mechanism under the 2010 Act which enables Scottish Ministers to provide for the conservation of nationally important marine heritage sites. MCOs are covered by sections 85 – 94 of the 2010 Act. Section 85(1)<sup>10</sup> outlines the current key purposes of MCOs:

*85 Marine conservation orders*

*(1) The Scottish Ministers may make one or more orders (“marine conservation orders”) for any or all of the following purposes—*

- (a) that of furthering the stated conservation objectives for a Nature Conservation MPA,*
- (b) that of furthering a stated purpose for a Demonstration and Research MPA,*
- (c) that of furthering the stated preservation objectives for a Historic MPA,*
- (d) where any such marine protected area—*
  - (i) includes all or part of (or is included in whole or part in) a European marine site, or*
  - (ii) adjoins a European marine site,**that of protecting the European marine site.*

2.1.2 As outlined above, Scottish Ministers currently have powers to make MCOs in the following circumstances:

- To protect any type of MPA (as designated under s67 of the 2010 Act) for the purpose of furthering a stated purpose or conservation objective; and
- To protect any overlapping or adjoining European marine site, comprising either Special Areas of Conservation (SAC) or Special Protection Areas (SPA) under the European Habitats Directive (92/43/EEC)<sup>11</sup> and Birds Directive (2009/147/EC)<sup>12</sup>.

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<sup>10</sup> Marine Scotland Act (2010), Section 85(1) [online] Available at: <https://www.legislation.gov.uk/asp/2010/5/section/85> (Accessed 22/01/2024)

<sup>11</sup> European Commission (1992). The Habitats Directive [online]. Available at: [https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive\\_en](https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive_en) (Accessed: 22/01/2024).

<sup>12</sup> European Commission (2009). The Birds Directive [online]. Available at: [https://environment.ec.europa.eu/topics/nature-and-biodiversity/birds-directive\\_en](https://environment.ec.europa.eu/topics/nature-and-biodiversity/birds-directive_en) (Accessed: 22/01/2024).

- 2.1.3 As set out under section 85(2) of the 2010 Act, Scottish Ministers can make an MCO to apply to any area in Scottish territorial waters, for the purposes set out above.
- 2.1.4 Section 86 of the 2010 Act<sup>13</sup> outlines example provisions for MCOs. These include (amongst others) prohibiting, restricting, or regulating:
- Entry or movement;
  - Anchoring;
  - Disturbance to animals or plants;
  - Removal; and
  - Depositing.
- 2.1.5 A series of MCOs have been made between 2015 and 2022 and are shown in Figure 2. These include:
- The South Arran MCO 2015<sup>14</sup>;
  - The Loch Sunart to the Sound of Jura MCO 2016<sup>15</sup>;
  - The Wester Ross MCO 2016<sup>16</sup>;
  - The Loch Carron MCO 2019<sup>17</sup>; and
  - The Red Rocks and Longay Marine Conservation Order 2022<sup>18, 19</sup>.

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<sup>13</sup> Marine (Scotland) Act 2010, section 86: Example provisions for marine conservation orders [online] Available at: <https://www.legislation.gov.uk/asp/2010/5/section/86> (Accessed 22/01/2024)

<sup>14</sup> The South Arran Marine Conservation Order 2015 [online] Available at: <https://www.legislation.gov.uk/ssi/2015/437/made> (Accessed 22/01/2024)

<sup>15</sup> The Loch Sunart to the Sound of Jura Marine Conservation Order 2016 [online] Available at: <https://www.legislation.gov.uk/ssi/2016/90/made> (Accessed 22/01/2024)

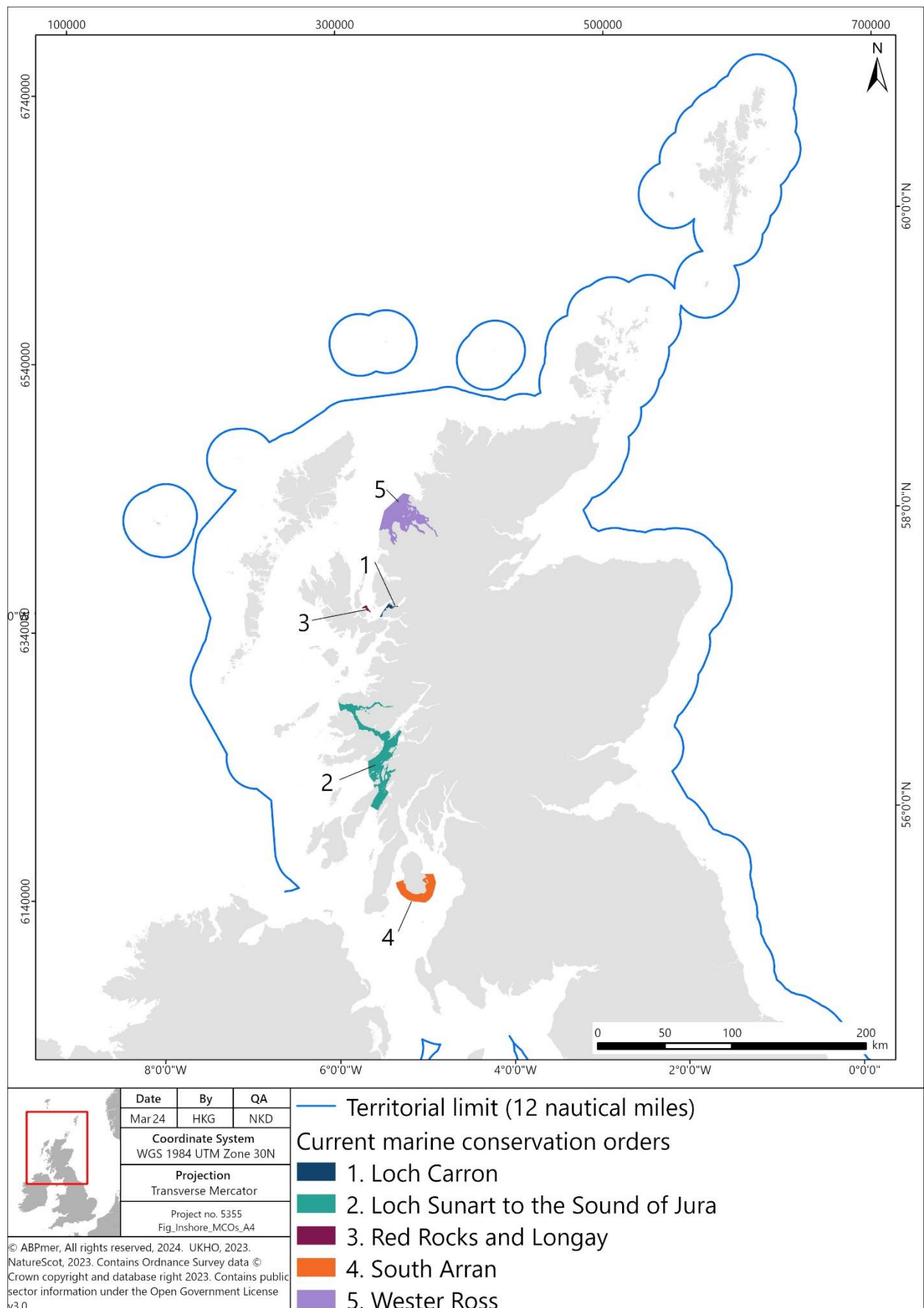
<sup>16</sup> The Wester Ross Marine Conservation Order (2016) [online] Available at: <https://www.legislation.gov.uk/ssi/2016/88/made> (Accessed 22/01/2024)

<sup>17</sup> The Loch Carron Marine Conservation Order 2019 [online] Available at: <https://www.legislation.gov.uk/ssi/2019/101/contents/made> (Accessed 22/01/2024)

<sup>18</sup> NatureScot (2023). Marine Protected Areas (MPAs). Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/marine-protected-areas-mpas> (Accessed 22/01/2024)

<sup>19</sup> The Red Rocks and Longay Marine Conservation Order 2022 [online] Available at: <https://www.legislation.gov.uk/ssi/2022/372/contents/made> (Accessed 22/01/2024)

**Figure 2 MCOs in effect in February 2022**



“Figure showing a map of Scotland and areas of current Marine Conservation Orders (MCOs). MCOs shown on map are Loch Carron, Loch Sunard to the Sound of Jura, Red Rocks and Longay, South Arran, and Wester Ross. The territorial limit of Scotland’s waters (12 nautical miles) is also shown.”

2.1.6 The Marine Directorate has identified legislative proposals which would amend the 2010 Act, the legislative framework for managing Scotland’s inshore region. As outlined in section 1.1.7, the proposals would enable MCOs to be made:

- To standalone European marine sites (i.e. those which do not overlap spatially with an MPA) in Scotland’s inshore waters; and
- nature restoration and enhancement projects in Scotland’s inshore waters.

2.1.7 The proposals therefore extend existing powers in the 2010 Act, with the provisions remaining applicable only in Scottish territorial waters.

2.1.8 It should be noted that these proposals do not identify specific new spatial locations of the sea for protection through MCOs. The intention of the proposals is to improve the current provisions under the 2010 Act by ensuring that MCOs could be used to protect standalone European marine sites and nature restoration and enhancement projects in future if appropriate. It is therefore only possible to undertake an SEA at this stage involving a preliminary consideration of the types of impacts that could arise from the future making of MCOs under the proposed extended provisions, and restrictions/limitations placed on activities within them.

## 2.2 Relationship with the existing legislation

2.2.1 As outlined in section 2.1.1, the purpose of MCOs is to further the conservation objectives, purpose, or preservation objectives of nature conservation MPAs, D&R MPAs, and Historic MPAs, respectively. These designations are covered by Part 5 of the 2010 Act. In addition to fulfilling statutory conservation obligations under both the 2010 Act and the UK Marine and Coastal Access Act 2009<sup>20</sup> (“the 2009 Act”), inshore and offshore MPAs also form part of the wider OSPAR network of MPAs that are found across the North East Atlantic<sup>21</sup>.

2.2.2 MCOs can also be applied to European marine sites if the site overlaps or adjoins an MPA. European marine sites, consisting of SACs and SPAs are

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<sup>20</sup> Marine and Coastal Access Act 2009 [online] Available at: <https://www.legislation.gov.uk/ukpga/2009/23/contents> (Accessed 22/01/2024)

<sup>21</sup> OSPAR Commission (2022) Marine Protected Areas [online] Available at: <https://www.ospar.org/work-areas/bdc/marine-protected-areas> (Accessed 22/01/2024)

designated/classified in Scotland's inshore waters under the Conservation (Natural Habitats &c.) Regulations 1994 (as amended)<sup>22, 23, 24</sup>.

- 2.2.3 The Scottish MPA network consists of 247 sites, 233 of which are for nature conservation purposes, covering 37% of Scotland's seas<sup>25</sup>. In addition, there is one D&R MPA in the waters surrounding Fair Isle<sup>26</sup>, eight historic MPAs, and five Other Area Based Measures recognised as part of the Scottish MPA network<sup>27</sup>.
- 2.2.4 MCOs can help to further the conservation objectives of MPAs through the management or restriction of activities. To date MCOs have mostly been made for the protection of MPAs from certain fishing activities (but their application is not limited to this purpose). A key benefit to MCOs is that they can be applied to multiple activities through a single regulatory route. For example, the Red Rocks and Longay MCO 2022<sup>28</sup> restricts and prohibits a wide range of activities (including fishing, diving, dredging, construction and anchoring) to protect flapper skate and their eggs.
- 2.2.5 The Inshore Fishing (Scotland) Act 1984<sup>29</sup> and the Sea Fish (Conservation) Act 1967<sup>30</sup> also provide powers to prohibit sea fishing in specified areas. An example is The Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order 2015<sup>31</sup> which restricts certain fishing activities in specified MPAs. MCOs and fisheries management measures in effect in February 2022 are available on 'Marine Scotland Maps NMPI'<sup>32</sup>.

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<sup>22</sup> JNCC (2023). Special Areas of Conservation [online] Available at: <https://jncc.gov.uk/our-work/special-areas-of-conservation/> (Accessed 22/01/2024)

<sup>23</sup> JNCC (2023). Special Protection Areas [online] Available at: <https://jncc.gov.uk/our-work/special-protection-areas/> (Accessed 22/01/2024)

<sup>24</sup> The Conservation (Natural Habitats, &c.) Regulations 1994 [online] Available at: <https://www.legislation.gov.uk/uksi/1994/2716/contents/made> (Accessed 22/01/2024)

<sup>25</sup> NatureScot (2023) Marine Protected Areas (MPAs) [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/marine-protected-areas-mpas> (Accessed 22/01/2024)

<sup>26</sup> NatureScot (2023). Fair Isle MPA(DR) [online] Available at: <https://sitelink.nature.scot/site/10499> (Accessed 22/01/2024)

<sup>27</sup> NatureScot (2021) The MPA Network [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/marine-protected-areas/scotlands-marine-protected-area-network> (Accessed 22/01/2024)

<sup>28</sup> The Red Rocks and Longay Marine Conservation Order 2022 [online] Available at: <https://www.legislation.gov.uk/ssi/2022/372/contents/made> (Accessed 22/01/2024)

<sup>29</sup> Inshore Fishing (Scotland) Act 1984 [online] Available at: <https://www.legislation.gov.uk/ukpga/1984/26/contents> (Accessed 22/01/2024)

<sup>30</sup> Sea Fish (Conservation) Act 1967 [online] Available at: <https://www.legislation.gov.uk/ukpga/1967/84> (Accessed 20/02/2024).

<sup>31</sup> The Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order 2015 [online] Available at: <https://www.legislation.gov.uk/ssi/2015/435/made> (Accessed 22/01/2024)

<sup>32</sup> Scottish Government (2023). Marine Scotland Maps NMPI [online]. Available at: <https://marinescotland.atkinsgeospatial.com/nmpi/default.aspx?layers=838> (Accessed 22/01/2024).



2.2.6 In terms of wider seas management of activities, marine licensing and marine planning contribute to sustainable development and use of marine resources. The National Marine Plan<sup>33</sup> outlines that consideration should be given to opportunities to enhance biodiversity and associated ecosystem services, including recovery and/or enhancement of degraded habitats or species populations. GEN9 (Natural Heritage) of Scotland's National Marine Plan also outlines that development and use of the marine environment must protect and, where appropriate, enhance the health of the marine area<sup>33</sup>. In terms of marine licensing, the 2010 Act (s.27) requires that in determining an application, regard must be had to the need to:

- Protect the environment;
- Protect human health; and
- Prevent interference with legitimate uses of the sea.

## 2.3 Policy context and Development of Proposals

2.3.1 The 2005 Act requires Responsible Authorities to identify the plan's broader policy context, particularly any relevant environmental protection objectives that will influence the plan's development and implementation. In terms of the immediate policy context for the proposed changes to MCO provisions, these are set out in section 1.1.

2.3.2 The following paragraphs set out the broader policy context in which the proposed extension to MCO provisions sit, beginning with a summary of relevant marine policies and followed by an overview of policies relating to the SEA topics that have been scoped into the assessment, specifically Biodiversity, Flora and Fauna; Soil (benthic (seabed) substrates and habitats); Water; Climatic Factors; and Cultural Heritage<sup>34</sup>.

### General marine policy

2.3.3 At a UK level, the Marine Strategy Regulations (2010) require the UK to take the necessary measures to achieve or maintain Good Environmental Status (GES) through the development of a UK Marine Strategy. It sets out the UK level policy framework for the delivery of the vision of clean, healthy, safe,

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<sup>33</sup> Scottish Government (2015). Scotland's National Marine Plan [online] Available at: <https://www.gov.scot/publications/scotlands-national-marine-plan/pages/5/> (Accessed 22/01/2024)

<sup>34</sup> Although Soil, Water and Climatic Factors have been scoped in under 'Biodiversity, Flora and Fauna', relevant policies relating to each are presented under their own headings for ease of reading.

productive, and biologically diverse oceans and seas. However, GES has not been achieved for 11 out of the 15 indicators<sup>35</sup>.

- 2.3.4 At a national level, the 2010 Act<sup>36</sup> is applicable to Scotland's inshore waters (0-12 NM) and sets out powers for MCOs. Marine nature conservation measures are based on a three pillar approach, with action at the wider seas level (policy and measures); specific species conservation measures, and through site protection measures such as MPAs.
- 2.3.5 Scotland's National Marine Plan (NMP)<sup>37</sup> covers the management of Scottish inshore and offshore waters. The NMP includes protection and enhancement of the health of marine areas in its general policy objectives. In addition, the NMP recognises that management requirements for specified protected sites must be met throughout the planning process. NMP2 will build on, and supersede, the first NMP. Currently in development, NMP2 will aim to reflect policy and legislative changes that have come forward since the first NMP was adopted<sup>38</sup>.

## Biodiversity, Flora and Fauna

- 2.3.6 At the international level, targets have been developed, through the UN Convention on Biological Diversity (CBD) and the Kunming-Montreal Global Biodiversity Framework (GBF)<sup>39</sup>. The CBD is a multilateral treaty, to which the UK is a signatory, which came into force in 1993, following the 1992 Earth Summit in Rio de Janeiro. One of the three objectives of the Convention is the conservation of biological diversity (or biodiversity). The GBF reiterates the importance of fulfilling the original objectives of the convention, i.e., conserving biodiversity, while setting out a mission to reverse biodiversity loss and to enhance and restore natural ecosystems to ensure their integrity, connectivity, and resilience.
- 2.3.7 For the North East Atlantic, OSPAR is the mechanism by which 15 Governments and the European Union (EU) cooperate to protect the marine environment. The Northeast Atlantic Environment Strategy 2030 has been

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<sup>35</sup> Defra (2019). Marine strategy part one: UK updated assessment and Good Environmental Status [online]. Available at: <https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status> (Accessed 22/01/2024)

<sup>36</sup> The Marine Scotland Act 2010 [online] Available at: [Marine \(Scotland\) Act 2010 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2010/23) (Accessed 22/01/2024)

<sup>37</sup> Scottish Government (2015) Scotland's National Marine Plan [online]. Available at: <https://www.gov.scot/publications/scotlands-national-marine-plan/> (Accessed: 22/01/2024).

<sup>38</sup> Scottish Government (2022) National marine plan 2: engagement strategy [online]. Available at: <https://www.gov.scot/publications/scotlands-national-marine-plan-2/> (Accessed: 22/01/2024).

<sup>39</sup> Convention on Biological Diversity (2023). Kunming-Montreal Global Biodiversity Framework [online]. Available at: <https://www.cbd.int/gbf/> (Accessed: 22/01/2024)

adopted by OSPAR<sup>40</sup> which sets out strategic objectives to help to achieve good environmental status in the marine environment.

- 2.3.8 OSPAR also has a list of threatened and/or declining species and habitats<sup>41</sup> which was developed through the OSPAR Protection and Conservation of Ecosystems and Biological Diversity work area to fulfil the commitment to identify species and habitats that require protection. Contracting parties and observers to the Commission nominate species and habitats they consider in need of priority protection. Numerous species and habitats found within the Scottish Marine Area are noted to be in decline.
- 2.3.9 At a European level, the Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EEC) designated marine areas of importance as Special Areas of Conservation and Special Protection Areas. These directives are implemented in Scotland through the Conservation (Natural Habitats, &c.) Regulations 1994<sup>24</sup> within inshore waters (0-12 NM) and the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2017<sup>123</sup> which apply in waters beyond 12 NM. The key aims of these regulations are the protection, maintenance, and enhancement of biodiversity, particularly vulnerable species and habitats. The establishment of the Natura 2000 network (now referred to as the National Site Network) sought to deliver the requirements of these regulations.
- 2.3.10 At the national level, the Scottish Biodiversity Strategy to 2045<sup>42</sup> sets out the vision to restore and regenerate biodiversity across Scotland's land, freshwater and seas by 2045. This strategy includes the marine environment and sets out several priority actions linked to goals and targets specified in the CBD<sup>43</sup>.
- 2.3.11 Ambitions under the Environment Strategy for Scotland<sup>44</sup> include focus on the protection and restoration of Scotland's nature with flourishing biodiversity, clean and healthy air, water, seas and soils. It is a high level overarching policy framework identifying Scotland's strategic plans, priorities and opportunities to achieve these aims.

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<sup>40</sup> OSPAR Commission (2021). North-East Atlantic Environment Strategy 2030 [online]. Available at: <https://www.ospar.org/convention> (Accessed: 22/01/2024)

<sup>41</sup> OSPAR Commission (2018). List of Threatened and/or Declining Species and Habitats [online]. Available at: <https://www.ospar.org/work-areas/bdc/species-habitats/list-of-threatened-declining-species-habitats> (Accessed: 22/01/2024).

<sup>42</sup> Scottish Government (2022). Biodiversity strategy to 2045: tackling the nature emergency [online]. Available at: <https://www.gov.scot/publications/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland/> (Accessed: 22/01/2024)

<sup>43</sup> United Nations (1992). The Convention on Biological Diversity [online]. Available at: <https://www.cbd.int/convention/text/> (Accessed: 22/01/2024).

<sup>44</sup> Scottish Government (2020). The Environment Strategy for Scotland: vision and outcomes [online]. Available at: <https://www.gov.scot/publications/environment-strategy-scotland-vision-outcomes/> (Accessed: 22/01/2024)

2.3.12 The Blue Economy Vision for Scotland<sup>45</sup> sets out an approach for creating and maintaining economic prosperity for Scotland, maximising the potential benefits from the marine environment. The protection and enhancement of marine assets is a core aspect of the vision, with an aim to see Scotland’s marine environment restored and sustainably managed to achieve good environmental status.

## Soil

- 2.3.13 The topic of ‘Soil’ will be given consideration under the topic of ‘Biodiversity, Flora, and Fauna’. As such, soil policy and protection objectives relevant to the assessment are set out below.
- 2.3.14 There are currently no legislative or policy tools developed specifically for the protection of soils, however there are several site designations for which the management agreements provide a mechanism to extend protection to soils. The protections aim to enhance biodiversity, geodiversity, cultural resources, and landform value.
- 2.3.15 Nature conservation MPAs, as designated under the 2010 Act and 2009 Act, may be created for the purposes of protecting marine habitats and features of geological or geomorphological interest. Similarly, SSSI<sup>46</sup> are those areas of land and water that best represent Scotland’s natural heritage in terms of its flora, fauna, geology, geomorphology, and/or a mixture of these natural features, as designated by Scottish Natural Heritage (now NatureScot) under the Nature Conservation (Scotland) Act 2004<sup>47</sup>
- 2.3.16 Sea-floor integrity is included in the UK Marine Strategy<sup>48</sup> as one of 11 descriptors used for the assessment of progress towards GES. This relates to benthic habitats, with a high-level objective of ensuring the health of seabed habitats is not significantly affected by human activities. Hydrographical conditions are also considered, noting that changes resulting from anthropogenic activities should not have significant long-term impacts on UK habitats and species.

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<sup>45</sup> Scottish Government (2022). A Blue Economy Vision for Scotland [online] Available at: <https://www.gov.scot/publications/blue-economy-vision-scotland/> (Accessed 22/01/2024)

<sup>46</sup> SNH (2017) Sites of Special Scientific Interest [online]. Available at: <https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-areas/national-designations/sites-special-scientific-interest> (Accessed: 22/01/2024).

<sup>47</sup> Nature Conservation (Scotland) Act 2004 [asp 6] [online]. Available at: <https://www.legislation.gov.uk/asp/2004/6/contents> (Accessed: 22/01/2024).

<sup>48</sup> The Marine Strategy Regulations 2010, reg 13(3) (2010) [online]. Available at <https://www.legislation.gov.uk/uksi/2010/1627/regulation/13/made> (Accessed: 22/01/2024)

2.3.17 Scotland's Geodiversity Charter<sup>49</sup>, which was launched by the Scottish Geodiversity Forum and supported by Scottish Government, sets out a vision for the protection of a resource vital to the environment, economy, heritage, and future sustainability<sup>50</sup>. The marine environment is included as an area with valuable geodiversity/geo-heritage that should be conserved and enhanced through integration into policy and decision frameworks.

## Water

- 2.3.18 The topic of 'Water' will be given consideration under the topic of 'Biodiversity, Flora, and Fauna'. As such, soil policy and protection objectives relevant to the assessment are set out below.
- 2.3.19 At the European level the Water Framework Directive (2000/60/EC)<sup>51</sup> ("WFD") is a comprehensive framework for protecting, managing and improving Europe's water bodies, including rivers, lochs, transitional waters (estuaries), coastal waters, and groundwater dependent wetlands. The WFD requires an assessment of both chemical and ecological status for each individual waterbody with the goal of bringing all European waters to 'good ecological and chemical status,' which includes protecting biodiversity. The Marine Strategy Framework Directive (2008/56/EC)<sup>52</sup> extends the requirements of the WFD beyond 1 NM.
- 2.3.20 Scotland fulfils its water protection obligations under the WFD and MSFD primarily through the Water Environment and Water Services (Scotland) Act 2003<sup>53</sup> which defines the establishment of River Basin Management Plans (RBMP), the Water Environment (Controlled Activities) (Scotland) Regulations 2011<sup>54</sup>, and the Marine Strategy Regulations 2010<sup>55</sup>.

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<sup>49</sup> NatureScot (2023). Scotland's Geodiversity Charter [online] Available at: <https://www.nature.scot/landforms-and-geology/protecting-our-geodiversity/scotlands-geodiversity-charter> (Accessed 22/01/2024)

<sup>50</sup> Scottish Geodiversity Forum (2017). Scotland's Geodiversity Charter 2018–2023 [online]. Available at: <https://scottishgeodiversityforum.files.wordpress.com/2019/06/scotlands-geodiversity-charter2018-2023.pdf> (Accessed: 22/01/2024).

<sup>51</sup> European Commission (2000). Water Framework Directive (2000/60/EC) [online]. Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32000L0060> (Accessed: 22/01/2024).

<sup>52</sup> European Commission (2008). Marine Strategy Framework Directive (2008/56/EC) [online]. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32008L0056> (Accessed: 22/01/2024).

<sup>53</sup> Water Environment and Water Services (Scotland) Act 2003 [online] Available at: <https://www.legislation.gov.uk/asp/2003/3/contents> (Accessed 22/01/2024)

<sup>54</sup> The Water Environment (Controlled Activities) (Scotland) Regulations 2011 [online] Available at: [The Water Environment \(Controlled Activities\) \(Scotland\) Regulations 2011 \(legislation.gov.uk\)](https://www.legislation.gov.uk/uksi/2011/1627/contents) (Accessed 22/01/2024)

<sup>55</sup> Marine Strategy Regulations 2010 (2010) [online]. Available at: <https://www.legislation.gov.uk/uksi/2010/1627/contents> (Accessed: 22/01/2024).

## Climatic Factors

- 2.3.21 The Paris Agreement<sup>56</sup> is a legally binding international treaty agreed by world leaders at the UN Climate Change Conference (COP21) in 2015, which came into force in 2016. The agreement sets out goals to substantially reduce greenhouse gas emissions to limit global temperature increases to a maximum of 2°C, while pursuing an ideal limit of below 1.5°C. To achieve these temperature increase limits a target of net zero by 2050 was set, with an interim reduction of emissions by 45% by 2030. The Glasgow Climate Pact<sup>57</sup>, a key outcome from COP26, called for countries to revisit and strengthen 2030 targets and associated actions required to achieve these.
- 2.3.22 The Climate Change (Scotland) Act 2009<sup>58</sup> sets out the statutory framework for greenhouse gas (GHG) emissions reductions in Scotland. The Act was amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 which increased interim reduction targets to 75% and 90% reduction (compared to the baseline) by 2030 and 2040, respectively<sup>59</sup>. The 2019 Act also brought forward the target year for achieving net-zero emissions in Scotland (100%+ lower than the baseline) to 2045. The baseline refers to aggregate amounts of Scottish emissions of GHG in either 1990 or 1995, dependant on the GHG. The Climate Change (Scotland) Act 2009 also set out a duty for Scottish Ministers to lay a climate change plan and a programme for adaptation to climate change before Scottish Parliament.
- 2.3.23 Scottish Government's Climate Change Plan 2018-2032<sup>60</sup> (updated 2020) sets out the framework for how the targets in the Climate Change Act 2019 can be achieved. The plan set out a need to harness the potential of Scotland's marine and wind resources for economic development and a transition away from fossil fuels.
- 2.3.24 Climate Ready Scotland: Climate Change Adaptation Programme 2019- 2024<sup>61</sup> sets out an outcomes-based approach to adapting to climate change, including

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<sup>56</sup> United Nations (2015). The Paris Agreement [online]. Available at [https://unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](https://unfccc.int/sites/default/files/english_paris_agreement.pdf) (Accessed: 22/01/2024)

<sup>57</sup> United Nations (2021). The Glasgow Climate Pact [online]. Available at: [https://unfccc.int/sites/default/files/resource/cma2021\\_10\\_add1\\_adv.pdf](https://unfccc.int/sites/default/files/resource/cma2021_10_add1_adv.pdf) (Accessed: 22/01/2024).

<sup>58</sup> Climate Change (Scotland) Act 2009 (2009) [online]. Available at: <https://www.legislation.gov.uk/asp/2009/12/contents> (Accessed: 22/01/2024).

<sup>59</sup> Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 (2019) [online]. Available at: <https://www.legislation.gov.uk/asp/2019/15/contents> (Accessed: 22/01/2024).

<sup>60</sup> Scottish Government (2020). Securing a green recovery on a path to net zero: climate change plan 2018– 2032 – update [online]. Available at: <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/> (Accessed: 22/01/2024).

<sup>61</sup> Scottish Government (2019). Climate Ready Scotland: climate change adaptation programme 2019-2024 [online]. Available at: <https://www.gov.scot/publications/climate-ready-scotland-second-scottish-climate-change-adaptation-programme-2019-2024/> (Accessed: 22/01/2024).

a set of outcomes related to the marine environment. Recognising the value of ecosystem services, e.g., carbon sequestration and climate regulation, in mitigating climate change the programme highlights the need to regulate and support such services. This approach seeks to ensure the coastal and marine environment is protected and enhanced, as well as being valued and enjoyed, and has increased resilience to climate change.

- 2.3.25 The 2010 Act specifies a duty for Scottish Ministers to take the best course of action to mitigate or adapt to climate change when exercising any function under the Act (consistent with the purpose of the function concerned).

## Cultural Heritage

- 2.3.26 Historic MPAs are designated under section 67 of the Marine (Scotland) Act 2010<sup>62</sup> with an aim to preserve and safeguard marine historic assets of national importance. Such assets include remains of vessels, structures relating to human activity such as trade by sea, caves, or deposits and artefacts that evidence previous human activity.
- 2.3.27 Our Place in Time: The Historic Environment Strategy for Scotland (2014)<sup>63</sup> provides a high-level framework setting out a 10-year vision for Scotland's historic environment. The strategy seeks to ensure that Scotland's historic environment is protected and enhanced, recognising a desire to pass access to this environment on to future generations. In 2023 a new historic strategy for Scotland (Our Past, Our Future) was published<sup>64</sup>. It sets out a national mission to sustain and enhance the benefits of Scotland's historic environment, for people and communities now and into the future.
- 2.3.28 The Culture Strategy for Scotland (2020)<sup>65</sup> recognises that Scotland has a rich cultural heritage, with a wide range of cultural activities taking place across the country. The strategy recognises that engagement in culture takes many forms, including historic and traditional practices and a key aim of the strategy is to recognise each community's local cultures and how they generate distinct senses of place and identity.

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<sup>62</sup> Marine (Scotland) Act 2010, s67 (2020) [online]. Available at: <https://www.legislation.gov.uk/asp/2010/5/section/67> (Accessed: 22/01/2024).

<sup>63</sup> Scottish Government (2014). Our Place in Time: the Historic Environment Strategy for Scotland [online]. Available at <https://www.gov.scot/publications/place-time-historic-environment-strategy-scotland/> (Accessed: 22/01/2024)

<sup>64</sup> Historic Environment Scotland (2023). Our Past, Our Future [online] Available at: <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=79204155-9eb2-4d29-ab14-aff200ec2801> (Accessed 22/01/2024)

<sup>65</sup> Scottish Government (2020). A Culture Strategy for Scotland [online]. Available at <https://www.gov.scot/publications/culture-strategy-scotland/> (Accessed: 22/01/2024).

- 2.3.29 The UNESCO Convention on the Protection of the Underwater Cultural Heritage (2001)<sup>66</sup> sets out a framework to regulate interference with underwater cultural heritage in international waters. This has not been ratified by the UK Government. However, Annex to the 2001 Convention – Rules Concerning Activities Directed at the Underwater Cultural Heritage provides an accepted model of ‘best practice’ for underwater archaeology.
- 2.3.30 The Historic Environment Policy for Scotland<sup>67</sup> (HEPS) is a policy statement for decision making for the whole of the historic environment and outlines six policies that define how the historic environment should be managed.

## 2.4 Finalisation and adoption of changes to MCO provisions

2.4.1 Proposals outlined here will be part of a public consultation, along with this Environmental Report. Following the public consultation, a Post-adoption Statement will be produced, demonstrating:

- how environmental considerations have been integrated into the proposals;
- how the environmental report has been taken into account;
- how the views of the consultation authorities have been taken into account;
- how the results of the consultation have been taken into account;
- the reason for choosing the proposals, as adopted, in the light of other reasonable alternatives considered; and
- the measures that are to be taken to monitor the significant environmental effects of the implementation of the proposals.

2.4.2 The proposals would amend the existing MCO provisions in the 2010 Act and would therefore need to be implemented via primary legislation in the Scottish Parliament. Any future MCOs proposed under the revised provisions would be implemented via secondary legislation.

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<sup>66</sup> United Nations: UNESCO (2001). Convention on the Protection of the Underwater Cultural Heritage [online]. Available <https://en.unesco.org/about-us/legal-affairs/convention-protection-underwater-cultural-heritage> (Accessed: 22/01/2024).

<sup>67</sup> Historic Environment Scotland (2019). Historic Environment Policy for Scotland [online] Available at: <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=1bcfa7b1-28fb-4d4b-b1e6-aa2500f942e7> (Accessed 22/01/2024)



## 3 Approach to the Assessment

### 3.1 Purpose of the assessment

3.1.1 The purpose of the SEA is to assess the potential for likely significant environmental effects (positive or negative) that may arise from changes to the application of Marine Conservation Order provisions (MCOs) under the 2010 Act. Reforms seek to extend the powers of the Scottish Ministers to make MCOs in Scottish inshore waters (0-12 NM). Undertaking this SEA allows corresponding mitigation measures to be identified where necessary and highlights opportunities for enhancement in cases where beneficial effects are likely.

### 3.2 Scope of the Proposal

3.2.1 The aim of the proposal would be to extend the powers available to Scottish Ministers to make MCOs in Scottish inshore waters (0-12 NM), addressing shortfalls in the existing MCO provisions within the 2010 Act of:

- MCOs cannot be applied to standalone European marine sites (i.e. those which do not overlap spatially with an MPA), which means that the powers available to Scottish Ministers to protect European marine sites are more limited than those available to protect MPAs; and
- MCOs cannot be applied to protect marine restoration projects.

3.2.2 The proposal would therefore:

- Provide a means for all European marine sites to be protected by MCOs if necessary; and
- Provide a means for nature restoration and enhancement activities to be safeguarded by MCOs if necessary.

3.2.3 The geographical scope of the proposed reforms extend up to Mean High Water (MHW) springs, and therefore also include intertidal elements.

3.2.4 It is only possible to undertake a high-level SEA at this stage to consider the types of impacts that could arise from any future implementation of MCOs.

3.2.5 The potential economic and social impacts that may result from the implementation of the legislative reforms does not form part of the scope of this SEA. Additional assessments may be undertaken, as appropriate, to help estimate the socio-economic benefits, costs, and risks associated with the proposed reform. Section 91 of the 2010 Act also sets out a duty on Scottish Ministers to assess the socio-economic and environmental impact of restricting activity when making an MCO.

### 3.3 Scope of the Assessment

- 3.3.1 The scope will focus on the potential beneficial effects of the proposal, the potential for spillover effects beyond the location of the areas where MCOs are made, any cumulative effects arising from interactions with other comparable policies or legislative reforms, and potential negative effects resulting from the displacement of activities to other habitats and species outside the area of an MCO.
- 3.3.2 The scope of the assessment has been undertaken with consideration of the environmental topics set out in Schedule 3 of the 2005 Act<sup>68</sup>. A review of these topics suggests that potentially significant effects would focus on Biodiversity, Soil, Water, Climatic Factors (including marine carbon sequestration/ blue carbon processes) and Cultural Heritage.

The rationale for scoping in and out each of the SEA topics is set out in Table 1.

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<sup>68</sup> The Environmental Assessment (Scotland) Act 2005, Schedule 3 (2005) [online]. Available at: <https://www.legislation.gov.uk/asp/2005/15/schedule/3> (Accessed: 22/01/2024).

**Table 1 Proposed scoping in/out of SEA topics**

| SEA Topic                      | In/Out | Reasons for inclusion / exclusion  |
|--------------------------------|--------|--|
| Biodiversity, Flora, and Fauna | In     | The proposal considered directly relates to biodiversity by enhancing marine protection and conservation measures through the expansion of MCO powers.   |
| Population and Human Health    | Out    | No environmental impacts are considered likely on this SEA topic. This topic has therefore been scoped out. Additional assessments may be undertaken, as appropriate, to help estimate the socio-economic benefits, costs, and risks associated with the proposed reform.  |
| Soil                           | In     | Soils for the purposes of this SEA are taken to be benthic (seabed) substrates and habitats. The proposal could help Scotland's marine waters achieve and maintain Good Environmental Status, as per Marine Strategy Framework Directive/Marine Strategy Regulations criteria, as well as 'good' status under the WFD. This topic is assessed under the 'Biodiversity, Flora and Fauna' given the close link with issues, such as seafloor condition, with geodiversity. |
| Water                          | In     | The proposals could benefit WFD objectives by improving the ecological status of water bodies that overlap with areas covered by MCOs, as well as potential benefits beyond these locations. Water quality, in line with broader objectives of the Water Framework Directive, is scoped in. Potential impacts on ecological status will be addressed under 'Biodiversity, Flora, and Fauna'.   |
| Air                            | Out    | No significant environmental impacts on air quality are anticipated from the proposal.   |
| Climatic Factors               | In     | Proposals have potential significant impacts on marine carbon sequestration/ blue carbon processes, resulting in potential benefits for climate change mitigation.   |
| Material Assets                | Out    | No significant environmental impacts on material assets are considered likely on this topic. Additional assessments may be undertaken, as appropriate, to help estimate the socio-economic benefits, costs, and risks associated with the proposed reform.   |
| Cultural Heritage              | In     | As a maritime nation there are strong cultural and historical links with the marine environment in many areas of Scottish society. This topic is scoped into the assessment, given the potential effects (positive and negative) of the proposal to marine historic environment features, either through enhanced use of MCO on certain locations, or potential displacement of activities to other locations.   |

3.3.3 Consultation responses on the Screening and Scoping Reports have been reviewed and where appropriate have been built into the scope and methodology of the assessments.

## 3.4 Consideration of Reasonable Alternatives

3.4.1 In accordance with the 2005 Act, there is a requirement to consider reasonable alternatives that fulfil the objective of the plan as part of the SEA. The reasonable alternatives that have been identified as part of the development of legislative reforms have been assessed.

3.4.2 The rationale for implementing individual MCOs would be specific to the area under consideration (in relation to the habitats, species and conservation interest present) and the anthropogenic pressures that it may be experiencing.

3.4.3 Given that spatially specific areas within which MCOs may be applied under these proposed extended provisions have not yet been identified, reasonable alternatives are considered to be as follows:

- “Do nothing”, i.e. keep the provisions of the 2010 Act as they are currently
- Seeking to secure outcomes through voluntary mechanisms or guidance approaches.

## 3.5 Assessment Methodology

### Assessment of potential effects

3.5.1 Based on the available data and strategic nature of SEAs, a high level, qualitative desk-based assessment of potential likely significant effects of the proposal has been undertaken which compares the potential impacts against the receiving environment.

3.5.2 The assessment of potential likely significant benefits has considered how environmental pressures will reduce as a result of the proposed legislative reform. The assessment of potential likely significant negative environmental effects has considered information on current/ recent activity and an indication of potential displacement levels.

3.5.3 The assessment has involved gathering evidence-based assumptions on potential positive or negative environment impacts on the wider environment before describing and quantifying those effects identified.

3.5.4 The assessment has drawn on a number of different sources of information, including:

- Spatial information, such as that gathered using Scottish Government's Geographic Information System (GIS);
- Research studies relating to the benefits of enhanced marine protection measures;
- The results of any previous SEA work that is directly/ indirectly applicable to the legislative proposals;
- Published guidance from other UK Government or associated bodies; and
- Monitoring information from previous or ongoing strategies and plans that relate to the legislative proposals.

3.5.5 The key potential environmental effects or impact pathways that are likely to arise from the proposed legislative reforms are as follows:

- Potential benefits to marine biodiversity and the marine ecosystem;
- Potential spillover benefits beyond MCO boundaries; and
- Potential adverse effects resulting from possible displacement of activities from MCO boundaries into new areas and the intensification of activities in areas where these activities already occur.

3.5.6 The assessment of potential benefits to marine habitats and species has considered in generic terms how the pressures on the marine environment might reduce as a result of the adoption of the policy reforms and reasonable alternatives.

3.5.7 The assessment of potential for spillover benefits beyond MCO boundaries has considered how the change in pressures within MCOs might result in spillover benefits taking account of the latest available evidence.

3.5.8 Section 86 of the 2010 Act<sup>69</sup> outlines example provisions for MCOs. These include (amongst others) prohibiting, restricting, or regulating:

- Entry or movement;
- Anchoring;
- Disturbance to animals or plants;
- Removal; and
- Depositing.

3.5.9 For the assessment of adverse environmental effects, a high level qualitative review of activities that might be displaced and the potential implications of that displacement on the marine environment has been undertaken.

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<sup>69</sup> Marine (Scotland) Act 2010, section 86: Example provisions for marine conservation orders [online] Available at: <https://www.legislation.gov.uk/asp/2010/5/section/86> (Accessed 22/01/2024)

3.5.10 The assessment has included consideration of the potential for transboundary effects on EU Member States if displacement of activities occurs outwith areas under Scottish jurisdiction.

### Assessment criteria

3.5.11 For the purposes of this assessment, only indicative criteria to define the nature or type of potential effects that may result from the proposal and reasonable alternatives have been used (i.e. beneficial, adverse or neutral). It is not possible to determine the potential scale/magnitude of these effects in advance of designating any MCOs under the proposed new powers, and undertaking a spatial analysis of site specific information.

### SEA objectives

3.5.12 The potential implications of the proposed legislative reforms and reasonable alternatives have also been assessed against SEA objectives. The SEA objectives that have been applied in this assessment are presented in Table 2.

**Table 2 SEA objectives**

| SEA Topic                      | SEA Objectives  |
|--------------------------------|---|
| Biodiversity, Flora, and Fauna | <ul style="list-style-type: none"> <li>To protect and enhance marine and coastal ecosystems, including species and habitats, and their interactions; and</li> <li>To maintain and enhance the ecological coherence of the MPA network and ensure conservation objectives for protected marine areas are achieved by supporting effective management.</li> </ul> |
| Soil                           | <ul style="list-style-type: none"> <li>To maintain, protect and enhance the character and integrity of the seabed.</li> </ul>   |
| Water                          | <ul style="list-style-type: none"> <li>To maintain or work towards achieving good ecological status and good environmental status.</li> </ul>   |
| Climatic Factors               | <ul style="list-style-type: none"> <li>To preserve and enhance existing marine carbon stocks and carbon sequestration potential.</li> </ul>   |
| Cultural Heritage              | <ul style="list-style-type: none"> <li>To conserve and protect cultural and historical heritage associated with the marine environment.</li> </ul>  |

## 3.6 Building on previous assessments

3.6.1 This SEA builds on previous and ongoing SEAs that have been undertaken on marine conservation work by the Scottish Government. This includes the following:

- the designation of nature conservation MPAs (assessed in 2013)<sup>70</sup>;
- phase one fisheries management proposals for inshore MPAs (assessed in 2014);<sup>71</sup>
- the designation of an additional suite of marine SPAs (assessed in 2018)<sup>72</sup> ;
- the designation of four additional MPAs (assessed in 2019)<sup>73</sup>;
- the designation of the West of Scotland MPA (assessed in 2019)<sup>74</sup>;
- 2018 proposals for management measures applying to PMFs;<sup>75</sup>; and
- Proposals for management measures applying to PMFs and inshore MPAs (currently under assessment).

3.6.2 The proposed extensions to existing MCO provisions would interact with and support the potential future development of a marine restoration plan and policy guidance, which would have the overarching aim of streamlining the process for restoration activities. The restoration plan would be subject to a separate SEA.

3.6.3 Other relevant sources of information may include the SEAs undertaken on the Sectoral Marine Plans for Offshore Renewable Energy in Scottish Waters<sup>76</sup>, the

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<sup>70</sup> Scottish Government (2013) Planning Scotland's Seas: 2013 – Possible Nature Conservation Marine Protected Areas Consultation Overview – Strategic Environmental Assessment Report [online] Available at: <https://www.gov.scot/publications/planning-scotlands-seas-2013-possible-nature-conservation-marine-protected-areas/documents/> (Accessed 03/11/2023)

<sup>71</sup> Scottish Government (2014) 2014 Consultation on the Management of Inshore Special Areas of Conservation and Marine Protected Areas Overview [online] Available at: <https://www.gov.scot/publications/2014-consultation-management-inshore-special-areas-conservation-marine-protected-areas/pages/2/> (Accessed 22/01/2024)

<sup>72</sup> Scottish Government (2018) SEA of Marine Proposed Special Protection Areas Strategic Environmental Assessment Environmental Report. Available at: [https://consult.gov.scot/marine-scotland/sea-for-15-proposed-special-protection-areas/supporting\\_documents/Marine%20SPA%20SEA%20%20Consultation%20document%20%20September%202018.pdf](https://consult.gov.scot/marine-scotland/sea-for-15-proposed-special-protection-areas/supporting_documents/Marine%20SPA%20SEA%20%20Consultation%20document%20%20September%202018.pdf) (Accessed 22/01/2024)

<sup>73</sup> Marine Scotland (2019) Sustainability Environmental Assessment of proposed Marine Protected Areas Sustainability Appraisal [online] Available at: [https://consult.gov.scot/marine-scotland/four-new-marine-protected-areas/supporting\\_documents/MPA%20Sustainability%20Appraisal%20Project%20%20Final%20with%20covers%20%20SEA%20Report%20%2006%20June%202019.pdf](https://consult.gov.scot/marine-scotland/four-new-marine-protected-areas/supporting_documents/MPA%20Sustainability%20Appraisal%20Project%20%20Final%20with%20covers%20%20SEA%20Report%20%2006%20June%202019.pdf) (Accessed 22/01/2024)

<sup>74</sup> Marine Scotland (2019) Proposed Deep Sea Marine Reserve Strategic Environmental Assessment Environmental Report [online] Available at: [https://consult.gov.scot/marine-scotland/deep-sea-marine-reserve/supporting\\_documents/Development%20of%20deep%20sea%20reserve%20%20West%20of%20Scotland%20%20SEA%20%20Final.pdf](https://consult.gov.scot/marine-scotland/deep-sea-marine-reserve/supporting_documents/Development%20of%20deep%20sea%20reserve%20%20West%20of%20Scotland%20%20SEA%20%20Final.pdf) (Accessed 22/01/2024)

<sup>75</sup> Marine Scotland (2018) SEA of Proposed Inshore PMF Management Measures Strategic Environmental Assessment Screening and Scoping Report [online] Available at: [https://consult.gov.scot/marine-scotland/priority-marine-features/supporting\\_documents/R2977%20Draft\\_ScreeningScoping\\_03July2018.pdf](https://consult.gov.scot/marine-scotland/priority-marine-features/supporting_documents/R2977%20Draft_ScreeningScoping_03July2018.pdf) (Accessed 22/01/2024)

<sup>76</sup> Scottish Government (2013) Planning Scotland's Seas: Draft Sectoral Marine Plans for Offshore Renewable Energy in Scottish Waters – Strategic Environmental Assessment: Environmental Report and Appendix A [online] Available at: <http://www.gov.scot/Publications/2013/07/2403/0> (Accessed 22/01/2024)

more recent Sectoral Marine Plan for Offshore Wind Energy<sup>77</sup>, Sectoral Marine Plan for Offshore Wind for Innovation and Targeted Oil and Gas Decarbonisation (INTOG)<sup>78</sup>, Management Proposals of Inshore Fisheries Groups<sup>79</sup>, and the Wild Seaweed Harvesting SEA<sup>80</sup>.

- 3.6.4 As some of this SEA work is ongoing, these concurrent assessments have been used to inform the current assessment as far as possible, providing a more complete understanding of cumulative effects in particular.

## 3.7 Cumulative Effects Assessment

- 3.7.1 Cumulative effects assessments present significant methodological challenges owing to limitations of data availability from other plans and programmes, and uncertainties in where future MCOs may be applied. The cumulative effects assessment has focused on the legislative proposals for the broadened application of MCOs, and not specific areas of their application. Other plans, programmes, and strategies that may similarly impact key environmental receptors have been included, such as proposals for management measures applying to PMFs and inshore MPAs (currently under assessment).

## 3.8 Mitigation and Monitoring Proposals

- 3.8.1 The identification of mitigation measures is an integral part of the SEA and policy development processes. Proposals for monitoring will be provided in the Post Adoption Statement. These will focus on the significant environmental effects identified in this assessment.

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<sup>77</sup> Scottish Government (2019) SEA of Sectoral Marine Plan for Offshore Wind Energy Strategic Environmental Assessment Environmental Report [online] Available at: <https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-strategic-environmental-assessment/> (Accessed 22/01/2024)

<sup>78</sup> Scottish Government (2022) Sectoral Marine Plan for Offshore Wind for Innovation and Targeted Oil and Gas Decarbonisation (INTOG) Strategic Environmental Assessment Screening and Scoping Report September 2022 [online] Available at: [https://marine.gov.scot/sites/default/files/intog\\_sea\\_screening\\_and\\_scoping\\_september\\_2022.pdf](https://marine.gov.scot/sites/default/files/intog_sea_screening_and_scoping_september_2022.pdf) (Accessed 22/01/2024)

<sup>79</sup> Scottish Government (2014) Management Proposals of Inshore Fisheries Groups: Strategic Environmental Assessment Post Adoption Statement [online] Available at: <https://www.gov.scot/publications/management-proposals-inshore-fisheries-groups-strategic-environmental-assessment-post-adoption/documents/> (Accessed 22/01/2024)

<sup>80</sup> Scottish Government (2016) Wild seaweed harvesting: strategic environmental assessment - environmental report [online] Available at: <https://www.gov.scot/publications/wild-seaweed-harvesting-strategic-environmental-assessment-environmental-report/> (Accessed 22/01/2024)



## 4 Environmental Baseline

### 4.1 Introduction

4.1.1 This section of the Environmental Report describes the character of the environment which may be affected by the proposed extension to MCO provisions. The focus of this baseline information is, therefore, on Biodiversity, Flora and Fauna; Soil (geodiversity); Water (the ecological status of WFD water and environmental status of the marine region under the UK Marine Strategy Regulations); Climatic Factors (carbon cycling, storage and sequestration); and Cultural Heritage (historic features), reflecting the scope of the assessment as described in Section 3.3. Whilst MCO provisions only apply to Scotland's territorial limits (i.e., inshore waters, to 12 NM), this section also considers the environmental baseline of offshore waters, given the potential for displacement of activities.

### 4.2 Overview

4.2.1 Scotland's location at the edge of the continental shelf means that it is subject to both subpolar and subtropical influences. The North Atlantic current brings warm water from the Gulf of Mexico to the west coast of Scotland. These warm waters mix with cooler polar waters from the Arctic in the north and east that are rich in nutrients. This unique geographic position means that the seas around Scotland contain a wide variety of habitats and species.

4.2.2 The Scottish marine environment covers an area of over 462,000 km<sup>2</sup>, the territorial sea limit (Scotland's inshore waters) of which is approximately 44,480 km<sup>2</sup>. The Scottish marine environment comprises a wide variety of habitats including intertidal rocky and sediment shores, subtidal rocky reefs and sandy / muddy sea bed to deep-sea sediment sea floor as well as the water column itself<sup>81</sup>. Scotland has over 18,000 km of coastline and its inshore and offshore areas are among the largest of any country in the European continent, representing 13% of all European seas.

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<sup>81</sup> Scottish Government (2020). Marine Scotland Assessment. Healthy and biologically diverse [online] Available at: <https://marine.gov.scot/sma/assessment-theme/healthy-and-biologically-diverse> (Accessed 22/01/2024)

## 4.3 Biodiversity, Flora and Fauna

- 4.3.1 Scotland's marine environment supports a diverse complex of different habitats, which in turn support a wide range of marine plants and animals. Estimates suggest there are around 6,500 species of animals and plants (excluding microbial flora and seabirds) in Scotland's seas<sup>81</sup>. Many of these occur within Scotland's inshore waters (0 – 12 NM).
- 4.3.2 There are a number of pressures on biodiversity within Scottish seas, linked to the development of industry in the marine environment. The Feature Activity Sensitivity Tool (FeAST) provides more comprehensive information on the relevant pressures associated with a range of marine activities and the sensitivity of marine features to these activities and pressures<sup>82</sup>. The tool has undergone a review and a new interface has been built.
- 4.3.3 Key pressures to species and habitats in Scotland's inshore waters include climate change, coastal developments, dredging, pollution, marine litter, seabed abrasion, invasive non-native species. The effect of these pressures is dependent on their intensity and the sensitivity and vulnerability (exposure) of marine and coastal species and habitats to these pressures.

### Marine habitats

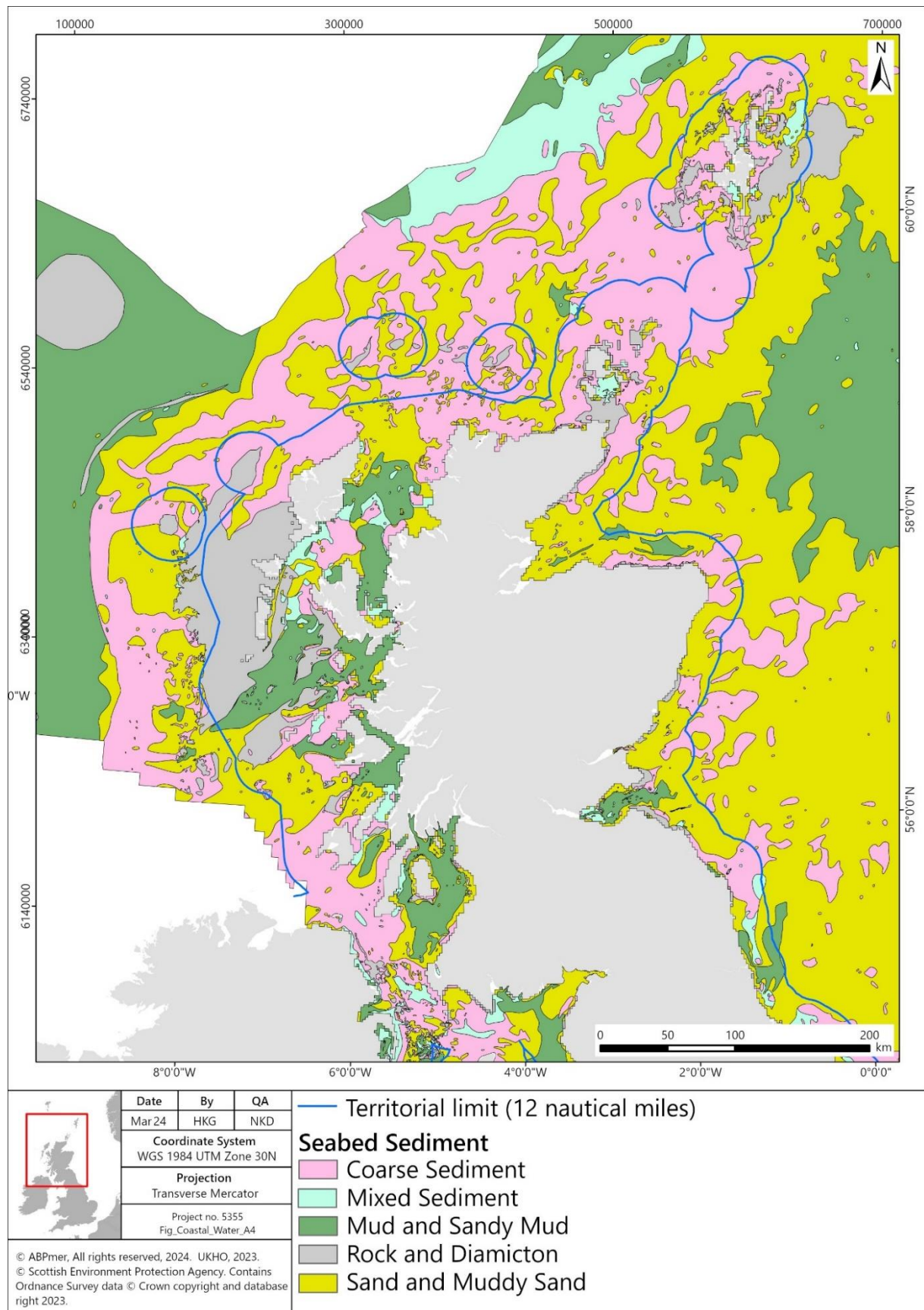
- 4.3.4 Benthic (seafloor) habitats are vital natural resources, as many marine species rely, directly or indirectly, on the seafloor to feed, hide, rest or reproduce. Generally benthic habitats are characterised by low mobility species<sup>83</sup>. Marine habitats within the Scottish marine environment can be characterised into three broad groups: intertidal habitats; subtidal (inshore and shelf sea); and deep sea habitats (found predominantly in offshore waters, and to a very limited extent inshore). These broad groups can be further broken down by substrate type. The seabed is a critical component of marine ecosystems. Overall, the inshore west coast is dominated by mud and sandy mud; coarse sediments are found inshore in the North; and the East coast inshore is dominated by sand and muddy sand (Figure 3).

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<sup>82</sup> NatureScot (2023) Feature Activity Sensitivity Tool (FeAST) [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/priority-marine-features-scotlands-seas/feature-activity-sensitivity-tool-feast> (Accessed 22/01/2024)

<sup>83</sup> OSPAR. 2017. Condition of Benthic Habitat Communities: Subtidal habitats of the Southern North Sea [online] Available at: <https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/biodiversity-status/habitats/condition-of-benthic-habitat-defining-communities/subtidal-habitats-southern-north-sea/> (Accessed 22/01/2024)

**Figure 3 Seabed habitat sediments in Scotland. For fullness of picture, habitats are shown for both inshore and offshore waters.**



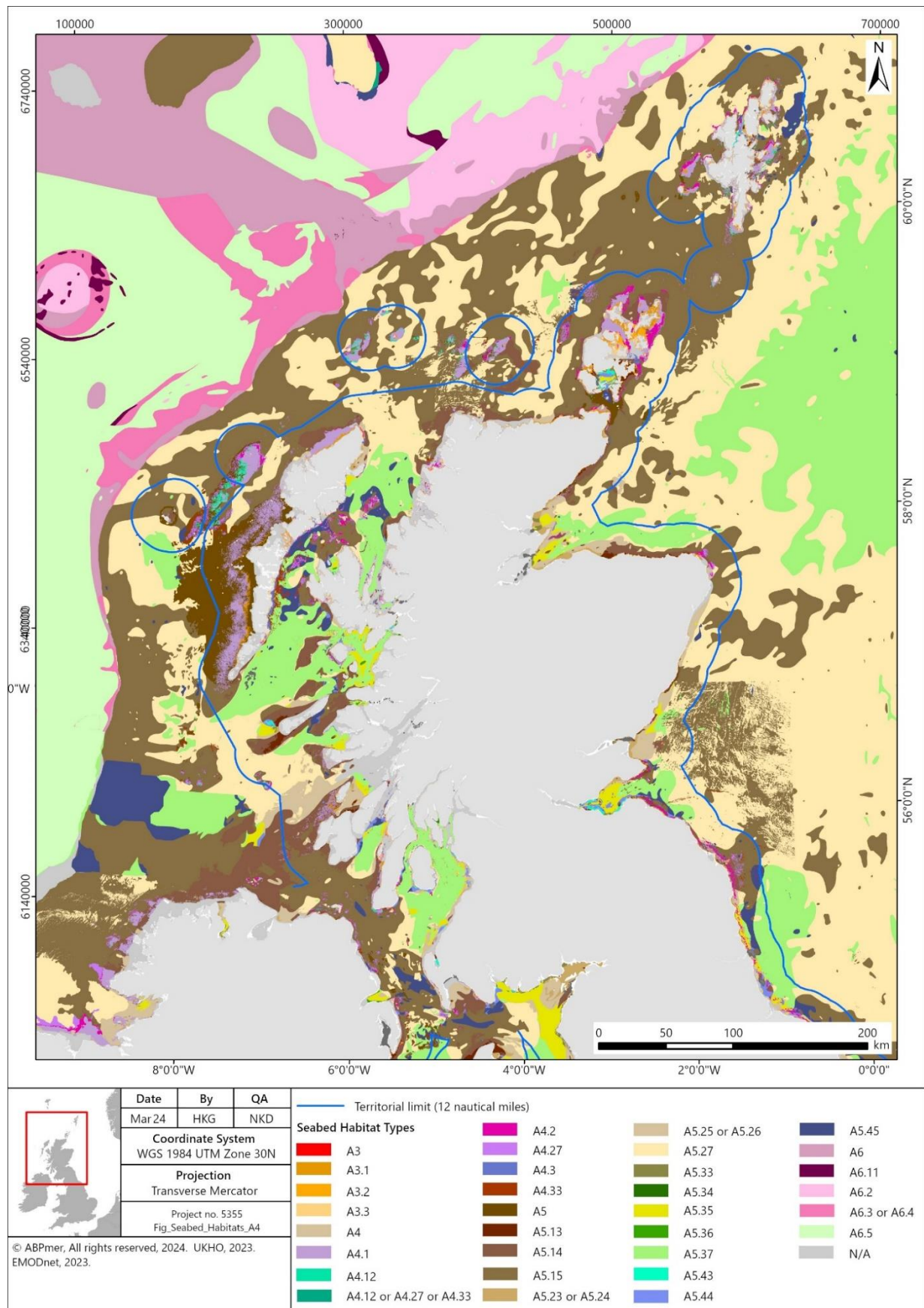
“Figure showing a map of Scotland and the seabed habitat sediments in Scotland. Map shows presence of coarse sediment; mixed sediment; mud and sandy mud; rock and diamicton; and sand and muddy sand. All sediment types are found in the inshore waters. The territorial limit of Scotland’s waters (12 nautical miles) is also shown.”

4.3.5 The information presented in Figure 4 on predicted seabed habitats is provided by National Marine Plan Interactive (NMPI) and European Marine Observation and Data Network (EMODnet) Seabed Habitats. The layer is a predictive European Nature Information System (EUNIS) seabed habitat map for the UK continental shelf, which has been created using five pre-processed input datasets: substrate, biological zone, energy, salinity and biogeographic region. The key is presented in Table 3.

**Table 3 Predicted habitat types and EUNIS codes for Figure 4**

| Predicted Habitat Type                        | EUNIS Code                            |
|---|---------------------------------------|
| Infralittoral rock and biogenic reef          | A3, A3.1, A3.2, A3.3                  |
| Circalittoral rock and biogenic reef          | A4, A4.1, A4.2, A4.3                  |
| Offshore circalittoral rock and biogenic reef | A4.12 or A4.27 or A4.33, A4.27, A3.33 |
| Infralittoral coarse sediment                 | A5.13                                 |
| Circalittoral coarse sediment                 | A5.14                                 |
| Offshore circalittoral coarse sediment        | A5.15                                 |
| Infralittoral sand                            | A5.23 or A5.24                        |
| Circalittoral sand                            | A5.25 or A5.26                        |
| Offshore circalittoral sand                   | A5.27                                 |
| Infralittoral mud                             | A5.33, A5.33 or A5.34, A5.34          |
| Circalittoral mud                             | A5.35, A5.35 or A5.36, A5.36          |
| Offshore circalittoral mud                    | A5.37                                 |
| Infralittoral mixed sediment                  | A5.43                                 |
| Circalittoral mixed sediment                  | A5.44                                 |
| Offshore circalittoral mixed sediment         | A5.45                                 |
| Upper bathyl sediment                         | A6, A6.2, A6.3, A6.4, A6.4 or A6.5    |
| Upper bathyl rock and biogenic reef           | A6.11                                 |
| Not applicable (land)                         | Na                                    |

**Figure 4 Seabed habitats in Scottish waters (full key is provided in Table 3). For fullness of picture, habitats are shown for both inshore and offshore waters.**



“Figure showing a map of Scotland and the seabed habitats in Scottish waters. Map shows presence of a wide range of habitats, the full details of which are provided in Table 3. The territorial limit of Scotland’s waters (12 nautical miles) is also shown.”

## Mobile species

4.3.6 Scotland’s marine environment supports a wide range of mobile species with several populations considered to be either of international or national importance. Several mobile species within Scottish waters are already protected through designation or classification of areas within Scottish waters or around Scottish coastlines as discussed below under ‘Protected habitats and species’. Mobile species in Scottish waters include the following groups:

- Seals (grey and harbour seals);
- Cetaceans (23 species have been recorded in Scottish waters over the last 25 years; of these, 11 are regularly sighted<sup>84</sup>);
- Birds (both breeding seabirds and overwintering waterbirds);
- Fish, incorporating marine and diadromous species, including sharks, rays and skates; and
- European otter (inshore waters only).

## Marine mammals (cetaceans, seals and otters)

4.3.7 Marine mammals are widely distributed around the Scottish coastline. Species distributions are a function of prey availability and habitat distribution. Eleven species of cetacean are regularly sighted around Scottish seas<sup>84</sup>. These comprise species with important resident populations, such as bottlenose dolphin, alongside more migratory species passing through Scottish seas, such as sperm whale. Key marine mammal species in Scottish seas include:

- Grey seal;
- Harbour seal;
- Harbour porpoise;
- Bottlenose dolphin;
- White-beaked dolphin;
- Fin whale;
- Minke whale;
- Short-beaked common dolphin;
- Atlantic white-sided dolphin;

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<sup>84</sup> Scottish Government (2011). Scotland’s Marine Atlas: Information for The National Marine Plan [online] Available at: <https://www.gov.scot/publications/scotlands-marine-atlas-information-national-marine-plan/pages/36/> (Accessed 22/01/2024)

- Risso's dolphin;
  - Long-finned pilot whale;
  - Killer whale;
  - Sperm whale; and
  - European otter.
- 4.3.8 All of the above species are Priority Marine Features (PMFs)<sup>85</sup>, as discussed below under 'Priority Marine Features', and have been recorded inshore.
- 4.3.9 Cetaceans occur all around Scotland, with greatest diversity found off the continental shelf waters to the north and west. The abundances of harbour porpoise, white-beaked dolphin and minke whale in the North Sea are assessed as being stable. An earlier reported shift south in the distribution of harbour porpoise has been maintained<sup>86</sup>. The abundance of coastal bottlenose dolphins on the east coast of Scotland has increased and their distributional range has expanded southwards<sup>87</sup>.
- 4.3.10 The Scottish grey seal population has increased, dominated by increases in the east coast populations<sup>88</sup>. Harbour seal populations are also distributed widely around Scotland, with stable populations identified on the west coast<sup>88</sup>. However, they have undergone a general decline in numbers elsewhere since 2001 for reasons which are unclear<sup>89,90</sup>. The pattern of decline is not universal, with populations growing significantly around the Hebridean Islands<sup>91</sup>, suggesting that these areas are important for this species.
- 4.3.11 In addition to the species discussed above, there is potential for humpback whales to be present throughout Scottish waters, with increasing records year

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<sup>85</sup> NatureScot (2020). Priority Marine Features in Scotland's seas – Habitats [online] Available at: <https://www.nature.scot/doc/priority-marine-features-scotlands-seas-habitats> (Accessed 22/01/2024)

<sup>86</sup> Scottish Government (2020). Marine Scotland Assessment. Cetaceans [online] Available at: <https://marine.gov.scot/sma/assessment/cetaceans> (Accessed 22/01/2024)

<sup>87</sup> Marine Scotland (2020) Cetaceans. Marine Scotland Assessment. [online] Available at: <https://marine.gov.scot/sma/assessment/cetaceans> (Accessed 27/03/2023)

<sup>88</sup> Marine Scotland (2020) Seals. Marine Scotland Assessment. [online] Available at: <https://marine.gov.scot/sma/assessment/seals> (Accessed 22/01/2024)

<sup>89</sup> Duck, C.D. & Morris, C.D. 2016. Surveys of harbour and grey seals on the south-east (border to Aberlady Bay) and south-west (Sound of Jura to Solway Firth) coasts of Scotland, in Shetland, in the Moray Firth and in the Firth of Tay in August 2015. Scottish Natural Heritage Commissioned Report No. 929. Available at <http://marine.gov.scot/data/snh-commissioned-report-929-surveys-harbour-and-grey-seals-south-east-border-aberlady-bay-and> (Accessed 22/01/2024)

<sup>90</sup> Arso Civil, M., Smout, S., Thompson, D., Brownlow, A., Davison, N., Doeschate, M., Duck, C., Morris, C., Cummings, C., McConnell, B. and Hall, A. J. (2018) Harbour Seal Decline – vital rates and drivers. Report to Scottish Government HSD2. Available at [https://risweb.st-andrews.ac.uk/portal/en/researchoutput/harbour-seal-decline--vital-rates-and-drivers\(e63c0fbe-b5dd-44ef-b341-457c7bdda315\).html](https://risweb.st-andrews.ac.uk/portal/en/researchoutput/harbour-seal-decline--vital-rates-and-drivers(e63c0fbe-b5dd-44ef-b341-457c7bdda315).html) (Accessed 22/01/2024)

<sup>91</sup> SCOS (2017) Scientific Advice on Matters Related to the Management of Seal Populations: 2017. Available at: <http://www.smru.st-andrews.ac.uk/files/2018/01/SCOS-2017.pdf>. (Accessed 22/01/2024)

on year<sup>92, 93</sup>. It is recognised that the majority of migrating individuals remain in deep water off the continental shelf<sup>94</sup> and therefore the exact distribution or number of individuals frequenting more inshore Scottish waters remains unknown, however there are records of humpback whales in more inshore waters both on the east and west coasts<sup>95</sup>.

- 4.3.12 Otters are present around the Scottish coast, with the most recent population (including both coastal and riverine populations) estimated at approximately 8,000 individuals<sup>96, 97</sup>. They are protected through the designation of coastal and riverine sites throughout Scotland, as protected species under the Wildlife and Countryside Act and are designated as a PMF, with particularly significant populations on the west coast and the islands<sup>97</sup>, generally in sheltered inshore waters. Foraging distances for otters are not well understood, however they are known to remain close to the coast and in relatively shallow water depths.

## Birds

- 4.3.13 Scotland, and its coastline, is important for marine and coastal birds, including seabirds, seaducks, divers, grebes, waders and waterfowl. Scotland provides an essential feeding station for migrating birds; a safe winter haven for ducks, geese and shorebirds; and provides nesting sites for seabird species. It holds internationally significant numbers of 24 species of breeding seabirds, with additional migratory species of waterbird overwintering on Scotland's coasts<sup>98</sup>.
- 4.3.14 An investigation into the temporal and spatial patterns of density for seabird species in eastern Scottish waters from digital aerial surveys undertaken

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<sup>92</sup> O'Neil, Katie E. Cunningham, Emily G. Moore, Daniel M. 2019 Sudden seasonal occurrence of humpback whales *Megaptera novaeangliae* in the Firth of Forth, Scotland and first confirmed movement between high-latitude feeding grounds and United Kingdom waters- Marine Biodiversity Records- 12 - 1

<sup>93</sup> Scottish Government (2022). Production of Seabird and Marine Mammal Distribution Models for the East of Scotland [online] Available at: <https://www.gov.scot/publications/production-seabird-marine-mammal-distribution-models-east-scotland/documents/> (Accessed 22/01/2024)

<sup>94</sup> Whaletrack. UiT (2018). In: The Arctic University of Norway; [online]. [https://en.uit.no/prosjekter/prosjekt?p\\_document\\_id=505966](https://en.uit.no/prosjekter/prosjekt?p_document_id=505966) (Accessed 22/01/2024)

<sup>95</sup> Hebridean Whale and Dolphin Trust (2019) Sightings map [online] available at <https://whaletrack.hwtdt.org/sightings-map/> (Accessed 22/01/2024)

<sup>96</sup> Jefferies, D.J., Strachan, C. & Strachan, R. 2003. Estimated numbers of the three interacting riparian mammals in Britain using survey data. In: Jefferies, D.J. (Ed) *The water vole and mink survey of 1996–1998 with a history of the long-term changes in the status of both species and their causes*, pp. 188–197. Vincent Wildlife Trust, Ledbury.

<sup>97</sup> Nature Scot (2023). Otter - Scotland is a European stronghold for the otter, a species of the land, river and sea [online] Available at: <https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/otter#:~:text=The%20Scottish%20population%20is%20estimated,lochs%2C%20rivers%20or%20the%20sea> (Accessed 22/01/2024)

<sup>98</sup> Scottish Government (2011). Scotland's Marine Atlas: Information for The National Marine Plan. Seabirds [online] Available at: <https://www.gov.scot/publications/scotlands-marine-atlas-information-national-marine-plan/pages/37> (Accessed 22/01/2024)



between February 2020 and March 2021 determined the following species being recorded regularly; Northern Fulmar, Northern Gannet, Great Skua, Common Gull, Herring Gull, Great Black-backed Gull, Black-legged Kittiwake, Common Guillemot, Razorbill, Atlantic Puffin and Lesser Black-backed Gull<sup>99</sup>.

- 4.3.15 Seabirds respond to a range of factors, such as changes in food availability, weather, predation and pollution. Breeding abundance and productivity is assessed for a number of the species that breed in Scotland based on a representative sample of colonies around Scotland, which are monitored as part of the UK Seabird Monitoring Programme<sup>100</sup>.
- 4.3.16 Scotland hosts large numbers of wintering seaduck, divers and grebes. Seaducks undertake surface diving to capture molluscs such as mussels and clams as well as crustacea. Divers and grebes are predominantly piscivores or in some cases insectivores, preying on a variety of small fish such as clupeids, sandeel and small gadoids by undertaking pursuit diving.
- 4.3.17 Scotland is also important for large numbers of terrestrial bird species, several of which are known to migrate over long distances, including over areas of sea, particularly around the Hebridean Islands. Scotland's coasts are also of international importance for wintering waterbirds, with indicators increasing by 15% since 2011<sup>101</sup>.
- 4.3.18 In recent years White Tailed Sea Eagles have been re-introduced to Scotland, and a breeding population is now established on the west coast and in the Western Isles<sup>102</sup>. More recently a pair has started breeding on Hoy in Orkney. Sea Eagles, particularly juveniles, have large foraging areas and are known to fly long distances.
- 4.3.19 The highly pathogenic avian influenza (HPAI) virus H5N1 is circulating widely within wild bird populations in Scotland<sup>103</sup>. The situation is rapidly evolving and there is concern about the impact of HPAI on vulnerable bird species, particularly in waterfowl, seabirds and raptors. The outbreak has resulted in significant declines in the Svalbard population of barnacle geese, northern

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<sup>99</sup> Scottish Government (2022). Production of Seabird and Marine Mammal Distribution Models for the East of Scotland [online] Available at: <https://www.gov.scot/publications/production-seabird-marine-mammal-distribution-models-east-scotland/documents/> (Accessed 22/01/2024)

<sup>100</sup> JNCC (2023) Seabird Monitoring [online] Available at: <https://jncc.gov.uk/our-work/seabird-monitoring/> (Accessed 22/01/2024)

<sup>101</sup> Marine Scotland (2020). Seabirds. Marine Scotland Assessment. [online] Available at: <https://marine.gov.scot/sma/assessment/seabirds-0> (Accessed 22/01/2024)

<sup>102</sup> RSPB, undated. Bird guide, white-tailed eagle. [online] available at <https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z/white-tailed-eagle/> (Accessed 22/01/2024)

<sup>103</sup> Nature Scot (2023) Highly pathogenic avian influenza (bird flu) - Guidance for site managers [online] Available at: <https://www.nature.scot/doc/highly-pathogenic-avian-influenza-bird-flu-guidance-site-managers> (Accessed 22/01/2024)

gannet and great skua<sup>104</sup>. HPAI has impacted on a wide range of wild bird populations, and caused reductions of conservation concern to some globally important Scottish populations of seabirds that could at best take many years to recover<sup>104</sup>.

## Fish

- 4.3.20 Scotland's inshore waters support approximately 250 different species of fish, with additional species occurring in deeper waters within the Scottish marine area. Some species are commercially important to the Scottish fishing industry, and others, such as sandeel, are key prey species for seabirds, marine mammals and larger fish species, including some shark species. There are several migratory anadromous fish species within Scottish waters which use Scottish rivers for spawning, including Atlantic salmon, shad, sea trout and lamprey. Thirty-one species of fish are identified as PMFs within Scottish waters<sup>105</sup>.
- 4.3.21 Of the 250 species of fish identified in Scottish waters, 40 are cartilaginous fish (Chondrichthyes). Scotland has over 30 species of sharks, skates and rays recorded in its waters of which 25 are found in coastal waters<sup>106</sup>. Flapper skate are a critically endangered species. They were historically abundant in the North-east Atlantic and widely distributed in the seas surrounding the British Isles, however its range has reduced significantly and catch rates declined throughout the 20<sup>th</sup> century. The flapper skate now largely occurs in the northern North Sea and off Scotland's north-west coast, where an egg nursery area is protected through the Red Rocks and Longay MCO<sup>107</sup>.
- 4.3.22 Within Scottish seas, there are nationally important populations of basking sharks. Significant numbers of sightings are concentrated around the Inner

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<sup>104</sup> NatureScot (2023). NatureScot Scientific Advisory Committee Sub-Group on Avian Influenza Report on the H5N1 outbreak in wild birds 2020-2023 [online] Available at: <https://www.nature.scot/doc/naturescot-scientific-advisory-committee-sub-group-avian-influenza-report-h5n1-outbreak-wild-birds> (Accessed 22/01/2024)

<sup>105</sup> Tyler-Walters, H., James, B., Carruthers, M. (eds.), Wilding, C., Durkin, O., Lacey, C., Philpott, E., Adams, L., Chaniotis, P.D., Wilkes, P.T.V., Seeley, R., Neilly, M., Dargie, J. & Crawford-Avis, O.T. 2016. Descriptions of Scottish Priority Marine Features (PMFs). Scottish Natural Heritage Commissioned Report No. 406. [online] available at: <https://www.nature.scot/sites/default/files/Publication%202016%20-%20SNH%20Commissioned%20Report%20406%20-%20Descriptions%20of%20Scottish%20Priority%20Marine%20Features%20%28PMFs%29.pdf> (Accessed 22/01/2024)

<sup>106</sup> Marine Scotland (2011) Scotland's Marine Atlas: Information for The National Marine Plan. Sharks and Ray [online] Available at: <https://www.gov.scot/publications/scotlands-marine-atlas-information-national-marine-plan/pages/34/> (Accessed 22/01/2024)

<sup>107</sup> Scottish Government (2023) Marine Protected Areas - Red Rocks and Longay: site information and public notifications [online] Available at: <https://www.gov.scot/publications/marine-protected-areas-public-notifications> (Accessed 22/01/2024)

Hebridean islands of Coll, Tiree, Canna and Hyskeir and have been highlighted as potential breeding grounds. The basking shark migrates over large distances in both Scottish offshore and coastal waters at depths from the surface to over 750m. They are particularly associated with tidal fronts on the continental shelf and shelf edge where they feed on plankton.

- 4.3.23 The sandy ray occurs at depths from 70 to 275 m and is typically found on sandy or muddy sea beds to the north-west of Scotland. The thresher shark is typically found 40 to 75 miles offshore and is considered rare in Scottish waters. The blackmouth shark is found throughout Scottish waters but is more abundant in deeper offshore waters.
- 4.3.24 The Scotland Marine Assessment 2020<sup>108</sup> reports numbers of Atlantic salmon returning to Scotland's coast have declined since at least 1971 and fail to meet conservation targets. Approximately half of assessed stocks (95/193) are in poor conservation status.
- 4.3.25 Within Scottish waters, there are two species of lesser sandeel, *Ammodytes tobianus* which is largely found in coastal waters from the intertidal zone, and *Ammodytes marinus* which inhabits deeper waters<sup>109</sup>. *Ammodytes marinus* is the most abundant of the two species in Scottish waters and is a key prey species and component of the North East Atlantic ecosystem. However, little is known about its distribution outside of fished areas. Using distribution models, Langton and Wright (2021)<sup>110</sup> suggest lesser sandeel have a preferred depth range of 30 – 50 m and predicted habitat patches can be found at Jura, Islay and Colonsay that are within the Inner Hebrides, the Minches SAC and North East Lewis MPA.

## Protected habitats and species

- 4.3.26 The importance of Scotland's marine ecosystems is reflected in the range of designations which protect them at international and national levels. The Scottish MPA network consists of 247 sites, 233 of these are for nature

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<sup>108</sup> Colin Moffat, John Baxter, Barbara Berx, Kirsty Bosley, Philip Boulcott, Martyn Cox, Lyndsay Cruickshank, Katie Gillham, Venetia Haynes, Ashley Roberts, David Vaughan, & Lynda Webster (Eds.). (2020). Scotland's Marine Assessment 2020. Healthy and Biologically Diverse: Species. Salmon and sea trout. Scottish Government [online] Available at: [sma2020\\_-\\_salmon\\_and\\_sea\\_trout\\_-\\_healthy\\_and\\_biologically\\_diverse.pdf \(marine.gov.scot\)](https://marine.gov.scot/sma/assessment-theme/fish) (Accessed 22/01/2024)

<sup>109</sup> Marine Scotland (2020). Fish. Marine Scotland Assessment. [online] Available at: <https://marine.gov.scot/sma/assessment-theme/fish> (Accessed 22/01/2024)

<sup>110</sup> Langton, R., Boulcott, P. and Wright, P.J., 2021. A verified distribution model for the lesser sandeel *Ammodytes marinus*. Marine Ecology Progress Series, 667, pp.145-159.

conservation purposes, covering 37% of Scotland's seas<sup>111</sup>. The current designations in Scottish inshore and offshore waters are:

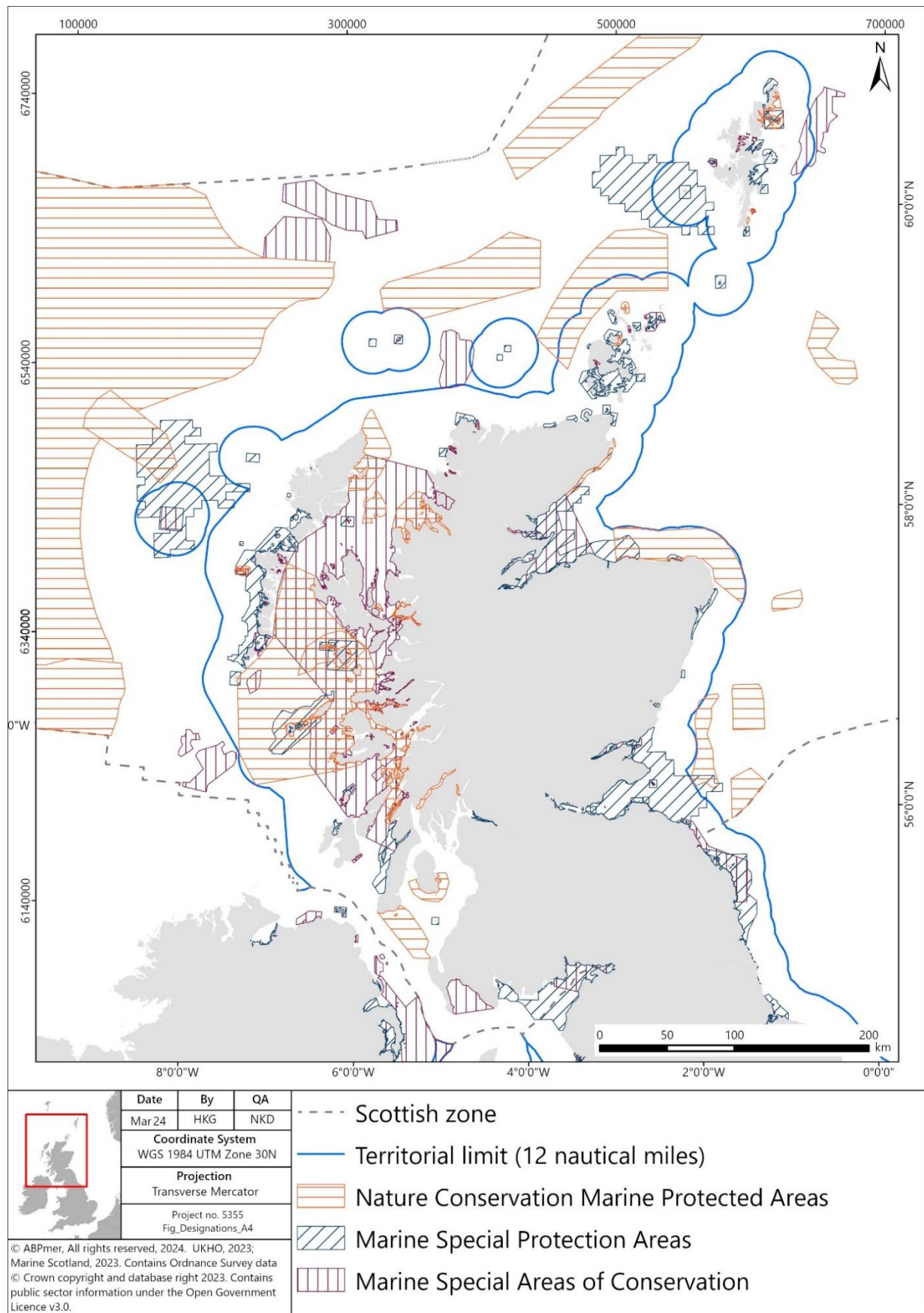
- SACs: These include both inshore and offshore SAC and cover eleven different marine habitat types which occur in Scotland (sandbanks which are slightly covered by seawater all the time; estuaries; mudflats and sandflats not covered by seawater at low tide; coastal lagoons; large shallow inlets and bays; reefs; submarine structures made by leaking gases; and submerged or partially submerged sea caves). Seven marine species that occur in Scotland are also protected (bottlenose dolphin, harbour porpoise, grey seal, harbour seal, sea lamprey, Atlantic salmon and otter);
- SPAs: These protect and are of international importance for a number of bird species (e.g. seabirds, waders, ducks and geese);
- nature conservation MPAs: These protect habitats and species such as maerl beds, coral gardens and common skate;
- SSSIs: These are nationally designated sites which protect species such as seabirds and seals, and habitats such as sea caves and rocky shores; and
- Ramsar sites: There are designated for their internationally important wetlands. Each Ramsar site is also designated as either a SPA or SAC, depending on the features present.

4.3.27 Existing and proposed SAC, nature conservation MPA, and SPA sites are shown in Figure 5.

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<sup>111</sup> NatureScot (2023) Marine Protected Areas (MPAs) [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/marine-protected-areas-mpas> (Accessed 22/01/2024)

**Figure 5 SAC, nature conservation MPA, and SPA sites in Scottish waters.**  
**For fullness of picture, sites are shown for both inshore and offshore waters.**



“Figure showing a map of Scotland and the SAC, nature conservation MPA, and SPA sites in Scottish waters. All designation types are found in inshore waters. The territorial limit of Scotland’s waters (12 nautical miles) is also shown.”

- 4.3.28 Scotland has 243 designated SACs (including three that straddle the border with England)<sup>112</sup>. Of the 243 SACs, 45 are found inshore, two straddle the inshore and offshore areas, and eight designated SACs are entirely in Scotland’s offshore waters<sup>113</sup>.
- 4.3.29 Scotland has 162 classified SPAs, from the north of Shetland to the cross-border Solway Firth SPA, as well as within inshore and offshore waters. This includes a suite of 12 marine SPAs which were classified in December 2020<sup>114</sup> and two SPAs near Orkney classified in 2022<sup>115</sup>. The 14 marine SPAs complement 30 colony SPAs (with marine extensions) in Scotland’s SPA network which help to protect rare, vulnerable and regularly occurring migratory species that use Scotland’s seas. These sites have been classified for their breeding seabird populations<sup>116</sup>.
- 4.3.30 There are currently 36 nature conservation MPAs located within Scotland’s seas, 13 of which are offshore<sup>117</sup>. There is also a D&R MPA around Fair Isle<sup>118</sup> (section 2.3), eight historic MPAs, and five Other Area Based Measures recognised as part of the Scottish MPA network<sup>119</sup>.

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<sup>112</sup> NatureScot (2023) Special Areas of Conservation (SACs) [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/european-sites/special-areas-conservation-sacs> (Accessed 22/01/2024)

<sup>113</sup> JNCC (2023) UK SACs with marine components spreadsheet [online] Available at: <https://hub.jncc.gov.uk/assets/598a60db-9323-4781-b5a8-dcf0ca3b29f9> (Accessed 22/01/2024)

<sup>114</sup> NatureScot (2023) Special Protection Areas (SPAs) [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/european-sites/special-protection-areas-spas> (Accessed 22/01/2024)

<sup>115</sup> Scottish Government (2022) Marine Proposed Special Protection Areas. SEA Post Adoption Statement [online] Available at: <https://www.gov.scot/publications/marine-proposed-special-protection-areas-strategic-environmental-assessment-post-adoption-statement/> (Accessed 22/01/2024)

<sup>116</sup> NatureScot (2023) Marine European sites [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/european-sites/marine-european-sites> (Accessed 22/01/2024)

<sup>117</sup> JNCC (2019) Nature Conservation Marine Protected Areas [online] Available at: <https://jncc.gov.uk/our-work/nature-conservation-mpas/> (Accessed 22/01/2024)

<sup>118</sup> NatureScot (2023) Fair Isle MPA(DR) [online] Available at: <https://sitelink.nature.scot/site/10499> (Accessed 22/01/2024)

<sup>119</sup> NatureScot (2021) The MPA Network [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/marine-protected-areas/scotlands-marine-protected-area-network> (Accessed 22/01/2024)

- 4.3.31 There are 65 SSSIs<sup>120</sup> with marine components in Scotland. These include land and the foreshore generally only down to mean low water spring tide level.
- 4.3.32 There are also 51 Ramsar sites in Scotland designated as internationally important wetlands, covering a total area of about 326,719 hectares<sup>121</sup>, of which 16 form part of the MPA network<sup>122</sup>.
- 4.3.33 The Habitats Regulations<sup>123</sup> also affords protection to certain species of plants and animals (European Protected Species). In the marine environment these include cetaceans and otters.

### Priority Marine Features

- 4.3.34 In July 2014, Scottish Ministers adopted a list of 81 PMFs. PMFs are species and habitats which have been identified as being of conservation importance to Scotland<sup>124</sup>. Most are a subset of species and habitats identified on national, UK or international lists.
- 4.3.35 The list of 81 PMFs comprises 26 broad habitats (e.g. burrowed mud), seven low or limited mobility species (e.g. ocean quahog) and 48 mobile species, including fish (e.g. blue ling) and marine mammals (e.g. minke whale).
- 4.3.36 Available PMF data relevant to Scottish waters are presented in Figure 6. The information has been collated in a computer database called GeMS (Geodatabase for Marine Habitats and Species adjacent to Scotland)<sup>125</sup>.

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<sup>120</sup> Nature Scot (2022). The MPA Network [online] <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/marine-protected-areas/scotlands-marine-protected-area-network> (Accessed 22/01/2024).

<sup>121</sup> Scottish Government (2023) Ramsar sites contributing to the MPA Network [online] Available at: <https://marine.gov.scot/maps/1750> (Accessed 22/01/2024)

<sup>122</sup> Nature Scot (2023). The MPA Network [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/priority-marine-features-scotlands-seas> (Accessed 22/01/2024)

<sup>123</sup> The Conservation of Habitats and Species Regulations 2017, the Conservation of Offshore Marine Habitats and Species Regulations 2017, and the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 are collectively known as the Habitats Regulations

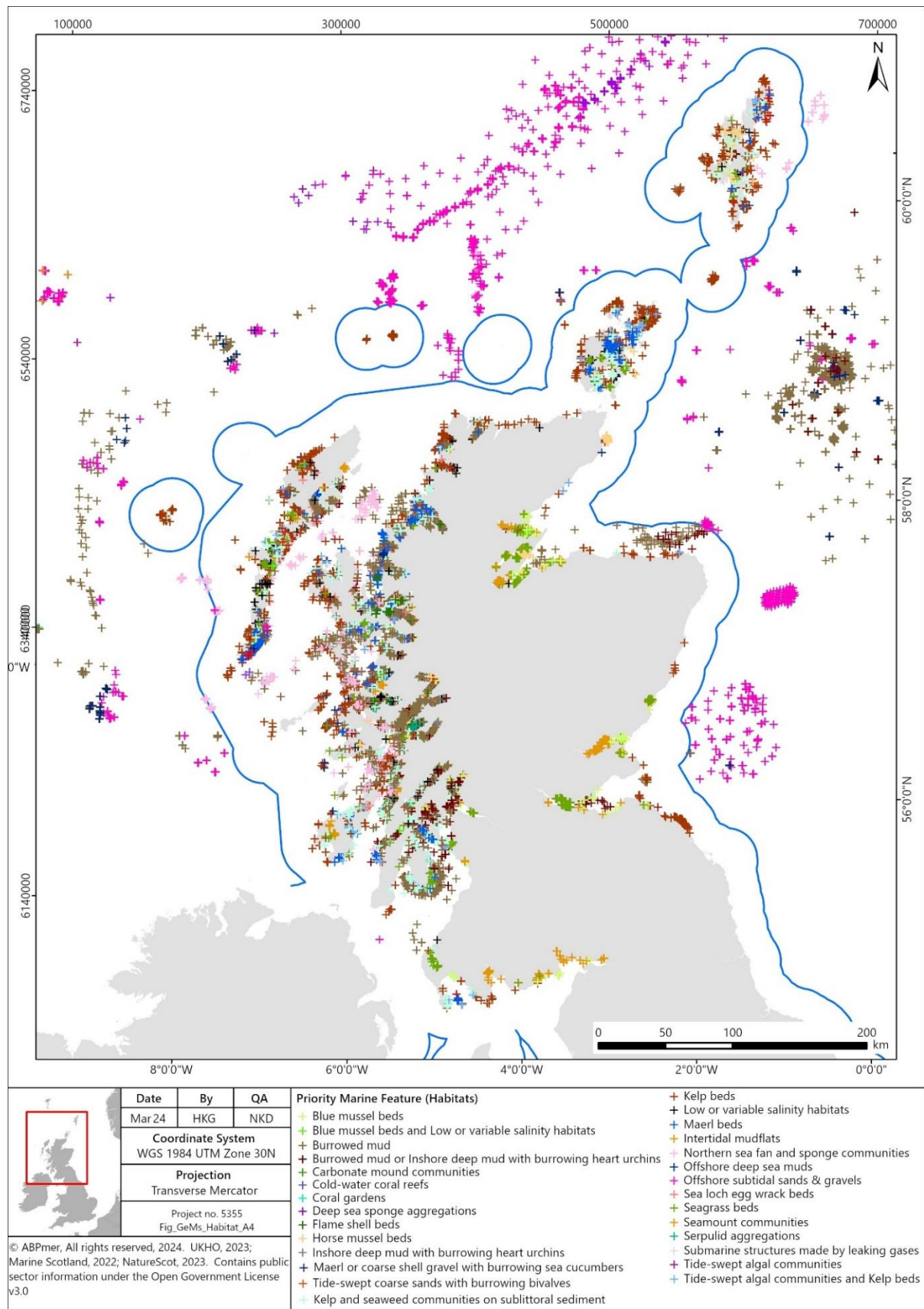
<sup>124</sup> Nature Scot (2023). Priority marine features in Scotland's seas [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/priority-marine-features-scotlands-seas> (accessed 22/01/2024)

<sup>125</sup> Scottish Government (2019) GeMS – Scottish Priority Marine Features (PMF). Version 10 iteration 26 [online] Available at: <https://www.data.gov.uk/dataset/0e78afea-ac1e-4080-8758-980f2d5cff6d/gems-scottish-priority-marine-features-pmf> (accessed 22/01/2024).

4.3.37 Kelp beds, burrowed mud, maerl beds, seagrass, horse mussel beds, flame shell beds and Northern sea fan and sponge communities are examples of PMF habitats identified within the Scottish inshore area (Figure 6 – for fullness of picture PMF habitats are shown for both inshore and offshore waters). PMF species identified within the Scottish inshore area include basking shark, sand goby, whiting, harbour seal, grey seal, saithe, whiting, ocean quahog, northern feather star, flapper and blue skate and anglerfish (Figure 7).

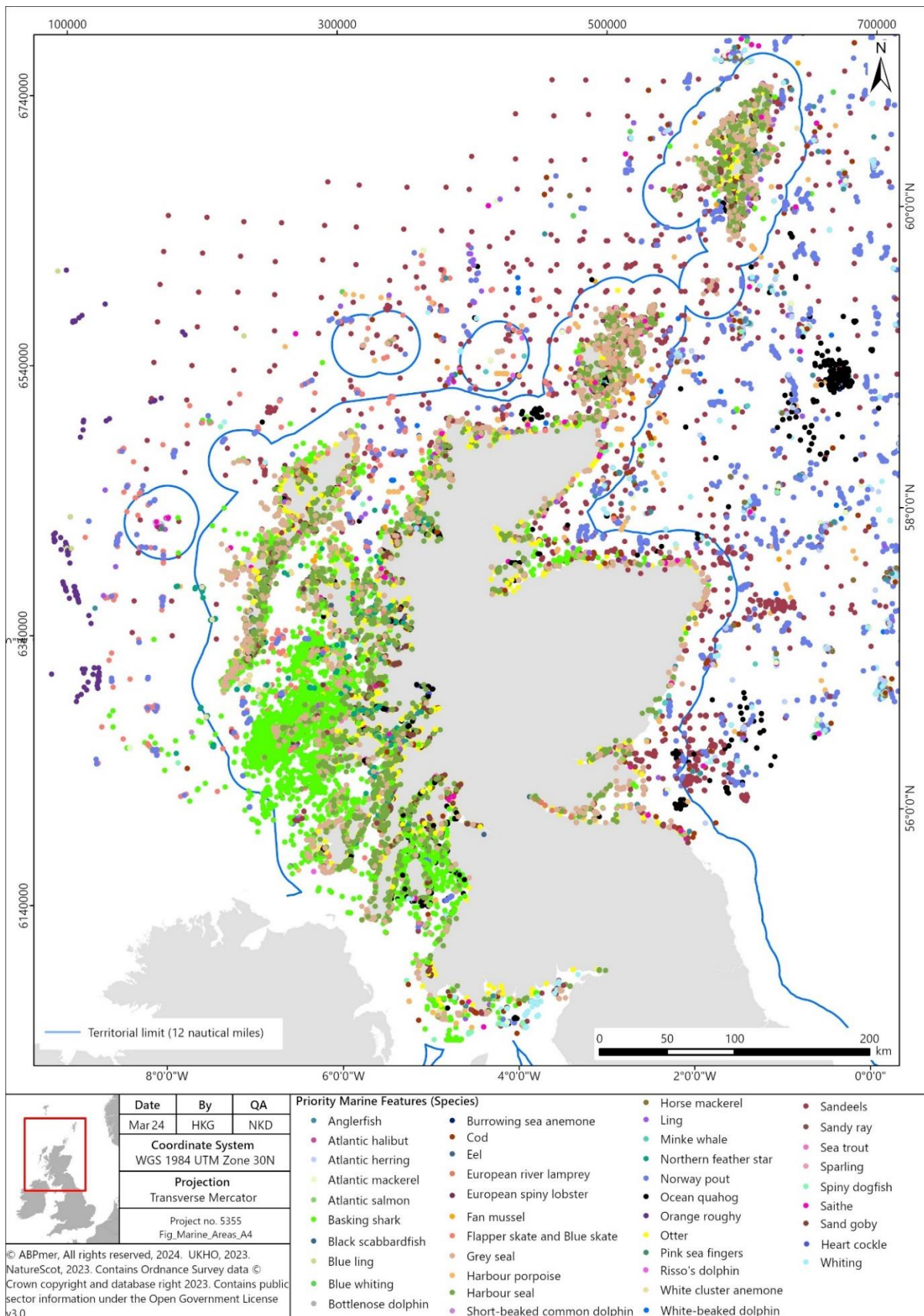


**Figure 6 GEMS habitat data in Scottish waters – blue line shows limit of inshore waters. For fullness of picture, PMF habitats are shown for both inshore and offshore waters.**



“Figure showing a map of Scotland and GEMS habitat data in Scottish waters. Map shows a wide range of PMF habitats found through Scottish inshore waters. Further details are provided in section 4.3.37. The territorial limit of Scotland’s waters (12 nautical miles) is also shown.”

**Figure 7 GEMS species data in Scottish waters – blue line shows limit of inshore waters. For fullness of picture, species data is shown for both inshore and offshore waters.**



“Figure showing a map of Scotland and GEMS species data in Scottish waters. Map shows a wide range of PMF species found through Scottish inshore waters. Further details are provided in section 4.3.37. The territorial limit of Scotland’s waters (12 nautical miles) is also shown.”

## Future Evolution of Baseline

- 4.3.38 The future baseline for biodiversity in Scottish seas is likely to be driven, certainly in the short term, by the current trends discussed above. However, there is currently very limited evidence to inform possible future trends, therefore this is an area of significant uncertainty. The Marine Scotland Assessment endeavoured to identify trends in pressures over the period 1 January 2014 to 31 December 2018, but it was decided that the lack of data precluded the determination of trends in the pressures<sup>126</sup>. This was identified as a data/knowledge gap which needs to be addressed to allow trends to be determined in the future.
- 4.3.39 In the longer term, continuing pressures from development of marine industry and wider human activities are likely to be key factors in driving changes from the current baseline. This includes effects from fishing practices, coastal development, and other activities in the marine environment (recreation, anchoring, commercial shipping, dredging etc.). These have the potential to affect biodiversity through a wide range of pathways including collision risk, bycatch, depletion of prey species, pollution events and damage to benthic habitats.
- 4.3.40 Climate change is likely to lead to changes in the distribution and abundance of species<sup>127</sup>, driven by changes in water and air. This may include the spread northwards of warmer water species currently restricted to the more southern areas of the UK. The seas around the UK are projected to be 1.5 – 4°C warmer, depending on location, with warming most pronounced in the Celtic, Irish and southern North Sea areas. Recent research has projected that these changes will reduce the spatial overlap of the habitat of some marine predators with their prey population distribution, namely grey seal, harbour seal, harbour porpoise and Black-legged Kittiwake<sup>128</sup>. The seas are also projected to become less

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<sup>126</sup> Scottish Government (2020). Marine Scotland Assessment. Pressures from activities [online] Available at: <https://marine.gov.scot/sma/assessment-theme/pressures-activities> (Accessed 22/01/2024).

<sup>127</sup> Searle, K. R., Waggitt, J., Evans, P., Bogdanova, M., Daunt, F. & A. Butler (2022) Study to examine the impact of climate change on seabird species off the east coast of Scotland and potential implications for environmental assessments [online] Available online: <https://www.gov.scot/publications/study-examine-impact-climate-change-seabird-species-east-coast-scotland-potential-implications-environmental-assessments/documents/> (Accessed 22/01/2024)

<sup>128</sup> Sadykova, D., Scott, B.E., Dominicis De, M., Wakelin, S.L., Wolf, J. and Sadykov A. (2020). Ecological costs of climate change on marine predator–prey population distributions by 2050. Ecology and

saline by the end of the 21<sup>st</sup> century, particularly in the North Sea areas<sup>129</sup>. In addition, potential increased ocean acidification may inhibit the growth organisms with shells (containing calcium carbonate) or with carbonate exoskeletons (coral, sea fans).

- 4.3.41 Several habitats and species within Scottish waters are considered to be in decline. Assessment for the UK Marine Strategy found estimated losses in coverage in six types of subtidal biogenic habitats (i.e. habitats formed by key animal or algal species): blue mussel, horse mussel, flame shell, maerl and seagrass beds, as well as serpulid aggregation<sup>130</sup>. It is estimated that 33% of UK seagrasses have been lost since the 1980s<sup>131</sup>, but projects are now being initiated in Scottish waters to help recover the species<sup>132</sup>. A study has also found that maerl beds in Scotland are at risk of decline due to climate change<sup>133</sup>.
- 4.3.42 The impact of the HPAI virus H5N1 is evolving and its future impact on vulnerable bird species in Scotland is not known. The situation is likely to be compounded by existing manmade and natural pressures that are being faced by bird populations, particularly climate change.
- 4.3.43 Changes in marine industry have the potential to affect species in several different ways. For example, some bird species have adapted to scavenge on fisheries' discarded bycatch, therefore a reduction in fishing activity can lead to a reduction in the population of these species. Conversely, where fisheries deplete prey, such as sandeel, for bird species, a reduction in fishing activity

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Evolution. [online] Available at: <https://onlinelibrary.wiley.com/doi/full/10.1002/ece3.5973> (Accessed 22/01/2024)

<sup>129</sup> Dye, S., Berx, B., Opher, J., Tinker, J.P. and Renshaw, R., 2020. Climate change and salinity of the coastal and marine environment around the UK. MCCIP Science Review 2020, pp.76-102. [online ] Available at: [https://www.mccip.org.uk/sites/default/files/2021-07/04\\_salinity.pdf](https://www.mccip.org.uk/sites/default/files/2021-07/04_salinity.pdf) (Accessed 12/12/23).

<sup>130</sup> Scottish Government (2020) Marine Scotland Assessment. Biogenic habitats [online] Available at: <https://marine.gov.scot/sma/assessment/biogenic-habitats> (Accessed 22/01/2024)

<sup>131</sup> Green AE, Unsworth RKF, Chadwick MA, Jones PJS. Historical Analysis Exposes Catastrophic Seagrass Loss for the United Kingdom. *Front Plant Sci.* (2021) Mar 4; ;12:629962. doi: 10.3389/fpls.2021.629962. PMID: 33747011; PMCID: PMC7970192. [online] Available at: <https://pubmed.ncbi.nlm.nih.gov/33747011/> (Accessed 22/01/2024)

<sup>132</sup> Walton, P., O'Brien, D., Smart, J., Burns, F., Basset, D., Bradfer, Lawrence, T., Foster, S., James, B. D., Mancini, F., Mordue, S., Pakeman, R. J., Pescott, O. L., Simkin, J., Stanbury, A. J., Towers, M. (2023). State of Nature Scotland 2023, the State of Nature Partnership [online] Available at: <https://stateofnature.org.uk/wp-content/uploads/2023/09/TP26056-SoN-Scotland-summary-report-v5-1.pdf> (Accessed 22/01/2024)

<sup>133</sup> Simon-Nutbrown C, Hollingsworth PM, Fernandes TF, Kamphausen L, Baxter JM and Burdett HL (2020) Species Distribution Modeling Predicts Significant Declines in Coralline Algae Populations Under Projected Climate Change With Implications for Conservation Policy. *Front. Mar. Sci.* 7:575825. doi: 10.3389/fmars.2020.575825 [online] Available at: <https://www.frontiersin.org/articles/10.3389/fmars.2020.575825/full> (Accessed 22/01/2024)

can lead to a recovery of the prey species and drive a recovery in some bird populations<sup>134,135</sup>.

- 4.3.44 In addition to changes in the baseline itself, there is potential for our understanding of the baseline to continue to develop. This is particularly pertinent with regard to understanding the effect of offshore wind farms on Kittiwake populations, as the current baseline in the East and North East regions suggests that the installed offshore wind farms have the potential to affect Kittiwake populations foraging from SPAs in the region. However, emerging evidence may reduce the predicted effects of offshore wind farms in collision risk assessments<sup>136</sup>.
- 4.3.45 Similarly, changes in prey species distributions could affect marine mammal populations. Therefore, Scottish Government has explored further protection of prey populations, such as sandeel, which support both birds and cetaceans in Scottish seas, through the MPA network. In July 2023, Scottish Government launched a consultation on proposals to close fishing for sandeel in all Scottish waters<sup>137</sup>. Following this consultation, The Sandeel (Prohibition Of Fishing) (Scotland) Order 2024 was laid in the Scottish Parliament on 5 February 2024 and will come into force on 26 March 2024<sup>138</sup>. The continued development and management of the MPA network has the potential to support the maintenance of biodiversity, and potentially allow recovery of some species where current pressures are eliminated or reduced.
- 4.3.46 The Feature Activity Sensitivity Tool (FeAST) provides comprehensive information on the relevant pressures associated with a range of marine activities and the sensitivity of marine features to these activities and pressures<sup>139</sup>. The JNCC has also compiled a marine pressures-activities

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<sup>134</sup> Dunn (2021). Revive our Seas: The case for stronger regulation of sandeel fisheries in UK waters [online] Available at: <https://docslib.org/doc/8409364/the-case-for-stronger-regulation-of-sandeel-fisheries-in-uk-waters> (Accessed 22/01/2024)

<sup>135</sup> Searle (K.R.), Regan, C.E., Perrow, M.R., Butler, A., Rindorf A., Harris, M.P., Newell, M.A., Sanless, S. and Daunt, F. (2023) Effects of a fishery closure and prey abundance on seabird diet and breeding success: Implications for strategy fisheries management and seabird conservation. *Biological Conservation* Volume 281, May 2023. Available at: <https://www.sciencedirect.com/science/article/pii/S0006320723000903> (Accessed 22/01/2024)

<sup>136</sup> Skov, H., Heinänen, S., Norman, T., Ward, R.M., Méndez-Roldán, S. & Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. 247 pp [online] Available at: <https://tethys.pnnl.gov/sites/default/files/publications/Skov-et-al-2018.pdf> (Accessed 22/01/2024)

<sup>137</sup> Scottish Government (2023). Sandeel fishing: consultation [online] Available at: <https://www.gov.scot/publications/sandeel-consultation-consultation-paper/> (Accessed 22/01/2024)

<sup>138</sup> Scottish Government (2024). Proposals to close fishing for sandeel in all Scottish waters: consultation. Feedback updated 31 Jan 2024 [online] Available at: <https://consult.gov.scot/marine-scotland/consultation-on-proposals-to-close-fishing/> (Accessed 26/02/2024)

<sup>139</sup> NatureScot (2023). Feature Activity Sensitivity Tool (FeAST) [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/priority-marine-features-scotlands-seas/feature-activity-sensitivity-tool-feast> (Accessed 22/01/2024)

database (PAD) comprising 39 human use activity categories and 34 human pressure types<sup>140</sup>. These tools provide a comprehensive evidence base for understanding the relationships between these human activities and pressures within the marine environment.

4.3.47 Examples are set out below (section 4.3.48 – section 4.3.56) of activities and their potential effects on marine Biodiversity, Flora and Fauna. The FeAST and PAD tools provide more comprehensive information on the relevant pressures associated with a range of marine activities and the sensitivity of protected features to these activities and pressures<sup>139, 140</sup>

4.3.48 Commercial fishing:

- Removal of target fish species may affect the sustainability of fish stocks, particularly where catches are above the level consistent with achieving maximum sustainable yield;
- Discards of fish are a waste of the resource, and also encourage scavenger species;
- Bycatch of both non-target fish and other species;
- Abrasion of the seabed and its benthic habitat by mobile fishing gear, with the consequent loss of marine plants and animals; and
- Removal of target species may also decrease the availability of prey species, leading to declines in populations of other species (e.g. birds).

4.3.49 Navigation dredging:

- Can result in loss of and/or damage to the seabed and the habitat that it supports;
- May give rise to elevated suspended sediment concentrations, resulting in decreased water quality, reduced visibility for foraging fauna and/or smothering of the seabed if these sediments settle out in a different area; and
- May disturb marine animals, including through increased noise levels.

4.3.50 Marine transport:

- Risk of collision of vessels with marine animals, resulting in their injury and/or death;
- May result in increased coastal erosion through the action of vessel wakes;

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<sup>140</sup> JNCC (2022) Marine Pressures-Activities Database (PAD) v1.5 2022. [online] Available at: <https://hub.jncc.gov.uk/assets/97447f16-9f38-49ff-a3af-56d437fd1951> (Accessed 22/01/2024)

- Vessel noise can impact marine animal behaviour and result in disturbance and / or displacement, including displacement of bird species from the water; and
- Introduction of non-native species may outcompete native species, thereby displacing them from the marine environment.

#### 4.3.51 Aquaculture:

- May give rise to elevated nutrient levels in and on the seabed from fish faeces and excess animal feed, which can result in changes to community composition and/or smothering of the seabed;
- Elevated concentrations of contaminants used in sea lice treatment, fish health and anti-fouling;
- Nets associated with aquaculture can result in the injury and / or death of marine animals through entanglement;
- Can damage the seabed and its habitat through anchoring of infrastructure;
- May affect wild salmon through transmission of sea lice; and
- May disturb marine animals, including through increased noise levels associated with Acoustic Deterrent Device (ADD) operations at finfish aquaculture sites.

#### 4.3.52 Marine wildlife watching:

- May result in increased disturbance and displacement to populations of marine animals such as whales, dolphins and bird species; and
- May give rise to collision risk of mobile species with vessels (e.g. birds, mammals etc.).

#### 4.3.53 Recreation:

- May result in loss of and/or damage to the seabed and its habitat through anchoring;
- May give rise to increased levels of marine litter, which can result in the injury and/or death of marine animals through entanglement, ingestion of litter (including plastic microparticles in particular), or both;
- May disturb marine animals if the Scottish Marine Wildlife Watching Code is not adhered to through human and/or vessel presence; and
- May give rise to collision risk of mobile species with vessels (e.g. birds, mammals etc.).

#### 4.3.54 Offshore renewables:

- May result in loss of and/or damage to the seabed and its habitat, through anchoring of infrastructure;
- May give rise to collision risk (e.g. with birds, mammals, etc.);



- Could result in changes to sediment transport through changes in energy levels in the water; and
- May disturb marine animals, particularly through increased noise levels associated with construction activities (e.g. percussive piling) and survey activities.

#### 4.3.55 Survey Activities

- May disturb marine animals, through increased noise levels in the marine environment associated with the use of acoustic survey equipment; and
- May give rise to collision risk of mobile species with vessels (e.g. birds, mammals etc.).

#### 4.3.56 Coastal Development

- May result in loss of and/or damage to the seabed and its habitat, through construction of infrastructure;
- Could result in changes to sediment transport through changes in coastal processes; and
- May disturb marine animals, through increased noise levels in the marine environment associated with construction activities.

## 4.4 Soil (Geodiversity)

### Seafloor geodiversity

4.4.1 Geodiversity is defined as the natural range (diversity) of geological features (rocks, minerals, fossils and structures), geomorphological features (landforms and processes) and soil features that make up the landscape both on land and below water. The condition of underlying geodiversity features such as sand banks and seabed influence the quality of habitats which in turn affects the viability and health of both flora and fauna populations.

4.4.2 There are six broad features of Scottish geodiversity that are protected by nature conservation MPAs<sup>141</sup>:

- Quaternary of Scotland;
- Submarine Mass Movement;
- Marine Geomorphology of the Scottish Deep Ocean Seabed;
- Seabed Fluid and Gas Seep;

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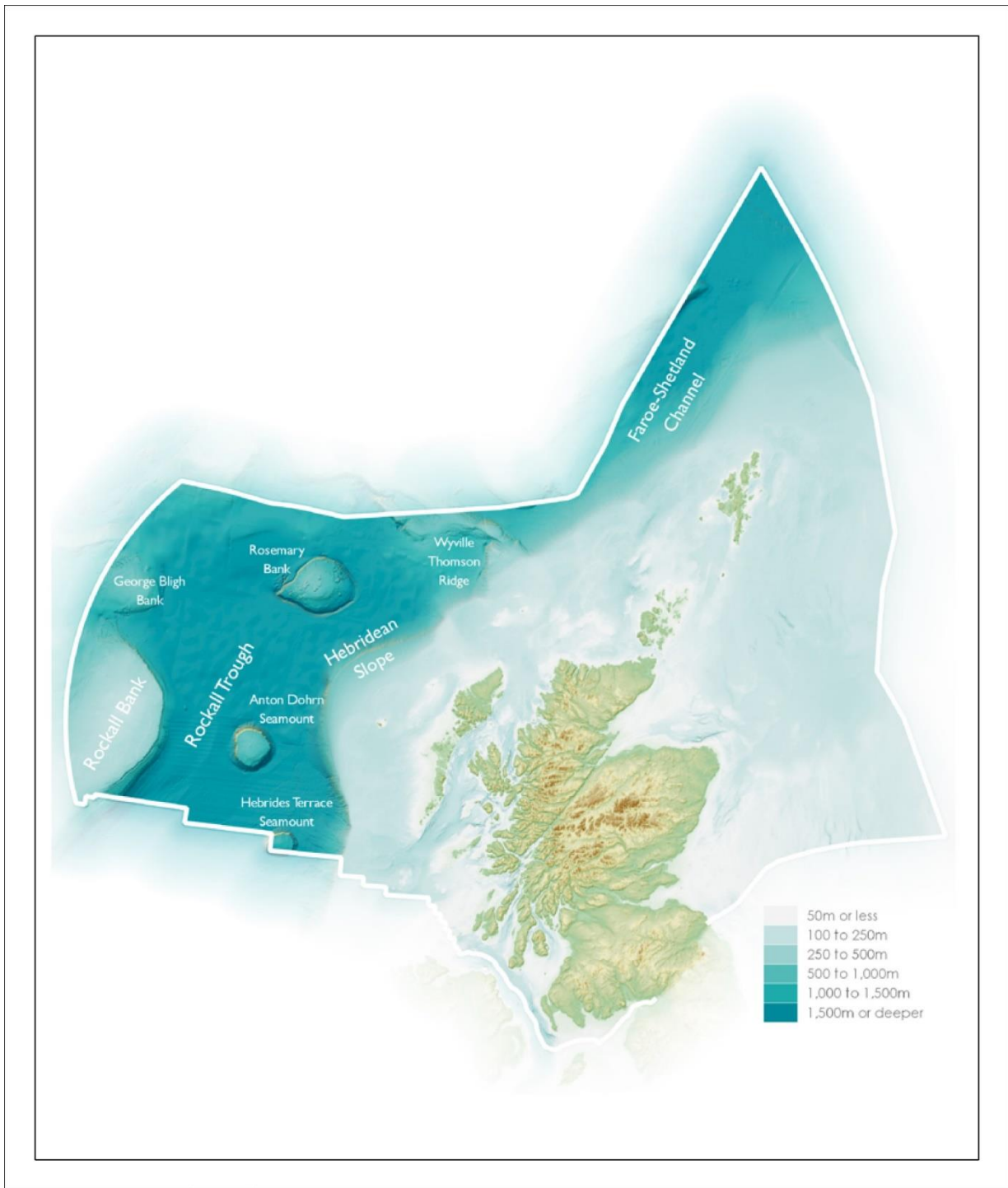
<sup>141</sup> Brooks, A., Kenyon, N., Leslie, A., Long, D. 2011. Characterising Scotland's marine environment to define search locations for new Marine Protected Areas. Part 2: The identification of key geodiversity areas in Scottish waters. Research Gate 430.

- Cenozoic Structures of the Atlantic Margin; and
- Marine Geomorphology of the Scottish Shelf Seabed.

4.4.3 Geological and geomorphological features of MPAs and SSSIs can be impacted upon by changes in physical processes as a result of natural and anthropogenic influences.

4.4.4 Each feature has a variety of components, such as continental slope channels, iceberg ploughmark fields, moraines, slide deposits, sand wave fields, pockmarks, seamounts, sand banks and mega-scale glacial lineation. Major physiographical features of the Scottish marine environment are shown in Figure 8 and demonstrates the shallower nature of inshore waters.

**Figure 8** Extent of Scotland's seas, showing bathymetry and locations of major physiographical features



|                             |                          |           |           |
|-----------------------------|--------------------------|-----------|-----------|
|                             | <b>Date</b>              | <b>By</b> | <b>QA</b> |
|                             | Dec 23                   | HKG       | CRO       |
|                             | <b>Coordinate System</b> |           |           |
|                             | WGS 1984 UTM Zone 30N    |           |           |
|                             | <b>Projection</b>        |           |           |
| Transverse Mercator         |                          |           |           |
| Project no. 5355            |                          |           |           |
| Fig_Extent_Scotland_Seas_A4 |                          |           |           |

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Figure produced by Marine Scotland, 2019

“Figure showing extent of Scotland’s seas, showing bathymetry and locations of major physiographical features, including the Rockall Trough, Hebridean Slope, Wyville Thomson Ridge, Rosemary Bank, Hebridean Terrace Seamount, George Bligh Bank, and Rockall Bank. Water depths move from 50m or less inshore to 1,500 m or deeper in offshore waters. The territorial limit of Scotland’s waters (12 nautical miles) is also shown.”

- 4.4.5 Scottish waters are geomorphologically distinct between the east and west coasts. The east coast presents mostly uniform depths and shallow inclines interspersed with localised trenches, while the seabed off Scotland’s west coast shelves steeply away from the coast, and deep waters occur relatively close to the land.
- 4.4.6 Data from the British Geological Society (BGS) indicates that Scottish waters have a wide range of seabed habitats, ranging from scoured rock or coarse sediment to muddy gravel or fine sand in some areas (Figure 3, section 4.3.4). A description of the key habitat types in Scottish waters is provided in ‘Marine Habitats’ in section 4.3.4 above.
- 4.4.7 In general, marine sediments are sandy or gravelly and originate from deposits during the Quaternary glaciation. Muddy sediments occur principally nearshore or, further offshore, in depressions on the sea floor, where currents may be relatively weak. They also occur beyond the shelf break (200 m water depth) to the west of Scotland. The concentration of calcareous material varies greatly in seabed sediments, reflecting the amount of shell material in different areas, and can locally be very high<sup>142</sup>.

### Coastal geodiversity

- 4.4.8 Much of Scotland’s landscape and coastline was initially formed through the processes of glacial erosion and deposition. Today the coast continues to change as a result of coastal processes such as wave action, sediment movement, erosion and accretion. The 2004 European Initiative for Sustainable Coastal Erosion Management (EuroErosion) survey of Scotland’s coastline reported that it comprises predominantly hard coasts of rocks and cliffs (70%); soft coasts that are potentially susceptible to erosion impacts, consisting of unconsolidated gravels, sand and silts (29%); and artificial coasts such as harbours and sea walls (less than 1%).

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<sup>142</sup> Scottish Government (2008) Scotland’s Seas: Towards understanding their state, Chapter 2 [online] Available at: <https://www.gov.scot/publications/scotlands-seas-towards-understanding-state/pages/7/> (Accessed 22/01/2024)

## Future Evolution of Baseline

- 4.4.9 As previously detailed, the majority of the Scotland's coastline is composed of hard geology, meaning that it is relatively stable. However, there are areas of the Scottish marine environment that are more dynamic and therefore continuously experiencing changes that are outside the direct influence of human activities.
- 4.4.10 Changes to geological and geomorphological features can occur through physical and hydrological pressures. These pressures may be the result of natural processes (e.g. storms), changing climatic conditions and marine activities, such as the development of infrastructure on coastal and subtidal habitats.
- 4.4.11 Coasts are dynamic environments, continually changing in response to variations in weather, land use and the supply of sediment. This capacity to change encourages landholders to try to design schemes to restrict and control this natural dynamism. Restricting coasts affects water and sediment flows, which can destroy wildlife habitat and reduce landscape value and diversity. Intervention at one point of a coast can have a negative knock-on effect at another point in the dynamic landscape.
- 4.4.12 Work carried out as part of the National Coastal Change Assessment (NCCA) provides a shared evidence base which encompasses historic coastal change and highlights susceptible areas of the coastline<sup>143</sup>.
- 4.4.13 In 2010-2011 it was estimated that around 12% of Scotland's coastline was erosional<sup>144</sup>. Following on from the Dynamic Coast NCCA, further research funded by the Scottish Government is ongoing to understand the potential damage from climate change to areas of the Scottish coastline categorised as 'soft' erodible coast, and how these effects can be mitigated<sup>145</sup>.
- 4.4.14 The erosional portion of the Scottish coastline largely consists of beaches, sand dunes, conglomerates/soft-rock cliffs, machair and marshes with muddy sediments<sup>146</sup>. Areas most vulnerable to coastal erosion include the east coast

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<sup>143</sup> M.D. Hurst, F.M.E Muir, A.F. Rennie & J.D. Hansom (2021). Dynamic Coast: Future Coastal Erosion (2021). CRW2017\_08. Scotland's Centre of Expertise for Waters (CREW). Available online at: [crew.ac.uk/publications](http://crew.ac.uk/publications) (Accessed 22/01/2024)

<sup>144</sup> Marine Climate Change Impacts Partnership. Marine climate change impacts. Annual Report Card 2010–2011 [online] Available at: [MCCIP annual report 2010-11](https://www.mccip.ac.uk/annual-report-2010-11) ()

<sup>145</sup> National Coastal Change Assessment 2: Enhancing the evidence base and our ability to adapt <https://www.crew.ac.uk/project/scotlands-coastal-change-assessment-2> (Accessed 22/01/2024)

<sup>146</sup> European Commission (2004) EuroSION: Living with Coastal Erosion in Europe – Sediment and Space for Sustainability – Results for the EuroSION Study, [online] Available at: <http://www.euroSION.org/reports-online/reports.html> (Accessed 22/01/2024)

from Montrose to Dunbar, the Firth of Clyde, the Inner Moray Firth, and the Northern and Western Isles <sup>147</sup>.

- 4.4.15 Pressures on geodiversity features in Scottish seas arise from multiple activities, including fishing, infrastructure development, seafloor exploration activities, oil and gas extraction and renewable energy development<sup>148</sup>.

## 4.5 Water

### Ecological status of WFD bodies

- 4.5.1 There are various mechanisms in place for monitoring and managing the quality of Scottish inshore waters. Each takes a different focus and approach:

- The Water Framework Directive (WFD) establishes a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters (out to 1 NM (3 NM in Scotland)) and groundwater; with the aim of ensuring that all aquatic ecosystems meet 'good status';
- River Basin Management Plans (RBMPs) have been prepared for the Scotland and Solway-Tweed River Basin Districts to address the requirements of the WFD in relation to the management of Scotland's river systems. Both plans also provide an overview of the state of the water environment for their districts. The plans have been updated since the first cycle (2009 – 2015) and are currently in the second cycle (2015 – 2027); and
- Scotland's coastal waters are monitored by Scottish Environment Protection Agency (SEPA) to measure performance and compliance with targets for coastal water quality status under the WFD.

- 4.5.2 Coastal and transitional water bodies are classified in terms of their ecological and chemical quality. For those water bodies not designated as heavily modified or artificial, this ecological quality is described in terms of 'ecological status', which defines how much ecological quality deviates from natural conditions. The quality elements used to assess ecological status are:

- Biological quality elements (water, plants and animals);

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<sup>147</sup> Geodiversity in Protected Areas - <https://www.nature.scot/landforms-and-geology/protecting-our-geodiversity/places-and-plans-safeguard-geodiversity/geodiversity-protected-areas> (Accessed 22/01/2024)

<sup>148</sup> SNH (2013) Assessing the sensitivity of geodiversity features in Scotland's seas to pressures associated with human activities. Report 590 [online] Available at: <https://www.nature.scot/sites/default/files/2018-09/Publication%202013%20-%20SNH%20Commissioned%20Report%20590%20-%20Assessing%20the%20sensitivity%20of%20geodiversity%20features%20in%20Scotland's%20seas%20to%20pressures%20associated%20with%20human%20activities.pdf> (Accessed 22/01/2024)

- Chemical and physicochemical elements (e.g. oxygen and nutrient levels); and
  - Hydromorphological quality elements (water flows and levels; the condition of beds, banks and shores; and the continuity of rivers for fish migration).
- 4.5.3 For good status, the chemical, physicochemical and hydromorphological quality of the water body must achieve the standards and conditions necessary for the biological quality elements to be in good condition. The ecological status of a water body is determined by the lowest-classed quality element.
- 4.5.4 The WFD requires surface and ground waters to be monitored and assessed, and plans for improvements in water quality to be developed and implemented where standards are not met. The majority of the 505 coastal and transitional water bodies in Scottish Waters, as represented in Figure 9, are classified as either good status (343) or high status (154), however some areas have been classified as moderate (6) or poor (2), principally due to pressures on morphology and macro-invertebrates<sup>149</sup>.
- 4.5.5 In terms of protected areas under the WFD, there are 89 designated bathing waters and 80 designated shellfish waters in Scotland. The latest available classification data from 2023 assessed 38 bathing waters as excellent, 37 as good, 12 as sufficient, and 2 as poor status<sup>150</sup>. There are 80 shellfish water protected areas in the Scotland and in the Solway Tweed RBD<sup>151</sup>. The latest available classification from 2014, assessed 29 shellfish waters as at target objective, with the remaining 51 assessed as not at target objective<sup>152</sup>.

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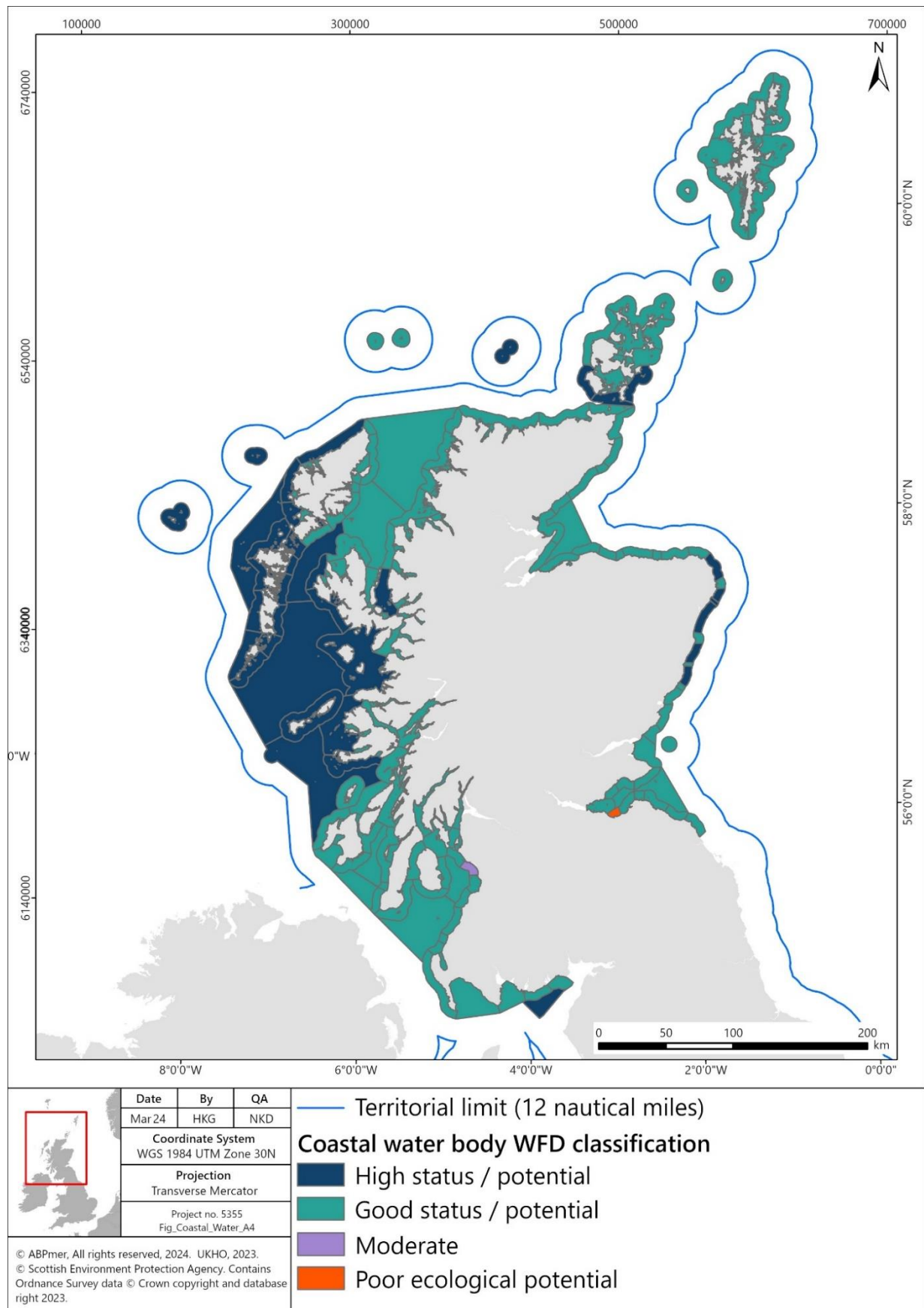
<sup>149</sup> SEPA. (2023). SEPA Water Classification Hub. Available at <https://www.sepa.org.uk/data-visualisation/water-classification-hub/>. (Accessed 22/01/2024)

<sup>150</sup> SEPA (2023). Bathing waters: current classification [online] Available at: <https://informatics.sepa.org.uk/BathingWaters/> (Accessed 22/01/2024)

<sup>151</sup> Scottish Government (2023) Water [online] Available at: <https://www.gov.scot/policies/water/protected-waters/> (Accessed 22/01/2024)

<sup>152</sup> SEPA (2023). Water classification: status of shellfish waters [online] Available at: <https://www.sepa.org.uk/data-visualisation/water-classification-hub/> (Accessed 22/01/2024)

**Figure 9 Classification of coastal and transitional water bodies under the WFD**





“Figure showing classification of coastal and transitional water bodies under WFD. Waters shown to be mostly of high status/potential and good status/potential. The territorial limit of Scotland’s waters (12 nautical miles) is also shown.”

## Environmental status of marine region

- 4.5.6 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. The Strategy extends from the landward boundary of coastal waters (the equivalent to Mean High Water Springs) to the outer limit of the UK Exclusive Economic Zone (EEZ)<sup>153</sup>. The North-East Atlantic Ocean marine region and the Celtic Seas and Greater North Sea sub regions that overlap Scottish waters are shown on Figure 10.
- 4.5.7 Achieving GES under the UK Marine Strategy involves satisfying several elements (known as descriptors (D)), namely D1 biological biodiversity (cetaceans, seals, birds, fish, pelagic habitats and benthic habitats); D2 no indigenous species; D3 commercially-exploited fish and shellfish; D4 food webs (cetaceans, seals, birds, fish and pelagic habitats); D5 eutrophication; D6 sea floor integrity (pelagic habitats and benthic habitats); D7 hydrographical conditions; D8 contaminants; D9 contaminants in fish and other seafood for human consumption; D10 litter and D11 introduction of energy, including underwater noise<sup>154</sup>.
- 4.5.8 The 2019 UK updated assessment and Good Environmental Status<sup>154</sup> reports for the North-East Atlantic Ocean marine region to not have achieved GES for birds, fish, benthic habitats, non-indigenous species, commercial fish and litter. It has partially achieved GES for cetaceans, seals, pelagic habitats, food webs and underwater noise. It has achieved GES for eutrophication, changes in hydrographical conditions, contaminants and contaminants in seafood.

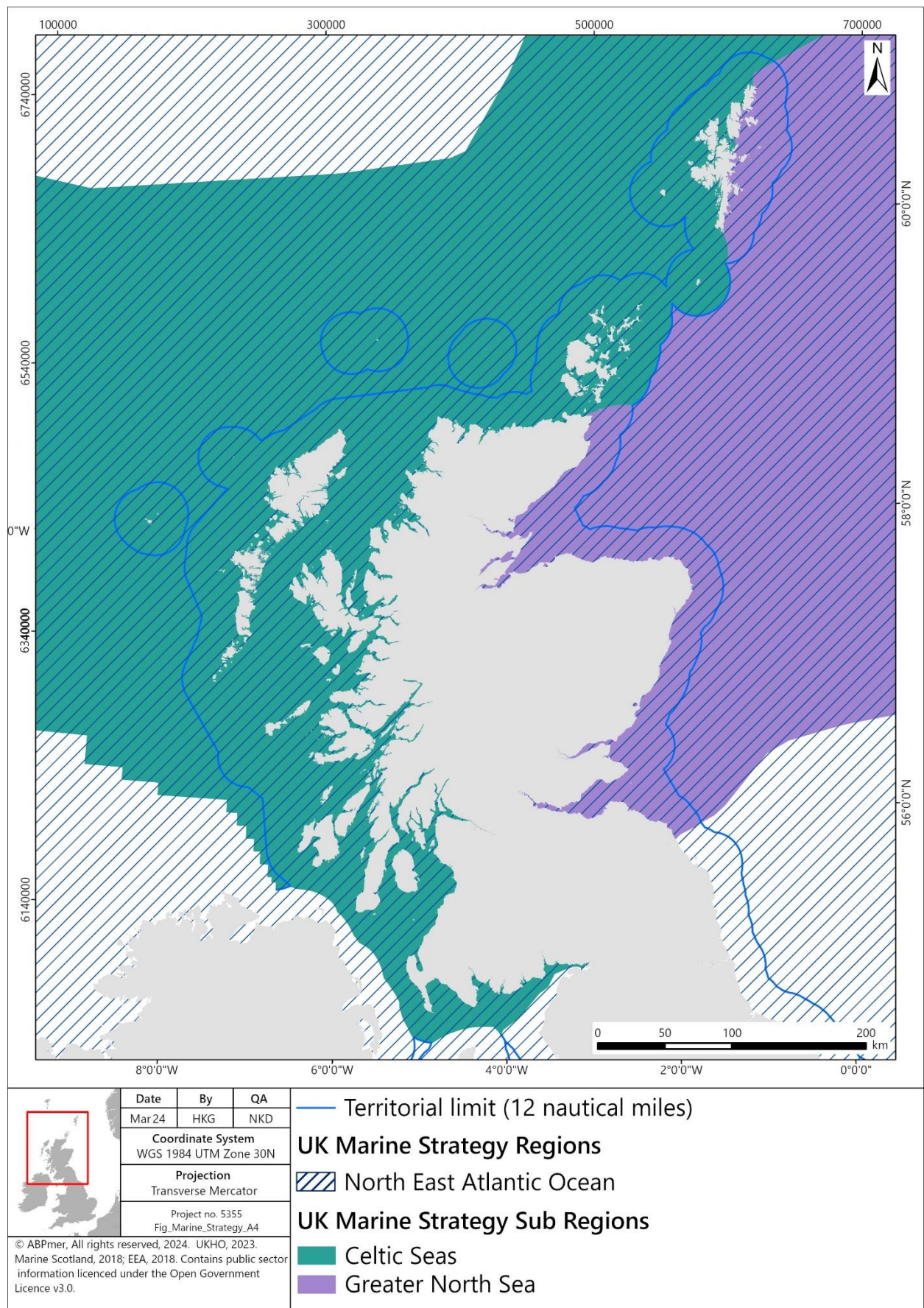
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<sup>153</sup> UK Marine Monitoring & Assessment Strategy (2018). Marine online assessment tool [online] Available at: <https://moat.cefas.co.uk/introduction-to-uk-marine-strategy/> (Accessed 22/01/2024)

<sup>154</sup> Defra (2019) Marine Strategy Part One: UK updated assessment and Good Environmental Status. October 2019 [online] Available at:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/921262/marine-strategy-part1-october19.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf) (Accessed 22/01/2024)

**Figure 10 UK Marine Strategy region and subregions**



“Figure showing UK Marine Strategy region and subregions. The North East Atlantic Ocean Marine Strategy region covers all Scottish waters. The Celtic Seas subregion is shown to the west of Scotland and the Greater North Sea subregion to the east of Scotland. The territorial limit of Scotland’s waters (12 nautical miles) is also shown.”

## Future Evolution of Baseline

- 4.5.9 Since the first River Basin Management Plans (RBMPs) in Scotland were published in 2009, the condition of water bodies has generally improved continuing a trend that has been observed since the 1980s following implementation of the Control of Pollution Act 1974. However, a wide range of pressures are continuing to affect the condition of specific water bodies and protected areas. The most widespread pressures on the marine environment in the Scotland RBMP are modifications to physical condition, rural diffuse pollution, waste water discharges and local pollution events such as oil spills<sup>155</sup>,<sup>156</sup>.
- 4.5.10 Pressures on water quality around Scottish coastlines are generally dependent on the level of marine industry and associated effects, together with land use. The future baseline will continue to be affected by similar pressures observed in the marine environment today, but the level of these pressures going forward is unknown.
- 4.5.11 In terms of GES, since 2012, environmental status has declined for birds, and has remained stable for cetaceans, pelagic habitats, benthic habitats, non-indigenous species, eutrophication, changes in hydrological conditions, litter and input of anthropogenic sound<sup>156</sup>. Environmental status has improved since 2012 for seals, fish, commercial fish and shellfish, food webs, contaminants, and contaminants in seafood.
- 4.5.12 Potential pressures against the UK Marine Strategy include those associated with increases in fishing activity, increases in oil and gas activity (and associated chemical discharges), increases in seabed extractive activities (i.e. seabed mining) and increases in offshore renewable development.
- 4.5.13 Higher marine traffic increases the potential for pollution events, however the modernisation of ships and more stringent inspection and maintenance regimes may reduce the occurrence of pollution events seen in a future baseline. The continued management of water quality through RBMPs has the potential to improve the status of coastal and transitional water bodies. The ongoing management of the North-East Atlantic Ocean marine region through a

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<sup>155</sup> Scottish Government. 2015. The river basin management plan for the Scotland river basin district: 2015–2027. <https://www.sepa.org.uk/media/163445/the-river-basin-management-plan-for-the-scotland-river-basin-district-2015-2027.pdf> (Accessed 22/01/2024)

<sup>156</sup> Scotland’s Environment (2023) Scotland’s seas [online] Available at: <https://www.environment.gov.scot/our-environment/water/scotland-s-seas/> (Accessed (22/01/2024)

Programme of Measures (POMs) developed as part of the UK Marine Strategy has the potential to achieve or maintain GES of waters in Scotland.

## 4.6 Climatic Factors (including carbon cycling, storage and sequestration)

### Climate Change

- 4.6.1 The key pressures on the climate are derived from the continued global emission of greenhouse gases, including carbon dioxide. These emissions are recognised as leading to changes in the global climate (including changes in temperatures, precipitation, storm density) in turn causing changes in the physical characteristics of the oceans, including potential changes in sea temperatures, circulation, salinity, pH and sea level rise. Global sea level has risen over the 20<sup>th</sup> century and will continue to rise over the coming centuries<sup>157</sup>.
- 4.6.2 It is estimated that over the past four decades, sea surface temperature has increased by 0.6 °C, with the latest five year average being 0.2 °C above the 1981–2010 reference period and 0.4°C above the 1991–2020 reference period<sup>158</sup>.
- 4.6.3 Worldwide sea pH has reduced by 0.1 in the period since the start of the industrial revolution<sup>159</sup>; and the sea level around the UK has risen by 15.4cm since 1900<sup>160</sup>.
- 4.6.4 Scotland’s ten warmest years on record have all occurred since 1997, and the average temperature in the last decade (2010 – 2019) was roughly 0.7 °C warmer than the 1961 – 1990 average. Furthermore, there has been an increase in rainfall in Scotland over the past few decades. The average year in the last decade was 9% wetter than the 1961 – 1990 average<sup>161</sup>.

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<sup>157</sup> Met Office (2018). UKCP18 Factsheet: Sea level rise and storm surge [online] Available at: <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-factsheet-sea-level-rise-and-storm-surge.pdf> (Accessed 22/01/2024)

<sup>158</sup> Copernicus (2022) Climate Indicators: Sea surface Temperature [online] Available at: <https://climate.copernicus.eu/climate-indicators/sea-surface-temperature> (Accessed 22/01/2024)

<sup>159</sup> European Environment Agency (2022). Ocean acidification [online] Available at: <https://www.eea.europa.eu/en/analysis/indicators/ocean-acidification> (Accessed 22/01/2024)

<sup>160</sup> Committee on Climate Change, 2018. Managing the coast in a changing climate [online] Available at <https://www.theccc.org.uk/wp-content/uploads/2018/10/Managing-the-coast-in-a-changing-climate-October-2018.pdf> (Accessed 22/01/2024)

<sup>161</sup> Scotland's Environment (2021) Changing climate [online] Available at: <https://www.environment.gov.scot/our-environment/climate/changing-climate/> (Accessed 22/01/2024)

## Carbon Cycle

- 4.6.5 The term 'carbon cycle' refers to the circulation of carbon in the environment. In the context of this report, it focusses on the exchange of carbon between the ocean and the atmosphere. The proportion of carbon incorporated into biomass is said to be 'stored'. Seagrasses, saltmarshes, biogenic calcifying reefs, kelp, and vegetated sand dunes all contribute to carbon cycling, sequestration, and storage<sup>162</sup>. The addition of solid carbon to these long-term stocks is referred to as sequestration, and the conversion of atmospheric carbon dioxide to solid carbon in living material is referred to as fixation. The stored carbon can be released, however, through physical disturbance, bacterial decomposition of organic matter or respiratory processes within the food chain.
- 4.6.6 The largest contribution to carbon fixation and sequestration in Scottish waters comes from phytoplankton, via photosynthesis and subsequent deposition of the produced organic matter in seabed sediments. This may occur either directly through the export of phytoplankton or indirectly through the consumption of phytoplankton by other organisms and subsequent export of this organic matter through the food chain<sup>163</sup>.
- 4.6.7 Within the marine environment, habitats and processes capable of carbon fixation and sequestration are defined as 'blue carbon habitats'. Multiple habitats across Scottish seas and coastal areas can be termed blue carbon habitats due to their fixation and sequestration ability. Their effectiveness as carbon sinks is highly dependent upon their long-term capacity to store carbon.
- 4.6.8 Scottish blue carbon habitats are wide ranging and include: vegetated coastal habitats (saltmarsh, sand dunes, and machair) and nearshore habitats (including intertidal and subtidal seagrass beds and kelp) that produce and store organic carbon; calcifying aggregations (e.g., maerl, serpulid aggregations, and native oysters) that produce and store inorganic carbon within their structures; and seabed sediments, which receive, bury, and store organic and inorganic carbon<sup>162</sup>.
- 4.6.9 Carbon stored in shallow shelf sediment tends to be ephemeral and constantly exchanged due to the dynamic nature of such habitats. Therefore, the potential for shallow shelf sediments to provide long term carbon storage is a function of sedimentation rates and the degree of recycling of organic carbon. The rate of

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<sup>162</sup> Cunningham, C. and Hunt, C. (2023). Scottish Blue Carbon - a literature review of the current evidence for Scotland's blue carbon habitats. NatureScot Research Report 1326 [online] Available at: <https://www.nature.scot/doc/naturescot-research-report-1326-scottish-blue-carbon-literature-review-current-evidence-scotlands> (Accessed 22/01/2024)

<sup>163</sup> Kröger S, Parker R, Cripps G & Williamson P (Eds.) 2018. Shelf Seas: The Engine of Productivity, Policy Report on NERC-Defra Shelf Sea Biogeochemistry programme. Cefas, Lowestoft. DOI: 10.14465/2018.ssb18.pbd [online] Available at: [https://www.uk-ssb.org/shelf\\_seas\\_report.html](https://www.uk-ssb.org/shelf_seas_report.html) (Accessed 22/01/2024)

recycling of organic carbon is driven by the level of oxygen available for bacterial and chemical breakdown of organic matter<sup>163</sup>, which is primarily influenced by disturbance of seabed sediments and the oxygen content of the seawater above the seabed.

- 4.6.10 Deeper sediments are less mobile and dynamic and, therefore, are able to store carbon to a greater extent, but the rate of uptake into the sediment is slower as sedimentation rates in deeper waters are reduced. Deeper sediments are predominantly found in offshore waters.
- 4.6.11 Kelp forests, ubiquitous along the rocky shore common around Scotland, are identified as a significant carbon store (estimated to store ~0.6 Mt OC as standing stock within living biomass<sup>162</sup>). However, the fate of carbon within kelp (i.e. whether it is eventually sequestered permanently) is not quantified, and the majority of stored carbon in kelp is understood to be recycled rather than sequestered<sup>163</sup>. Recent studies have also highlighted the potential contribution of brittlestar beds to carbon storage in Scottish waters warrant further consideration<sup>162</sup>. Brittlestar beds are located primarily in inshore waters but can be found to depths of 85 m.
- 4.6.12 For many of Scotland's blue carbon habitats, a lack of extent data impedes the calculation of accurate estimates of carbon stocks. Additionally, there is a paucity of Scottish-specific sequestration and burial rate data for many habitats<sup>162</sup>.

### Future Evolution of Baseline

- 4.6.13 Predictions of the effects of climate change under all emissions scenarios suggest that several changes will occur within the marine environment. Key changes include increasing sea surface temperatures, sea level rise, increases in ocean acidity and potential changes in storm intensity (and hence wind and wave energy).
- 4.6.14 However, further reduction in emissions, through the continuing development of a de-carbonised energy sector, can support the Scottish, UK and International policy goals to limit greenhouse gas emissions and hence mitigate the progression and effects of climate change. In Scotland, between 1990 and 2021, there has been a 49.2% reduction in estimated emissions, a 40.3 MtCO<sub>2e</sub> decrease<sup>164</sup>, driven by factors such as reductions in energy supply emissions (such as power stations) (77.6% reduction since baseline).
- 4.6.15 Climate change has the potential to affect the carbon sequestration capacity of marine habitats. Kelps and seagrasses are likely to be vulnerable to increases

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<sup>164</sup> Scottish Government (2021). Scottish Greenhouse Gas Statistics 2021 [online] Available at: <https://www.gov.scot/publications/scottish-greenhouse-gas-statistics-2021/> (Accessed 22/01/2024)

in the frequency of severe storms which have the potential to cause physical damage and reduce habitat extents and hence reduce carbon storage potential. For seagrasses, reductions in canopy density resulting from physical damage may also decrease this habitat's ability to trap sediment and deflect wave energy away from the bed. Carbon-storing sediments are, therefore, likely to be more vulnerable to wave scour and subsequent resuspension during severe storms. Resuspension events increase the opportunity for organisms to recycle any biologically available carbon from the sediment, reducing sequestration in the sediment once it re-settles on the seabed.

- 4.6.16 Such storm events are also likely to increase the turbidity of the water through increased sediment resuspension, which could potentially reduce available light for photosynthesis, reducing growth rates and, therefore, reducing the overall carbon sequestration capacity of marine habitats. However, in offshore areas, storm events will have no influence on turbidity due to the water depths.
- 4.6.17 Several marine activities (e.g. fishing, deep sea mining, oil and gas activities and renewable energy development) physically disturb the seafloor. As previously stated, any physical damage caused to a habitat has the potential to disturb, remove or release any carbon held within that store. However, it may also increase other nutrient levels, which could in turn increase the levels of primary production. The level of impact will depend on the specific area affected. The dominant controls on the release of carbon have been found to relate to the intensity of trawling (a function of the depth to which carbon was disturbed, the particulate organic carbon content of the sediment, and the fraction redeposited without mineralisation)<sup>165</sup>. In general, direct physical disturbance from marine activities has the potential to affect how Scotland's marine environments regulate atmospheric carbon levels.
- 4.6.18 A number of blue carbon habitats are currently thought to be declining, including maerl and flame shell beds. However, the current MPA programme is expected to contribute to halting or even reversing the decline of habitats within the MPAs.
- 4.6.19 Shelf seas around the UK are predicted to be 1°C to 4°C warmer by the end of the 21<sup>st</sup> century<sup>166</sup>. Warmer sea temperatures could result in a shift in

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<sup>165</sup> Tiziana Luisetti, R. Kerry Turner, Julian E. Andrews, Timothy D. Jickells, Silke Kröger, Markus Diesing, Lucille Paltriguera, Martin T. Johnson, Eleanor R. Parker, Dorothee C.E. Bakker, Keith Weston (2019) Quantifying and valuing carbon flows and stores in coastal and shelf ecosystems in the UK ,Ecosystem Services, Volume 35, 2019, Pages 67-76, ISSN 2212-0416 [online] Available at: <https://www.sciencedirect.com/science/article/pii/S2212041618300536> (Accessed 22/01/2024)

<sup>166</sup> Tinker, J.P. and Howes, E.L. (2020) The impacts of climate change on temperature (air and sea), relevant to the coastal and marine environment around the UK. MCCIP Science Review 2020, 1–32 [online] Available at: [https://nora.nerc.ac.uk/id/eprint/534103/1/The%20Impacts%20of%20Climate%20Change%20on%20Sea%20Temperature%20around%20the%20UK%20and%20Ireland\\_1.pdf](https://nora.nerc.ac.uk/id/eprint/534103/1/The%20Impacts%20of%20Climate%20Change%20on%20Sea%20Temperature%20around%20the%20UK%20and%20Ireland_1.pdf) (Accessed 22/01/2024)

distribution of certain habitats and species. Climate change may also favour some species, leading to a potential increase in the diversity of seabed marine life<sup>167</sup>. Biodiversity and benthic biomass in the deep oceans, however, are generally predicted to decrease as a result of climate change<sup>168</sup>.

- 4.6.20 An increase in atmospheric carbon dioxide will lead to a subsequent increase in dissolved CO<sub>2</sub> concentrations within the ocean, increasing ocean acidity. This has the potential to hinder calcium carbonate producing organisms, and, therefore, their ability to sequester carbon in the long term. In addition, following mortality of such organisms, there is increased potential for carbonate shells or skeletons to dissolve faster, in both shallow shelf seas and deeper ecosystems, and, therefore, recycle greater amounts of carbon before they can be sequestered in seabed sediments. This pathway is particularly significant where the carbonate pump forms a considerable portion of the carbon export to deep sea sediments.

## 4.7 Cultural Heritage

- 4.7.1 Key pressures on historic marine environment and archaeological features are from climatic conditions, including storm events, physical processes (e.g. leading to erosion) and human activities such as coastal and offshore infrastructure developments.
- 4.7.2 Many cultural heritage features are designated and thus afforded some degree of protection; however, there is considerable uncertainty on the location, extent and status of many subtidal marine historical assets.
- 4.7.3 Loss, damage and modification of historic assets and their settings can occur through a range of marine activities and infrastructure developments. Where the construction or operation of offshore marine developments, including their associated infrastructure (e.g. subsea cables, coastal substations etc.), overlaps with historical features then there is the potential for direct effects to arise on the feature and its setting. Indirect effects on historical features may also occur from changes in physical processes and sediment transport regimes resulting from offshore infrastructure.

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<sup>167</sup> Hiscock, K., Southward, A., Tittley, I., Hawkins, S., 2001 The impact of climate change on subtidal and intertidal benthic species in Scotland. Report to Scottish Natural Heritage from the Marine Biological Association of the UK.

<sup>168</sup> Sweetman, A.K., Thurber, A.R., Smith, C.R., Levin, L.A., Mora, C., Wei, C.L., Gooday, A.J., Jones, D.O., Rex, M., Yasuhara, M. and Ingels, J., 2017. Major impacts of climate change on deep-sea benthic ecosystems. *Elem Sci Anth*, 5, p.4. [online] Available at: [https://www.researchgate.net/publication/313902424\\_Major\\_impacts\\_of\\_climate\\_change\\_on\\_deep-sea\\_benthic\\_ecosystems](https://www.researchgate.net/publication/313902424_Major_impacts_of_climate_change_on_deep-sea_benthic_ecosystems) (Accessed 22/01/2024)



## Designated Historical Sites and Shipwrecks

- 4.7.4 There are numerous scheduled monuments and listed buildings along the Scottish coastline, with designated wrecks and military remains sites identified both inshore and offshore. Three of Scotland's six designated World Heritage Sites (WHS) are on the coast (St. Kilda; The Heart of Neolithic Orkney; The Forth Bridge). The Antonine Wall runs across central Scotland, from Old Kilpatrick in the west to Bo'ness in the east. (Figure 11). The Crucible of Iron Age Shetland is also on the Tentative List for a future WHS<sup>169</sup>.
- 4.7.5 Other key coastal features include a number of Category A listed lighthouses, ecclesiastical remains, coastal heritage museums, military defences, harbours, forts and castles.
- 4.7.6 Historic MPAs are designated under Section 67 of the Marine Scotland Act 2010 to protect marine historic assets (e.g. historic shipwrecks) of national importance within Scottish Territorial waters (up to 12 NM from the coast). There are currently 9 Historic MPAs designated within Scottish waters<sup>170</sup> (Figure 11).
- 4.7.7 In addition to the historic MPAs, there are a number of other designated sites that overlap with the coastal and marine environment including eight designated wrecks, nine scheduled monuments, four listed buildings and 20 sites and vessels designated under the Protection of Military Remains Act 1986 (Figure 11).
- 4.7.8 There are also numerous shipwrecks around Scotland, an estimate puts this in the region of 20,000<sup>171</sup>.

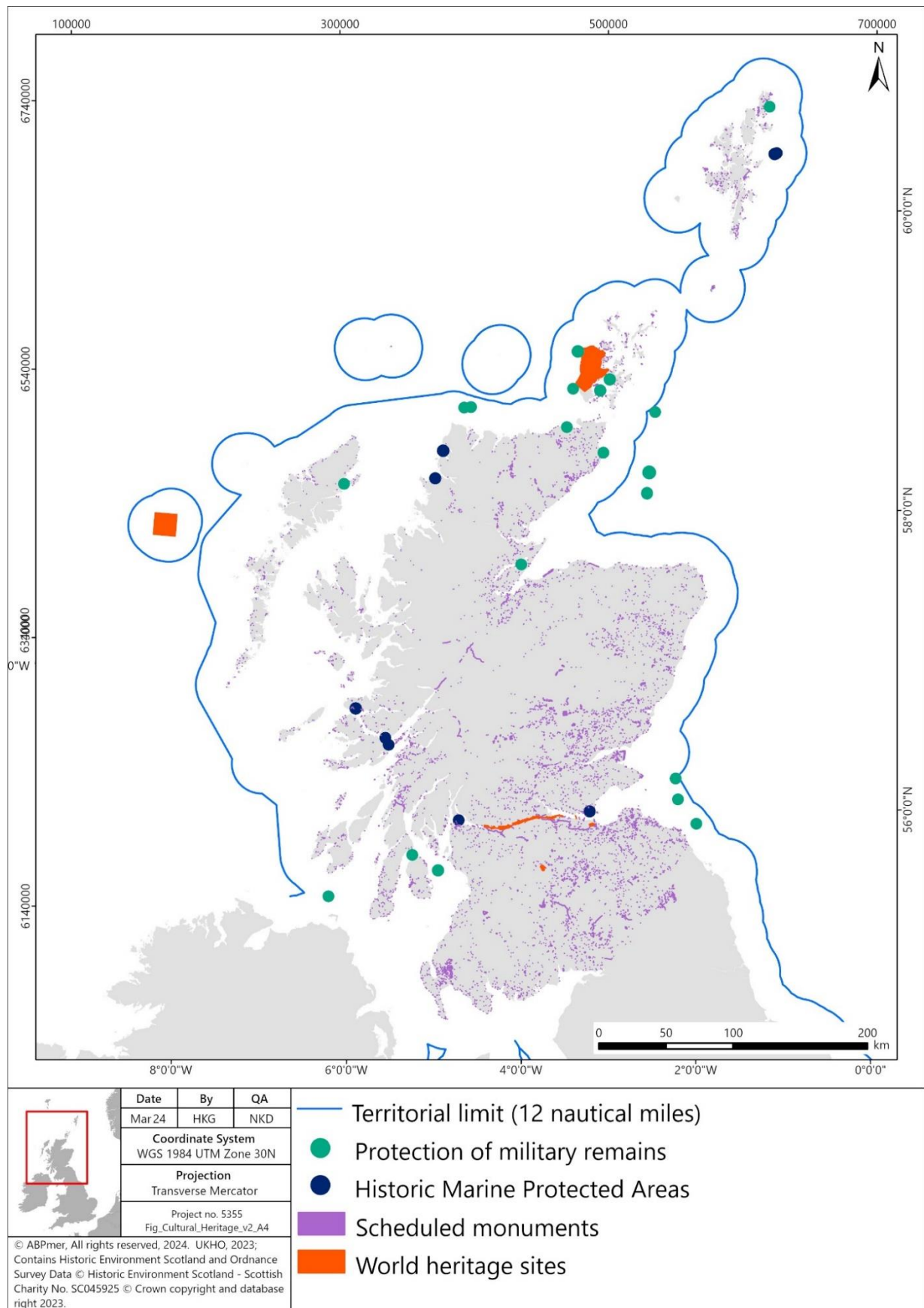
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<sup>169</sup> United Nations Educational, Scientific and Cultural Organization (UNESCO): Mousa, Old Scatness and Jarlshof: the Zenith of Iron Age Shetland [online] Available at: <https://whc.unesco.org/en/tentativelists/6691/> (Accessed 22/01/2024)

<sup>170</sup> Scottish Government - National Marine Plan interactive (NMPi) – Historic Marine Protected Areas (HMPAs) - protected wrecks contributing to the MPA network (HES WMS) (OSCP) [online] Available at: <https://marine.gov.scot/maps/1469> (Accessed 08/02/2023)

<sup>171</sup> Scottish Government (2011) Scotland's Marine Atlas: Information for the national marine plan. Pg 156.

**Figure 11 Cultural heritage sites in Scotland including Protection of Military Remains, Historic MPAs, Scheduled Monuments, and WHS**



“Figure showing cultural heritage sites in Scotland including Protection of Military Remains, Historic MPAs, Scheduled Monuments, and WHS. All types of cultural heritage sites are shown in Scottish inshore waters. The territorial limit of Scotland’s waters (12 nautical miles) is also shown.”

## Future Evolution of Baseline

- 4.7.9 Pressures from coastal erosion and climatic conditions will continue to affect the historic environment with climate change potentially exacerbating the erosive and destructive effects from physical processes. Pressures from human development will also affect the setting of historic assets.
- 4.7.10 The Scottish Coastal Archaeology and the Problem of Erosion Trust (SCAPE) provides an indication of coastal heritage sites around Scotland which are threatened by erosion<sup>172</sup>. The works highlights those coastal sites seen most at risk from erosion.
- 4.7.11 An increase in visitors to historic sites in Scotland may increase pressure on the sites. However, sites such as Skara-Brae in the Heart of Neolithic Orkney WHS will continue to be actively managed through the adoption of individual site management plans and government and agency commitments, to minimise the risk of effects from visitor disturbance and erosion.

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<sup>172</sup> Scotland's Coastal Heritage at Risk [online] Available at: <http://ssharp.co.uk/> (Accessed 22/01/2024)

## 5 Results of the SEA

### 5.1 Introduction

- 5.1.1 The purpose of this section is to report the results of the SEA. At this stage, it has only been possible to undertake a high-level SEA to consider the type of impacts that could arise from any future implementation of MCOs under the revised provisions.
- 5.1.2 As outlined in section 3.5.11, only indicative criteria to define the nature or type of potential effects that may result from the proposal and reasonable alternatives have been used (i.e. beneficial, adverse or neutral).
- 5.1.3 Taking forward the proposals outlined will extend existing provisions of MCOs in the 2010 Act, enabling MCOs to be applied to:
- standalone European marine sites (i.e. those which do not overlap spatially with an MPA) in Scottish inshore waters; and
  - nature restoration and enhancement projects in Scottish inshore waters.
- 5.1.4 This will provide a potential mechanism for management and therefore additional environmental protection over and above the existing legislation. As such, it is considered that the proposed legislative changes has the potential to lead to significant beneficial environmental effects.
- 5.1.5 A high level overview of the implications of extending MCO provisions on the topics and SEA objectives, is provided in this section. The approach to the assessment is outlined in section 3.5 and a summary of the assessment against each SEA topic and objective is given in Table 4.
- 5.1.6 As part of the assessment of reasonable alternatives which is a requirement of the 2005 Act, consideration has also been given in this section to the potential impacts that could arise from:
- “Do nothing”, i.e. keep the provisions of the 2010 Act as they are currently
  - Seeking to secure outcomes through voluntary mechanisms or guidance approaches.

### 5.2 Environmental effects

- 5.2.1 Extending provisions of MCOs in Scottish inshore waters has the potential to have significant environmental effects through the potential future management of certain marine activities. The rationale for implementing individual MCOs would be specific to the area under consideration (in relation to the habitats, species and conservation interest present) and the anthropogenic pressures

that it may be experiencing. Future making of MCOs under the extended provisions could therefore apply to a wide range of marine uses and sectors. As outlined in section 2.2.4, MCOs can manage a wide range of activities through a single regulatory mechanism. They can also be brought in as an emergency order, therefore enabling rapid protection of habitats and species where appropriate.

5.2.2 Section 86 of the 2010 Act<sup>173</sup> outlines example provisions for MCOs. These include (amongst others) prohibiting, restricting, or regulating:

- Entry or movement;
- Anchoring;
- Disturbance to animals or plants;
- Removal; and
- Depositing.

5.2.3 The key potential environmental effects or impact pathways that are likely to arise from the proposed legislative reforms are as follows:

- Potential benefits to marine biodiversity and the marine ecosystem;
- Potential spillover benefits beyond MCO boundaries; and
- Potential adverse effects resulting from the displacement of activities from MCO boundaries into new areas and the intensification of activities in areas where these activities already occur.

### Potential benefits

5.2.4 Evidence of potential environmental impacts of a wide range of marine activities is available from the FeAST<sup>82</sup> and PAD<sup>174</sup> tools. It is recognised that enhanced protection and targeted management measures can bring environmental benefits. MCOs would enable management of a number of pressures and/or reduce the magnitude of current pressures (or future pressures) if required. As discussed in section 5.3, there are some existing mechanisms available for the management of activities (e.g., fisheries), but these offer less flexibility than MCOs.

5.2.5 As outlined in section 4.3.39, in the longer term, continuing pressures from development of marine industry and wider human activities such as fishing or recreation are likely to be the key factors in driving changes from the current baseline. This includes effects from fishing practices, coastal development and

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<sup>173</sup> Marine (Scotland) Act 2010, section 86: Example provisions for marine conservation orders [online] Available at: <https://www.legislation.gov.uk/asp/2010/5/section/86> (Accessed 22/01/2024)

<sup>174</sup> JNCC (2022) Marine Pressures-Activities Database (PAD) v1.5 2022. [online] Available at: <https://hub.jncc.gov.uk/assets/97447f16-9f38-49ff-a3af-56d437fd1951> (Accessed 22/01/2024)

other activities in the marine environment (recreation, aquaculture, anchoring, commercial shipping, dredging etc.).

- 5.2.6 In generic terms, the adoption of the proposed extensions to existing MCO provisions would potentially result in overall beneficial effects on the overarching topic Biodiversity, Flora and Fauna, (including the topics Soil and Water) and contribute to the achievement of the SEA objectives because it would be possible for MCOs to be made in evidenced circumstances to manage damaging marine activities in standalone European marine sites (i.e. those which do not overlap or adjoin spatially with an MPA) and to protect nature restoration and enhancement projects. This will allow for ecosystem recovery and biodiversity enhancement.
- 5.2.7 In terms of fishing impacts, wider evidence of the benefits of enhanced management is available for tropical and warm temperate regions<sup>175</sup>, but evidence has also been gathered from cooler temperate regions. For example, surveys undertaken, in Lamlash Bay, Isle of Arran have shown that live maerl (*Phymatolithon calcareum*), macroalgae, sponges, hydroids, feather stars and eyelash worms (*Myxicola infundibulum*) to be significantly more abundant within the area of management than on surrounding fishing grounds<sup>176</sup>. Similarly, following a closure of some fishing activity in Lyme Bay to protect the temperate reef communities, studies showed that within three years, positive responses were observed for species richness, total abundance, assemblage composition and seven of thirteen indicator taxa studied<sup>177</sup>.
- 5.2.8 A review of the effectiveness of measures to manage fishing activity of relevance to MPAs in Scotland<sup>178</sup> found that existing knowledge justifies the

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<sup>175</sup> Caveen, A.J., Sweeting, C.J., Willis, T.J. and Polunin, N.V.C., 2012. Are the scientific foundations of temperate marine reserves too warm and hard?. *Environmental Conservation*, 39(3), pp.199-203 [online] Available at: [https://www.researchgate.net/profile/Alex-Caveen/publication/231752572\\_Are\\_the\\_scientific\\_foundations\\_of\\_temperate\\_marine\\_reserves\\_too\\_warm\\_and\\_hard/links/02e7e51c014f26ff6e000000/Are-the-scientific-foundations-of-temperate-marine-reserves-too-warm-and-hard.pdf](https://www.researchgate.net/profile/Alex-Caveen/publication/231752572_Are_the_scientific_foundations_of_temperate_marine_reserves_too_warm_and_hard/links/02e7e51c014f26ff6e000000/Are-the-scientific-foundations-of-temperate-marine-reserves-too-warm-and-hard.pdf) (Accessed 22/01/2024)

<sup>176</sup> Leigh M. Howarth, Sarah E. Pickup, Lowri E. Evans, Tim J. Cross, Julie P. Hawkins, Callum M. Roberts, Bryce D. Stewart (2015). Sessile and mobile components of a benthic ecosystem display mixed trends within a temperate marine reserve. *Marine Environmental Research*, Volume 107, 2015, Pages 8-23, ISSN 0141-1136 [online] Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0141113615000410?via%3Dihub> (Accessed 22/01/2024)

<sup>177</sup> Sheehan, E.V., Stevens, T.F., Gall, S.C., Cousens, S.L. and Attrill, M.J. (2013). Recovery of a Temperate Reef Assemblage in a Marine Protected Area following the Exclusion of Towed Demersal Fishing. *PLoS ONE* 8(12): e83883. doi:10.1371/journal.pone.0083883 [online] Available at: <https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0083883&type=printable> (Accessed 22/01/2024)

<sup>178</sup> Sarah Cunningham, David Donnan, Katie Gillham, Ben James, Lisa Kamphausen, Suzanne Henderson - NatureScot, Peter Chaniotis and Eirian Kettle - JNCC and Phil Boulcott and Peter Wright - Marine Scotland Science. Towards understanding the effectiveness of measures to manage fishing activity of relevance to MPAs in Scotland. NatureScot Research Report No 1292 [online] Available at: <https://www.nature.scot/doc/research-report-1292-towards-understanding-effectiveness-measures->

need for management, but recognised that adequate timescales need to be allowed for detecting and evaluating change. Case studies from older MPAs such as the increasing infaunal species richness in Skomer MCZ and the diverse algal community resilient to invasive species in Californian MPAs, illustrated it can take decades to see positive changes in some habitats and species<sup>178</sup>.

- 5.2.9 Change in pressures within MCO areas may also result in the potential for spillover benefits beyond the boundaries of the managed area. Spillover occurs when there is a population surplus in the newly protected area and the carrying capacity of that area is surpassed. As the protected area cannot support all of the individuals present, a migration away from the more densely populated area will occur and this movement may be outwith the area of management. This migration can result in a net increase in the number of marine species outwith the area<sup>179</sup>.
- 5.2.10 There is, however, variation in the level of effectiveness and scale of benefits that removal of an activity can have and these are site dependent<sup>180, 181</sup>. The current conditions encountered within an area (e.g. current stock level, species present, nursery and spawning areas for those species, and level of activity/pressure prior to management being implemented) need to be characterised in order to be able to undertake a detailed assessment of the potential for spillover benefits to occur.
- 5.2.11 In terms of wider marine activities, the 2010 Act provides the regulatory framework for marine licensable activities in Scottish inshore waters, including the requirement to obtain a marine licence for certain types of activity (e.g., construction or deposition activities). The marine licensing process supports the sustainable use of the marine environment, ensuring activities which require a licence do not harm the environment, impact on human health, or interfere with other legitimate uses of the seas<sup>182</sup>. Any potential impacts to an MCO from a proposed licensable activity would be considered in the determination of a licence application. This may help to reduce pressures associated with marine licensable activities in the areas of MCOs, particularly for restoration projects.

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[manage-fishing-activity-relevance#Management+of+fishing+activity+within+MPAs](#) (Accessed 22/01/2024)

<sup>179</sup> Kerwath, S.E., Winker, H., Götz, A. and Attwood, C.G., 2013. Marine protected area improves yield without disadvantaging fishers. *Nature Communications*, 4, p.2347.

<sup>180</sup> Starr RM, Wendt DE, Barnes CL, Marks CI and others (2015) Variation in responses of fishes across multiple reserves within a network of marine protected areas in temperate waters. *PLoS ONE* 10: e0118502

<sup>181</sup> Hillborn, R. (2017) Are MPAs effective? *ICES Journal of Marine Science*, Volume 75, Issue 2, P1160-1162

<sup>182</sup> Full details are set out in Section 27 of the Marine (Scotland) Act 2010 [online] Available at: <https://www.legislation.gov.uk/asp/2010/5/section/27> (Accessed 22/01/2024)

5.2.12 The extended MCO provisions will also have beneficial effects to the SEA topic of Climatic Factors. The management of areas that include blue carbon habitats (such as seagrass, saltmarsh, kelp beds, biogenic reefs and sedimentary stores<sup>183</sup>) could contribute to the achievement of the Climatic Factors SEA objective. These habitats can be found in European marine sites and may also be a focus of restoration projects, but currently are not afforded the option of management via MCOs. A study which investigated the effects of marine conservation on carbon sequestration found significant increases in carbon sequestration in preserved or restored seagrass<sup>184</sup>. Similarly, the study showed that sediments in untrawled seabed sequestered significantly more carbon than areas exposed to trawling.

### Neutral effects

5.2.13 In terms of the Cultural Heritage SEA objective, current powers in the 2010 Act enable MCOs to be made for “*furthering the stated preservation objectives for a Historic MPA*”. The extended MCO provisions do not broaden the application of MCOs to other cultural heritage features. Whilst there could be indirect benefits if other cultural heritage features are located in the same area as an MCO, effects to the Cultural Heritage objective have been assessed as neutral, due to the current uncertainty in location of any future MCOs.

### Potential adverse effects

5.2.14 Potential adverse effects may result from the displacement of activities from MCO boundaries into new areas and the intensification of activities in areas where these activities already occur. The scale of the impact and the sector impacted by the displacement would be dependent on the specifics of any management measures implemented using the proposed extended MCO provisions.

5.2.15 In terms of restoration and enhancement projects, the scale and nature of projects to date have very limited potential for displacement effects. The Scottish Marine Environmental Enhancement Fund (SMEEF) facilitates investment in marine and coastal enhancement in Scotland and has mapped current marine restoration projects in Scotland<sup>185</sup>. These are currently predominantly located inshore, in shallow water focusing on habitats and

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<sup>183</sup> Scottish Blue Carbon Forum (2022). Blue Carbon International Policy Challenge [online] Available at: <https://www.bluecarbon.scot/> (Accessed 22/01/2024)

<sup>184</sup> Juliette Jacquemont, Robert Blasiak, Chloé Le Cam, Maël Le Gouellec, Joachim Claudet, Ocean conservation boosts climate change mitigation and adaptation, *One Earth*, Volume 5, Issue 10, (2022), Pages 1126-1138, ISSN 2590-3322, <https://doi.org/10.1016/j.oneear.2022.09.002> [online] Available at: <https://www.sciencedirect.com/science/article/pii/S2590332222004808> (Accessed 22/01/2024)

<sup>185</sup> SMEEF (2024) Marine Restoration Across Scotland [online] Available at: <https://smeef.scot/#map> (Accessed 22/01/2024)



species such as seagrass and native oyster. However, there has been some interest in horse mussels and further species and habitats may be looked at in future.

- 5.2.16 In situations where displacement of activities may occur (either to restoration and enhancement projects or to standalone European marine sites), these could result in potential adverse environmental effects in other areas, where such activities are not managed. The risk of this would depend on the nature and scale of any proposed MCO, and the ability of the sector to adapt, given other potential restrictions they may be under. There is potential for transboundary effects on EU Member States if activities are displaced outwith areas under Scottish jurisdiction.
- 5.2.17 The spatial demands on the marine environment are resulting in 'spatial squeeze' of established sectors, particularly fishing, which finds its traditional grounds under increasing competition from other sectors<sup>186</sup>. Given the high level nature of this assessment, it has not been possible to undertake a displacement analysis of fishing effort, but available literature has been drawn on to inform this assessment.
- 5.2.18 Spatial squeeze on the fishing industry arises from a number of different sectors and regulations, including fisheries management-related measures and closed areas. Those with the largest spatial footprint are:
- Nature conservation such as restrictions on fishing in protected areas; and
  - Offshore renewable energy development (particularly offshore wind)<sup>186</sup>.
- 5.2.19 Both gear-related and spatial displacement of fishing effort can impact on the marine environment<sup>187</sup>. The spatial displacement of fishing from existing fishing grounds may have knock-on effects on the areas to which effort is displaced to, leading to possible conflict with other fleet segments and greater potential environmental impacts at these locations<sup>186</sup>. The effect of displacement on habitats and benthic communities depends on the sensitivity of the habitat where effort is displaced to, the gear type displaced, the level of fishing in the area prior to displacement and the relative change in fishing pressure compared to the baseline and to prevailing levels of natural disturbance<sup>187</sup>. Displacing fishing effort to an already heavily-fished area (by the same gear

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<sup>186</sup> ABPmer, (2022). Spatial Squeeze in Fisheries, Final Report, ABPmer Report No. R.3900.

A report produced by ABPmer for NFFO & SFF, June 2022 [online] Available at: [file:///M:/5355\\_Marine\\_Environment\\_Legislative\\_Reform/\\_Ref%20Docs/R3900\\_SpatialSqueeze\\_Final\\_23Jun2022-part-1.pdf](file:///M:/5355_Marine_Environment_Legislative_Reform/_Ref%20Docs/R3900_SpatialSqueeze_Final_23Jun2022-part-1.pdf) (Accessed 22/01/2024)

<sup>187</sup> ABPmer, (2017). Displacement of Fishing Effort from Marine Protected Areas, ABPmer Report No. R.2790. Commissioned Reports, Number 241. York [online] Available at: <https://publications.naturalengland.org.uk/publication/5674265573064704> (Accessed 22/01/2024)

type) causes relatively little additional mortality of benthic invertebrates. However, displacing fishing effort to lightly-fished or unfished areas may cause substantial additional mortality of benthic invertebrates, because the initial effects of fishing on benthic community biomass, productivity and diversity are the greatest<sup>188</sup>.

- 5.2.20 Understanding is developing regarding the full ecological effects resulting from changes to management practices and enhanced protection. Effects will also vary between features of interest and the activities of focus for management. For example, negative effects can be experienced for some species where management measures result in an increase in predator numbers and size. This can cause a reduction of some prey species (e.g., reductions in sea urchin numbers as a result of increases in rock lobsters<sup>189</sup>).
- 5.2.21 In terms of non-fishing sectors, any MCOs implemented in future using the extended provisions could have implications for new or existing activities, which could in turn lead to displacement of these activities. As with fishing activity, the risk of this would depend on the nature and scale of any proposed MCO, and the ability of sectors to adapt (given other potential restrictions they may be under). For example, cables can often be micro-sited to avoid sensitive habitats or species. Whilst a reduction in pressures would bring benefits to the area protected by the MCO, the marine area that the activity/development is relocated to could be adversely impacted. Where required, licensing regimes (such as marine licensing) would help to identify avoidance, mitigation, and compensation measures to any identified environmental impacts. This would help to manage any potential negative impacts to areas that the activity/development is relocated to bringing a small risk of negative environmental effects.
- 5.2.22 Potential adverse effects could be experienced to the SEA topic of Climatic Factors if the area of displaced activity includes blue carbon habitats. Several marine activities (e.g. fishing, deep sea mining, oil and gas activities and renewable energy development) physically disturb the seafloor. As previously stated (section 4.6.17), any physical damage caused to a habitat has the

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<sup>188</sup> Hiddink, J.G., Jennings, S., Kaiser, M.J., Queirós, A.M., Duplisea, D.E. and Piet, G.J. (2006). Cumulative impacts of seabed trawl disturbance on benthic biomass, production and species richness in different habitats. *Canadian Journal of Fisheries and Aquatic Sciences*, 63, pp. 721–736. [online] Available at: [https://www.researchgate.net/publication/40107263\\_Cumulative\\_Impacts\\_of\\_Seabed\\_Trawl\\_Disturbance\\_on\\_Benthic\\_Biomass\\_Production\\_and\\_Species\\_Richness\\_in\\_Different\\_Habitats](https://www.researchgate.net/publication/40107263_Cumulative_Impacts_of_Seabed_Trawl_Disturbance_on_Benthic_Biomass_Production_and_Species_Richness_in_Different_Habitats) (Accessed 22/01/2024)

<sup>189</sup> Pederson, H.G. and Johnson, C.R., 2006. Predation of the sea urchin *Heliocidaris erythrogramma* by rock lobsters (*Jasus edwardsii*) in no-take marine reserves. *Journal of Experimental Marine Biology and Ecology*, 336(1), pp.120-134 [online] Available at: [https://figshare.utas.edu.au/articles/journal\\_contribution/Predation\\_of\\_the\\_sea\\_urchin\\_Heliocidaris\\_erythrogramma\\_by\\_rock\\_lobsters\\_Jasus\\_edwardsii\\_in\\_no-take\\_marine\\_reserves/22858952/1/files/40602827.pdf](https://figshare.utas.edu.au/articles/journal_contribution/Predation_of_the_sea_urchin_Heliocidaris_erythrogramma_by_rock_lobsters_Jasus_edwardsii_in_no-take_marine_reserves/22858952/1/files/40602827.pdf) (Accessed 22/01/2024).

potential to disturb, remove or release any carbon held within that store. Similarly, negative effects could be experienced to cultural heritage features if these are located in the area of displaced activity. As outlined in section 4.7.2, there is considerable uncertainty on the location, extent, and status of many subtidal marine historical assets.

### Summary of effects

- 5.2.23 Overall, the environmental benefits of enhanced protection that will result from the extended MCO provisions are anticipated to be greater than the adverse environmental impacts associated with potential displacement of activities.
- 5.2.24 The impacts are summarised against each SEA objective at a qualitative level in Table 4 below.

**Table 4 Review of effects of changes to MCO provisions against SEA objectives**

| <b>Topic</b>  | <b>SEA Objective</b>   | <b>Assessment of the effect of changes to MCO provisions against SEA objective</b>   | <b>Objective met</b> |
|---|--|--|----------------------|
| Biodiversity, Flora, and Fauna (including Soil and Water, given the close link with issues) | To protect and enhance marine and coastal ecosystems, including species and habitats, and their interactions.  | The proposals could potentially contribute to this objective via the implementation of any future MCOs by minimising or avoiding the disturbance of and/or damage/impacts to marine species and habitats, and increasing their resilience/recovery. Consideration should be made in the making of individual MCOs to potential displacement effects onto wider marine and coastal ecosystems.  | Yes                  |
|   | To maintain and enhance the ecological coherence of the MPA network and ensure conservation objectives for protected marine areas are achieved by supporting effective management. | Extending provisions of MCOs to cover European marine sites will bring parity in management mechanisms available for Scotland's MPA network. By the making of MCOs in evidenced circumstances (to standalone European marine sites), damaging or impactful marine activities will be managed, therefore contributing towards this objective.   | Yes                  |
|   | To maintain, protect and enhance the character and integrity of the seabed   | The proposals could potentially contribute to the achievement of this objective via the implementation of any future MCOs by reducing or preventing destruction of and impacts to the seafloor. Consideration should be made in the making of individual MCOs to potential displacement effects.   | Yes                  |
|   | To maintain or work towards achieving good ecological status and good environmental status.  | The proposals could potentially contribute to the achievement of this objective by enabling MCOs to be made under a broader range of circumstances. If management measures are targeted, this could potentially help to minimise or avoid pressures that could result in a change to quality elements used to assess ecological status under the WFD and environmental status under the UK Marine Strategy Regulations. Consideration should be made in the making of individual MCOs to potential displacement effects. | Yes                  |
| Climatic  | To preserve and  | The proposals could potentially contribute   | Yes                  |

| Topic             | SEA Objective  | Assessment of the effect of changes to MCO provisions against SEA objective  | Objective met |
|-------------------|--|--|---------------|
| Factors           | enhance existing marine carbon stocks and carbon sequestration potential.                        | to the achievement of this objective via the implementation of any future MCOs that reduce or prevent damage of habitats that are blue carbon habitats, due to their fixation and sequestration ability. Consideration should be made in the making of individual MCOs to potential displacement effects onto blue carbon habitats.      |               |
| Cultural Heritage | To conserve and protect cultural and historical heritage associated with the marine environment. | The proposals would not extend the existing MCO provisions to other cultural heritage features. Effects to the SEA objective for the 'Cultural Heritage' topic have therefore been assessed as neutral. Consideration should be made in the making of individual MCOs to potential displacement effects onto cultural heritage features. | Yes           |

## 5.3 Reasonable alternatives

5.3.1 Further to the potential benefits of the proposed extended MCO provisions, a high level assessment of the potential environmental effects that may arise from the below reasonable alternatives are also considered:

- “Do nothing”, i.e. keep the provisions of the 2010 Act as they are currently; and
- Seeking to secure outcomes through voluntary mechanisms or guidance approaches.

### “Do nothing” scenario

5.3.2 In the “do nothing” scenario, management options for European marine sites would remain as they are currently. The future evolution of baseline identified in sections 4.3 to 4.7 would be expected to occur, but the level of this would be dependent on the extent to which currently existing management mechanisms are used. The Inshore Fishing (Scotland) Act 1984<sup>190</sup> and the Sea Fish (Conservation) Act 1967<sup>191</sup> provide powers to prohibit sea fishing in specified areas. An example is The Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order 2015<sup>192</sup> which restricts certain fishing activities in specified MPAs, including SACs. Fishing can also be managed through modifications to fishing licences.

5.3.3 MCOs however allow more flexibility in specifying prohibited activities<sup>193</sup>, and MCOs can address any type of activity which may impact upon the conservation objectives, rather than just fishing activities. For example, the Red Rocks and Longay MCO 2022<sup>194</sup> restricts and prohibits a wide range of activities (including fishing, diving, dredging, construction and anchoring) to protect flapper skate and their eggs. This demonstrates how MCOs can be used to regulate a suite of activities under a single regulatory mechanism, if

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<sup>190</sup> Inshore Fishing (Scotland) Act 1984 [online] Available at: <https://www.legislation.gov.uk/ukpga/1984/26/contents> (Accessed 22/01/2024)

<sup>191</sup> Sea Fish (Conservation) Act 1967 [online] Available at: <https://www.legislation.gov.uk/ukpga/1967/84> (Accessed 20/02/2024).

<sup>192</sup> The Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order 2015 [online] Available at: <https://www.legislation.gov.uk/ssi/2015/435/made> (Accessed 22/01/2024)

<sup>193</sup> Harrison, J. (2019). Briefing No. 2 - The Enforcement of Fishing Restrictions in Marine Protected Areas. Save our Seas – Law Policy Briefs Series. Edinburgh Law School [online] Available at: [https://www.law.ed.ac.uk/sites/default/files/2020-09/Marine%20Briefing%20%20\(final\)\\_ACC.pdf](https://www.law.ed.ac.uk/sites/default/files/2020-09/Marine%20Briefing%20%20(final)_ACC.pdf) (Accessed 22/01/2024)

<sup>194</sup> The Red Rocks and Longay Marine Conservation Order 2022 [online] Available at: <https://www.legislation.gov.uk/ssi/2022/372/contents/made> (Accessed 22/01/2024)

necessary<sup>195</sup>. Under the “do nothing” scenario MCOs would not be available as a management mechanism for standalone European marine sites. As outlined above, while there are alternative mechanisms available to introduce fisheries management measures these cannot be used to manage other activities in these areas, including activities that do not require a licence or a permit such as recreation, diving, and anchoring in some instances.

- 5.3.4 Similarly, under a “do-nothing” alternative, powers would not be extended to nature restoration and enhancement projects. D&R MPAs are available to promote the ‘demonstration of sustainable methods of marine management or exploitation’ or ‘research into such matters’. A proposal must meet certain criteria laid down by the Scottish Government, including demonstrating the novelty of the proposed investigation, how the proposal fits within broader national objectives and whether there is sufficient support from stakeholders<sup>195</sup>. Not all nature restoration and enhancement projects will be able to meet the requirements for D&R MPA designation, therefore leaving them vulnerable to damage. This can have the effect of disincentivising positive actions for nature recovery to be taken.

### Seeking to secure outcomes through voluntary mechanisms or guidance approaches

- 5.3.5 Voluntary mechanisms and guidance approaches can be explored prior to the implementation of any MCOs under the proposed new provisions. The proposed extensions to the existing provisions however would enable the use of an appropriate and flexible regulatory mechanism if required. Given the increased spatial squeeze and competing use of the marine environment, sole reliance on voluntary mechanisms and guidance approaches is unlikely to achieve nature restoration ambitions.

## 5.4 Cumulative effects

- 5.4.1 Cumulative effects have not been identified for the proposed extensions to the MCO provisions themselves. There is the potential for cumulative effects to arise from the implementation of the proposed extension to MCO provisions (i.e., the making of individual MCOs under secondary legislation) as a whole and also alongside other plans, programmes, and strategies likely to be undertaken in Scottish seas.

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<sup>195</sup> Harrison, J. (2019). Briefing No. 4 - Legal Tools for the Management of Marine Protected Areas in Scotland. Save our Seas – Law Policy Briefs Series. Edinburgh Law School [online] Available at: [https://www.law.ed.ac.uk/sites/default/files/2020-09/Marine%20Briefing%20%20\(final\)\\_ACC.pdf](https://www.law.ed.ac.uk/sites/default/files/2020-09/Marine%20Briefing%20%20(final)_ACC.pdf) (Accessed 22/01/2024)

## Cumulative effects of changes to MCO provisions as a whole

- 5.4.2 In terms of the combined effects associated with the proposed extensions to MCO provisions, the benefits would be additive, the scale of which would depend on the number, spatial area, and details of the management brought forward from any MCOs made under the extended provisions.
- 5.4.3 The scale of the displacement of activities to other areas, where such activities are not managed, as a result of any MCOs made under the proposed extended provisions would also depend on the spatial area of the MCO and the level of 'spatial squeeze' from other activities occurring at the time.

## Cumulative effects of changes to MCO provisions with other plans, programmes and strategies

- 5.4.4 Scotland's National Marine Plan 2 is currently under development and an SEA scoping report has been undertaken<sup>196</sup>. As this assessment has not yet been undertaken, it is not possible to identify in detail potential cumulative effects.
- 5.4.5 A new round of fisheries management measures is due to be assessed under the SEA provisions (and consulted upon) for the remaining inshore MPAs (where management is not already in place), as well as PMFs identified as most at risk from bottom-contacting mobile fishing gear outwith MPAs. There could be cumulative beneficial effects from enhanced protection as well as cumulative adverse effects from potential displacement of fishing activity.
- 5.4.6 The proposed fisheries management measures for offshore MPAs which have recently been assessed under the SEA provisions could potentially interact with the implementation of the proposals, although this is recognised to be limited, as the proposed extension to MCO provisions would apply only to Scottish territorial waters, (i.e. within 12 NM), rather than offshore (i.e. beyond 12 NM). Overall, the proposed measures for offshore MPAs are assessed as having a beneficial impact for the overarching topic Biodiversity, Flora and Fauna. In terms of adverse effects for offshore MPAs measures, the effects from displacement of fishing activities are assessed as generally being minor. Overall, the potential combined adverse effects from displacement or increased fishing effort from the offshore MPAs are not considered significant and are unlikely to interact with the implementation of proposed extensions to MCO provisions.
- 5.4.7 There is the potential for cumulative impacts to also arise from the implementation of proposed extension to MCO provisions alongside the

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<sup>196</sup> Scottish Government (2023). National Marine Plan 2: Strategic Environmental Assessment Report [online] Available at: <https://www.gov.scot/publications/national-marine-plan-2-strategic-environmental-assessment-scoping-report/documents/> (Accessed 22/01/2024)



Sectoral Marine Plan for Offshore Wind Energy, as well as the Sectoral Marine Plan (SMP) for Innovation and Targeted Oil & Gas Decarbonisation<sup>197</sup>, both currently undergoing SEA assessment. There may be cumulative negative effects of displacement (if fishing activity is displaced from areas of offshore wind development).

## 5.5 Mitigation and monitoring

- 5.5.1 Monitoring is an important component of SEA, as it seeks to ensure that plans avoid generating unforeseen adverse environmental effects. UK Government planning policy guidance<sup>198</sup> advises that details of monitoring arrangements may be included in the report, the post-adoption statement or in the plan itself. Monitoring arrangements should be sufficient to enable any unforeseen adverse effects to be identified at an early stage and to enable appropriate remedial actions.
- 5.5.2 Overall, there are no anticipated significant adverse environmental effects from the proposed extensions to existing MCO provisions, with potential adverse effects related to displacement activities through implementation likely to be less than the environmental benefits of increased protection through the making of any MCOs.
- 5.5.3 Any MCOs proposed in future would be subject to the consultation processes set out under existing provisions of the 2010 Act and would need to include consideration of the socio-economic impacts of introducing an MCO. The Environmental Report has not identified any additional factors beyond those addressed in policy-making that would need to be monitored.
- 5.5.4 If a monitoring strategy were to be developed, it should be undertaken in a proportionate manner, with existing data sources, environmental indicators, and monitoring programmes being utilised where possible. It should be noted however, that environmental benefits of enhanced marine protection can take many years in some cases to be measurable.
- 5.5.5 Final proposals for mitigation and suggested monitoring will be provided in the Post Adoption Statement. These will focus on the environmental effects identified in this assessment.

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<sup>197</sup> Scottish Government (2022) Sectoral Marine Plan for Offshore Wind for Innovation and Targeted Oil and Gas Decarbonisation (INTOG) Strategic Environmental Assessment Screening and Scoping Report September 2022 [online] Available at: [https://marine.gov.scot/sites/default/files/intog\\_sea\\_screening\\_and\\_scoping\\_september\\_2022.pdf](https://marine.gov.scot/sites/default/files/intog_sea_screening_and_scoping_september_2022.pdf) (Accessed 22/01/2024)

<sup>198</sup> Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2015) Guidance: Strategic environmental assessment and sustainability appraisal [online] Available at: <https://www.gov.uk/guidance/strategic-environmental-assessment-and-sustainability-appraisal> (Accessed 22/01/2024)

## 5.6 Conclusions

- 5.6.1 The proposed extensions to existing MCO provisions under the 2010 Act fall under Section 5(4) of the 2005 Act and are therefore subject to SEA. The outcome from the Screening and Scoping Report and the consultation responses confirmed the need for an SEA as there is potential for significant environmental effects to occur as a direct result of the proposals. This SEA provides a high-level and qualitative assessment of the potential environmental effects that are likely to result from any amendments to where MCOs can be applied in the inshore zone.
- 5.6.2 In the longer term, continuing pressures from development of marine industry, human activities are likely to be the key factors in driving changes from the current environmental baseline. This includes effects from fishing practices, coastal development and other activities in the marine environment (recreation, anchoring, aquaculture, commercial shipping, dredging etc.).
- 5.6.3 In generic terms, the adoption of the proposed extensions to existing MCO provisions would potentially result in overall beneficial effects on the overarching topic Biodiversity, Flora and Fauna (including the topics Soil and Water) and contribute to the achievement of the SEA objectives because it would be possible for MCOs to be made in evidenced circumstances to manage damaging marine activities in European marine sites and to protect nature restoration and enhancement projects. This will allow for ecosystem recovery and biodiversity enhancement.
- 5.6.4 As discussed in section 5.3, there are some existing mechanisms available for the management of fisheries activities, but these offer less flexibility than MCOs. For certain activities (e.g., construction or deposition activities), protection is also afforded through the marine licensing regime. In terms of wider non-permitted/non-licensed activities (e.g., e.g., recreation, diving, and anchoring in some circumstances) there are currently fewer tools available for management.
- 5.6.5 The management of areas that include habitats that are blue carbon habitats (such as seagrass, saltmarsh, kelp beds, and biogenic reefs) could contribute to the achievement of the Climatic Factors SEA objective.
- 5.6.6 The proposed extensions to existing MCO provisions would not broaden the application of MCOs to other cultural heritage features and effects have therefore been assessed as neutral.
- 5.6.7 Potential adverse environmental effects may result from the displacement of activities from any MCO boundaries into new areas and the intensification of activities in areas where these activities already occur. The scale of the impact and the sector impacted by the displacement would be dependent on the specifics of any management measures implemented using the proposed

extended MCO provisions. Displacement of activities could result in potential adverse environmental effects in other areas, where such activities are not managed. The risk of this would depend on the nature and scale of the implemented MCO, and the ability of the sector to adapt. There is potential for transboundary effects to occur on EU Member States if activities were displaced outwith areas under Scottish jurisdiction.

5.6.8 In summary, the implementation of the proposed extensions to MCO provisions to standalone European marine sites and to nature restoration and enhancement projects has been assessed to result in:

- Potential benefits to marine biodiversity and the marine ecosystem;
- Potential spillover benefits beyond MCO boundaries; and
- Potential adverse effects resulting from the displacement of activities from MCO boundaries into new areas and the intensification of activities in areas where these activities already occur.

5.6.9 Overall, the environmental benefits of enhanced protection that will result from the extended MCO provisions are anticipated to be greater than the adverse environmental impacts associated with displacement of activities.

5.6.10 In accordance with the 2005 Act, consideration has also been given to reasonable alternatives of:

- “Do nothing”, i.e. keep the provisions of the 2010 Act as they are currently; and
- Seeking to secure outcomes through voluntary mechanisms or guidance approaches.

5.6.11 Under the “do nothing” scenario MCOs would not be available as a management mechanism to standalone European marine sites, and similarly, powers would not be extended to nature restoration and enhancement projects. Whilst other management options are available (e.g., using powers in the Inshore Fishing (Scotland) Act 1984 for fisheries management, or designating D&R MPAs for nature restoration and enhancement projects), these do not offer the same flexibility of MCOs, which can address a greater range of activities which may impact marine habitats and species.

5.6.12 Voluntary mechanisms and guidance approaches could still be explored prior to the implementation of any MCOs under the proposed new provisions. The new proposed provisions however would enable the use of an appropriate and flexible regulatory mechanism if required.

5.6.13 In terms of cumulative effects, the benefits would be additive, the scale of which would depend on the number, spatial area, and details of the management brought forward from any MCOs made under the extended provisions. The scale of the displacement of activities to other areas, where such activities are not managed, as a result of any MCOs made under the proposed extended

provisions would also depend on the spatial area of the MCOs and the level of 'spatial squeeze' from other activities occurring at the time.

- 5.6.14 When considering cumulative effects with other plans, programmes, and strategies, there could be cumulative beneficial effects from enhanced protection as well as cumulative adverse effects from potential displacement of fishing activity (e.g., from fisheries management measures being considered for inshore MPAs and PMFs, currently under assessment).
- 5.6.15 There are no anticipated significant adverse effects on the environment from the proposed extensions to existing MCO provisions, with adverse environmental effects related to displacement of fishing activity through potential implementation likely to be less than the environmental benefits of increased protection that will result from the making of any MCOs.

## 6 Consideration of duties under Section 14 of the UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021

6.1.1 Consideration has been given to the duty on Scottish Ministers under Section 14 of the UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021 (“the 2021 Act”)<sup>199</sup>, to have due regard to the guiding principles on the environment in making policies (including proposals for legislation) and to record how due regard has been given to the principles in preparing the environmental report. The guiding principles on the environment are set out in Section 13 of the 2021 Act and include:

- a) the principle that protecting the environment should be integrated into the making of policies;
- b) the precautionary principle as it relates to the environment;
- c) the principle that preventative action should be taken to avert environmental damage;
- d) the principle that environmental damage should as a priority be rectified at source; and
- e) the principle that the polluter should pay

6.1.2 Scottish Government draft statutory guidance<sup>200</sup> provides background to the principles, which is summarised below:

- Integration requirement: In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.
- The precautionary principle: where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
- Preventative action: the prevention principle is intended to prevent, rather than react to, environmental damage from unregulated activities.

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<sup>199</sup> UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021 [online] Available at: <https://www.legislation.gov.uk/asp/2021/4/contents> (Accessed 22/01/2024)

<sup>200</sup> Scottish Government (2021). Guiding principles on the environment: draft statutory guidance [online] Available at: <https://www.gov.scot/publications/guiding-principles-environment-draft-statutory-guidance/pages/3/> (Accessed 22/01/2024)

- Rectification at source: prioritises how environmental damage or harm should be addressed at its source, rather than in the wider environment, and by the polluter, rather than wider society.
- The polluter should pay: those who cause pollution to bear the financial responsibility of any damage or remedial action required.

6.1.3 The environmental effects for the proposed extensions to existing MCO provisions identified in this Environmental Report are considered against each of the guiding principles in Table 5.

**Table 5 Consideration of proposed changes to MCO provisions against the guiding principles of Section 13 of the 2021 Act**

| <b>Guiding principle</b>  | <b>Consideration of proposed changes to MCO provisions against guiding principle</b>   |
|---|--|
| Protecting the environment should be integrated into the making of policies | This SEA has been undertaken at an early stage in the plan or policy preparation process, ensuring that decision-making is informed by relevant environmental information. Environmental considerations have therefore been integrated into the policy development.  |
| The precautionary principle as it relates to the environment                | Due to its dynamic nature, a degree of uncertainty will always exist when seeking to understand environmental effects in the marine environment. This SEA draws on the best available evidence to understand the likely positive and negative effects of the proposals. A lack of full scientific certainty shall not be used as a reason for postponing the implementation of the proposed extended MCO provisions. |
| Preventative action should be taken to avert environmental damage           | The proposals for extending MCO provisions to standalone European marine sites and to nature restoration and enhancement projects will provide a mechanism for preventative action to be taken if required. No specific areas of sea have yet been identified for the making of MCOs. This proposal is therefore being brought forward to enable responsible governance, rather than as a reactive measure.          |
| Environmental damage should as a priority be rectified at source            | These proposed extended provisions for MCOs will enable targeted application of MCOs if required to specific areas of impact, rather than in the wider environment.  |
| The polluter should pay   | Should any MCOs be brought forward under the proposed extended provisions, they will be made in evidenced circumstances to manage damaging marine activities in European marine sites and to protect nature restoration and enhancement projects. The introduction of any management measures will be targeted to the specific activity and pressure expected to cause the damage.                                   |

## 7 Next steps

### 7.1 Introduction

7.1.1 This Environmental Report has informed the development of proposed extensions to existing MCO provisions. The proposals and this Environmental Report are subject to a minimum eight week statutory consultation period. At the end of the consultation process, the views of stakeholders and the public on the proposals and Environmental Report will be analysed. In light of these comments, the proposals will be reviewed, updated and finalised. Following the public consultation, a Post-adoption Statement will be produced, demonstrating:

- how environmental considerations have been integrated into the proposals;
- how the environmental report has been taken into account;
- how the views of the consultation authorities have been taken into account;
- how the results of the consultation have been taken into account;
- the reason for choosing the proposals, as adopted, in the light of other reasonable alternatives considered; and
- the measures that are to be taken to monitor the significant environmental effects of the implementation of the proposals.

7.1.2 If significant changes are made to the proposed extensions to existing MCO provisions, this SEA will be reviewed in order to consider whether any further assessment work will be required.

### 7.2 Details of the Consultations

7.2.1 We are inviting responses to this consultation by using the Scottish Government's consultation hub, Citizen Space (<http://consult.gov.scot>). Access and respond to this consultation online at <https://consult.gov.scot/marine-scotland/marine-restoration-and-marine-conservation-order> . You can save and return to your responses while the consultation is still open.

7.2.2 If you are unable to respond using our consultation hub please complete the Respondent Information Form and

Email to

[marinerestoration@gov.scot](mailto:marinerestoration@gov.scot)



Or send to:

Marine Nature Restoration policy team

Area 1B North

Scottish Government

Victoria Quay

Edinburgh

EH6 6QQ

## Appendix 1 Abbreviations

|         |  |
|---------|--|
| ABPmer  | Associated British Ports Marine Environmental Research |
| CBD     | Convention on Biological Diversity                     |
| COP     | Conference of Parties                                  |
| D       | Descriptor   |
| D&R     | Demonstration and Research                             |
| EC      | European Commission                                    |
| EEC     | European Economic Community                            |
| EMODnet | European Marine Observation and Data Network           |
| EU      | European Union   |
| EUNIS   | European Nature Information System                     |
| FeAST   | Feature Activity Sensitivity Tool                      |
| GBF     | Global Biodiversity Framework                          |
| GeMS    | Geodatabase of Marine Features in Scotland             |
| GES     | Good Environmental Status                              |
| GHG     | Greenhouse Gas   |
| GIS     | Geographic Information System                          |
| HES     | Historic Environment Scotland                          |
| HPAI    | Highly Pathogenic Avian Influenza                      |
| INTOG   | Innovation and Targeted Oil and Gas                    |
| JNCC    | Joint Nature Conservation Committee                    |
| MCO     | Marine Conservation Order                              |
| MPA     | Marine Protected Area                                  |
| MSFD    | Marine Strategy Framework Directive                    |
| NM      | Nautical Mile  |
| NMPi    | National Marine Plan interactive                       |
| OSPAR   | Oslo and Paris Conventions                             |
| PAD     | Pressures-Activities Database                          |
| PIR     | Post Implementation Review                             |
| PMF     | Priority Marine Feature                                |
| PPS     | Plans, Programmes and Strategies                       |
| RBMP    | River Basin Management Plan                            |
| SAC     | Special Area of Conservation                           |
| SEA     | Strategic Environmental Assessment                     |
| SEPA    | Scottish Environment Protection Agency                 |
| SMEEF   | Scottish Marine Environmental Enhancement Fund         |

|        |  |
|--------|--|
| SMP    | Sectoral Marine Plan   |
| SNH    | Scottish Natural Heritage (now NatureScot)                       |
| SPA    | Special Protection Areas   |
| SSSI   | Sites of Special Scientific Interest                             |
| UK     | United Kingdom   |
| UKHO   | United Kingdom Hydrographic Office                               |
| UN     | United Nations   |
| UNESCO | United Nations Educational, Scientific and Cultural Organisation |
| WFD    | Water Framework Directive  |
| WHS    | World Heritage Site  |

## Appendix 2 Screening and Scoping Consultation Comments

Consultation responses were received from the following Consultation Authorities. The key points raised are captured below, along with an explanation of how their views have been considered in this Environmental Report.

| Consultation Authority              | Comment   | Response   |
|-------------------------------------|---|--|
| Historic Environment Scotland (HES) | Screening Report: We agree with your view that there are likely to be significant environmental effects for the historic environment.   | Noted. Proposals taken forward for environmental assessment in this Environmental Report.  |
|                                     | We note that the historic environment has been scoped in to the assessment and we agree with this decision.   | Noted  |
|                                     | On the basis of the information provided, we are content with this approach and are satisfied with the scope and level of detail proposed for the assessment.   | Noted  |
|                                     | We note that environmental report and its associated relevant documents will be publicly consulted upon for a period of 12 weeks and we are content to agree with this timescale. Please note that, for administrative purposes, we consider that the consultation period commences on receipt of the relevant documents by the SEA Gateway.  | Noted  |
|                                     | Scope of the assessment: We welcome that the historic environment has been scoped into the assessment and the overview of pathways for potential significant effects on this resource outlined in this section. As noted there is the potential for positive effects though the utilisation of MCOs to protect newly discovered features rapidly as well as effects associated with displaced activities. | Noted. Results section considers effects of displacement on cultural heritage and potential indirect beneficial effects of MCOs to cultural heritage features. |
|                                     | Proposed assessment methodology: While there is little detail within the scoping report relating to the methodological approach to the assessment, we would understand that legislative reform proposals will be tested   | Noted. SEA objective for Cultural Heritage topic includes historical heritage.   |

| Consultation Authority | Comment  | Response  |
|------------------------|--|---|
|                        | <p>against a series of environmental SEA objectives. We note the inclusion of the objective for the historic environment and consider that this will be appropriate for considering emerging proposals against.</p>  |   |
|                        | <p>Related Plans, Programmes and Policies:</p> <ul style="list-style-type: none"> <li>• A relevant policy here is the Historic Environment Policy for Scotland (HEPS) which was published in 2019.</li> <li>• In noting reference to the previous historic environment strategy for Scotland (Our Place in Time) we would bring to your attention the publication earlier this year of the new Historic Environment Strategy for Scotland. Scotland's new strategy for the historic environment Our Place, Our Future (OPOF) was published in April 2023.</li> </ul> | <p>Noted. Updated policies included in section 2.3.</p> |
|                        | <p>Initial Environmental Baseline:</p> <ul style="list-style-type: none"> <li>• Information on heritage designations in the terrestrial and marine environment is available from Historic Environment Scotland's website at the Historic Environment Scotland Portal. Furthermore, the Canmore database now includes maritime records for the entire Scottish Marine Area to 200 miles offshore with these sites on Pastmap under Canmore Maritime. Wrecksite provides access to the UKHO worldwide wreck database.</li> </ul>                                       | <p>Baseline information drawn into section 4.7.</p>     |
|                        | <p>In relation to the reference to the 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage we would note that this has not been ratified by the UK Government. However, Annex to the 2001 Convention – Rules Concerning Activities Directed at the Underwater Cultural Heritage provides an accepted model of 'best practice' for underwater archaeology.</p>   | <p>Noted. Details added into section 2.3.29.</p>        |

| Consultation Authority                        | Comment   | Response  |
|---|---|---|
| Scottish Environment Protection Agency (SEPA) | <p>Screening Report: In regard to our main areas of interest (air, water, soil, human health, material assets and climatic factors) we agree with the conclusions of the screening report that the proposed PPS may have significant environmental effects.</p>   | <p>Noted. Proposals taken forward for environmental assessment in this Environmental Report.</p>  |
|   | <p>Scoping in/out of environmental topics: We agree with the proposed SEA topics to be scoped in. It is noted that water will be addressed under “Biodiversity, Flora and Fauna” but water quality and quantity will be scoped out. We would hope that the changes to make MCO’s in Scottish inshore waters would have largely positive impacts on water quality. Protecting habitats and reducing pollution can help maintain or improve water quality. Whereas the displacement of activities to other habitats could have a negative impact on water quality and quantity.</p> | <p>Noted. Potential impacts to water quality considered and reported in results section.</p>  |
|   | <p>Proposed assessment methodology: We are satisfied with the proposed assessment methodology. We suggest the water objective looks at enhancing the state of the water environment as well as maintaining the ecological status. It is often useful to have sub-objectives to help assess environmental impacts such as; to ensure the sustainable use of water resources, to reduce levels of water pollution.</p>  | <p>Noted. SEA objective for Water in this environmental assessment is “To maintain or work towards achieving good ecological status and good environmental status.”</p> |
|   | <p>Baseline information:</p> <ul style="list-style-type: none"> <li>• SEPA’s Water Environment Hub is a useful source of data providing information on the latest assessment of the condition of the water environment and pressures on protected areas.</li> <li>• The Marine Climate Change Impacts Partnership website is a useful evidence source for marine and coastal climate change evidence.</li> <li>• UK Climate Projections 2018 (UKCP18) provide the most up to date climate change projections and</li> </ul>   | <p>Noted. Baseline information incorporated into sections 4.5 and 4.6.</p>  |

| Consultation Authority | Comment  | Response   |
|------------------------|--|--|
|                        | scenarios.   |  |
|                        | Alternatives: We note that alternatives are still being considered. Any reasonable alternatives identified during the preparation of the plan should be assessed as part of the SEA process and the findings of the assessment should inform the choice of the preferred option. This should be documented in the Environmental Report.  | Noted. Reasonable alternatives have been identified and assessed in this Environmental Report.             |
|                        | Monitoring: Although not specifically required at this stage, monitoring is a requirement of the Act and early consideration should be given to a monitoring approach particularly in the choice of indicators. It would be helpful if the Environmental Report included a description of the measures envisaged to monitor the significant environmental effects of the plan. | Noted. Monitoring requirements have been proposed in this Environmental Report.                            |
|                        | Consultation period: We are satisfied with the proposal for a 12 week consultation period for the Environmental Report.  | Noted.   |
| NatureScot             | Screening Report: In terms of our interests, we agree that the above Plan is likely to have significant environmental effects.   | Noted. Proposals taken forward for environmental assessment in this Environmental Report.                  |
|                        | Subject to the specific comments set out, NatureScot is content with the scope and level of detail proposed for the environmental report.  | Noted.   |
|                        | Potential effects of water quality have been scoped out, but included in the Biodiversity topic. Even if these impacts are not severe enough to change the WFD classification within a water body – they still warrant assessing – it wasn't clear if this was the intention.  | Topic of Water included in the assessment, and considered under the Topic 'Biodiversity, Flora and Fauna'. |
|                        | Recommend small revisions of the SEA objective wording for the Biodiversity topic to aid the assessment.   | Noted. NatureScot engaged further and consensus reached for the SEA objectives included in this            |

| Consultation Authority | Comment  | Response  |
|------------------------|--|---|
|                        |  | Environmental Report.   |
|                        | <p>Recreation and access may potentially be affected by the proposals and do require assessment. We think it's appropriate for these to be assessed fully within a BRIA, and so advise a BRIA is carried out (currently not confirmed).</p>  | <p>Noted. Additional assessments may be undertaken, as appropriate.</p> |
|                        | <p>Consultation period: NatureScot notes that a period of 12 weeks is proposed for consultation on the Environmental Report and is content with this proposed period.</p>  | <p>Noted.</p>   |
|                        | <p>General Approach:</p> <ul style="list-style-type: none"> <li>• The scope of the SEA is relatively narrow in terms of addressing wider marine legislative shortcomings that we have raised previously and have had discussion with Scottish Government. We also understand some of those additional aspects may be addressed separately and recognise the timeframes and complexities involved in considering them altogether. We do not wish to lose sight of the other shortcomings, and welcome the ongoing dialogue and further discussions on how to achieve those.</li> <li>• We support the shortcomings identified in the SEA with respect to Ministers powers associated with Marine Conservation Orders and agree the changes as proposed will strengthen the existing mechanisms available for marine protection, and in particular allow the protection of areas that are helping to restore certain habitats with key ecosystem functions.</li> </ul> | <p>Noted.</p>   |
|                        | <p>Setting the Context:</p> <ul style="list-style-type: none"> <li>• The purpose of the SEA is clear, and the shortcomings in existing powers to address are listed succinctly. The proposal highlights interaction with a future restoration plan and policy guidance. To</li> </ul>  | <p>Noted.</p>   |



| Consultation Authority | Comment  | Response  |
|------------------------|--|---|
|                        | <p>support the restoration process we welcome pursuit of actions that would enable an efficient, and proportionate restoration licensing process, and note this will be subject to a separate SEA process (section 2.1.2.). In addition there is interaction with marine nature positive policy, also subject to a separate SEA process.</p> <ul style="list-style-type: none"> <li>• There is a long list of related plans and policies which appears comprehensive.</li> </ul>   |   |
|                        | <p>Baseline information: The list of baseline information to be included is appropriate.</p>   | <p>Noted.</p>   |
|                        | <p>Significant issues: We agree with the majority of the scoped in SEA topics, but raise a few questions and comments below.</p> <ul style="list-style-type: none"> <li>• Recreation and access are factors that may potentially be affected by the proposals as activities that could be restricted or impacted and are not currently scoped in. We do note that 'it is likely' there will be a Business and Regulatory Impact Assessment (BRIA) as part of assessing the socio-economics impacts of the proposal. Our opinion is that impacts on recreation and access should be addressed as part of that process.</li> <li>• Effects on water quality have been scoped out as effects are not anticipated. The SEA scoping report states that any impacts on water body status will be addressed within a separate SEA topic. However it wasn't clear if the potential impacts on water bodies that didn't directly affect ecological status of a water body (assuming this meant changing from one WFD category to another) would be scoped in, and believe they should be considered. The proposals may have a positive</li> </ul> | <p>Noted. Additional assessments may be undertaken, as appropriate.</p> <p>Topic of Water included in the assessment, and considered under the Topic 'Biodiversity, Flora and Fauna'.</p> |

| Consultation Authority | Comment   | Response   |
|------------------------|---|--|
|                        | <p>effect on water quality, where used to restrict activities that may produce pollution (e.g. aquaculture/coastal infrastructure), or a negative effect elsewhere due to displacement of such activities.</p>  |  |
|                        | <p>Effects on European marine sites: The proposal will have an anticipated positive effect on European marine sites, providing additional powers of protection. There may be instances where there could be site specific negative impacts as a result of a proposed MCO, but feel these should be addressed at that site specific scale.</p>   | <p>Noted. Assessment concludes overall positive effects. Assessment has been high level and qualitative in nature and recognises there may be potential impacts from the implementation of any MCOs made using the proposed extended powers.</p> |
|                        | <p>SEA objectives:</p> <ul style="list-style-type: none"> <li>• The objectives (Table2) for the SEA seem appropriate, although we question the omission of ‘enhance’ within the first bullet of the Biodiversity topic, as this suggest this aspect may only apply to the MPA network. We think this should apply wider, as currently within the National Marine Plan policy protection – suggested revised text in italics below to aid discussions.</li> </ul> <p>To safeguard <i>and enhance</i> marine and coastal ecosystems, including species and habitats, and their interactions;</p> <ul style="list-style-type: none"> <li>• In addition, the second proposed objective relates to the National Site Network and focusses on ‘to maintain and enhance the coherence of the network’. The whole MPA network is likely to benefit, rather than just European sites. To assess this objective successfully, there would need to be a definition of coherence. We are assuming this is ecological</li> </ul> | <p>Noted. NatureScot engaged further and consensus reached for the SEA objectives included in this Environmental Report.</p>   |

| Consultation Authority | Comment   | Response   |
|------------------------|---|--|
|                        | <p>coherence and that the assessment would consider the concepts used within the existing MPA selection guidelines of coherence (such as replication, geographic variation etc). MCOs also have the potential to support the effectiveness of the network, and worth considering within the objective too. Suggested revised text in italics below to aid discussions.</p> <p>To maintain and enhance the <i>ecological</i> coherence of the MPA network <del>National Site Network</del> and ensure conservation objectives for protected marine areas are <del>not hindered</del> <i>achieved by supporting effective management.</i></p> |  |
|                        | <p>Assessment Methodology: We note the plans to develop reasonable alternatives to the proposal in due course. The methodology for assessing looks appropriate, and would welcome further discussions over potentially revising text for the Biodiversity topic objective.</p>  | <p>Noted. NatureScot engaged further and consensus reached for the SEA objectives included in this Environmental Report.</p> |



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