

Quendale beach © Shetland UHI

Creating marine restoration and enhancement guidance: key considerations from a Shetland Islands case study

Key Messages

Background

We are in the midst of global twin biodiversity and climate crises. The latest State of Nature Scotland Report finds that 43% of Scotland's species have declined in the last decade.¹ In recognition of these crises, the Scottish Government has produced a Biodiversity Strategy for Scotland to 2045 with the vision to *"have restored and regenerated biodiversity across our land, freshwater and seas."*²

Terrestrial and marine planning regimes in Scotland are evolving to reflect this commitment to protect natural capital with a vision that development be nature positive through restoration and enhancement. However, without appropriate guidance to support restoration and enhancement efforts, actions risk being poorly targeted or ineffective.

This brief presents key considerations for developing such guidance drawing on the Shetland Islands as a case study, where Scotland's first marine restoration and enhancement guidance was published in June 2025.³

The brief highlights how insights gained through active participation from a diverse range of stakeholders can inform the development of future national and regional guidance, ensuring it is both practical and locally appropriate.

- ✚ Restoration strategies can incorporate both active and passive approaches to support the development of a healthier and more resilient marine environment.
- ✚ Guidance on marine restoration and enhancement can encompass both marine and coastal actions to acknowledge the ecological interconnectivity of species and the impact of pressures across land, coast and sea.
- ✚ Restoration and enhancement actions that are not tailored to local contexts or lack support from industry and communities are less likely to achieve long-term success. Regional distinctiveness can include environmental characteristics as well as cultural and socio-economic conditions.
- ✚ Many ongoing activities in the marine environment can be considered a form of restoration or enhancement, yet can go unrecognised. Developing clear guidance on what constitutes marine restoration and enhancement could help acknowledge and further support these actions.
- ✚ Developing Guiding Principles for marine restoration and enhancement with local stakeholders from diverse sectors ensures an inclusive process which encompasses a wide range of perspectives, priorities, and local knowledge.





Defining Restoration

There are many definitions of 'restoration', all differing slightly in nuance. The commonly used definition from the Convention on Biological Diversity and the Kunming-Montreal Global Biodiversity Framework is *"the process of halting and reversing degradation, resulting in improved ecosystem services and recovered biodiversity"*.⁴

The Scottish Government is currently in the process of developing its own definition and framework for ecosystem restoration through the creation of an Ecosystem Restoration Code (ERC).⁵

Restoration approaches: active vs passive

Restoration is often divided into two categories: **active and passive restoration** (Box 1). These are typically viewed as separate approaches to ecological restoration. However, in terrestrial projects, there is a growing shift away from treating them as distinct, with many initiatives now combining both methods to achieve restoration goals.⁶

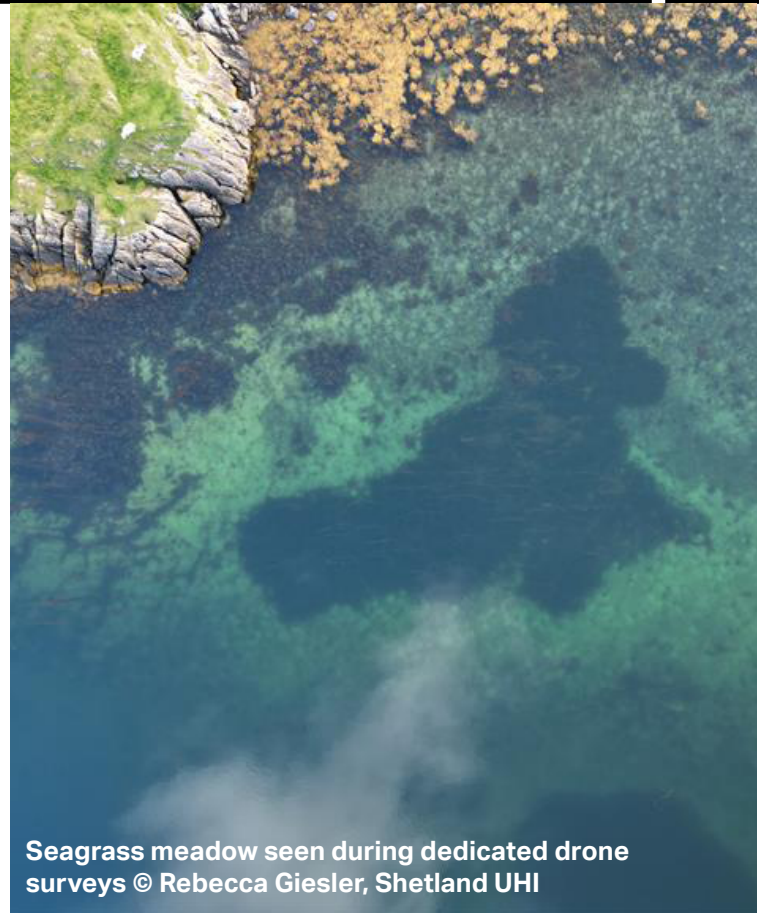
Box 1- Restoration key terms

Active Restoration- the creation, re-creation or improvement of marine habitats and/ or the re-introduction of marine species. For example, seagrass restoration and re-introduction of native oysters.

Passive Restoration (also referred to as Pressure Management)- removal/ management of pressures that are adversely affecting marine habitats and/ or species to allow for natural recovery. For example, removing human induced pressures such as marine litter/ pollution or managing non-native species.

Nature Positive Future- one where the environment is in a better state than when we found it and ensures economic and financial decision-making is aligned with nature recovery.

Natural Capital- refers to assets that occur in nature and can be used for economic production and consumption.



Seagrass meadow seen during dedicated drone surveys © Rebecca Giesler, Shetland UHI

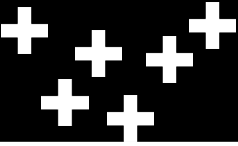
National Context

Scotland's Biodiversity Strategy (SBS), published in November 2024, recognises the current nature emergency and sets out the Scottish Government's ambition to **halt the loss of nature by 2030 and to make significant progress to restoring nature by 2045**.² The SBS is just one in a list of biodiversity and natural capital policy, strategy and guidance documents published by the Scottish Government in 2023/ 2024 (Box 2) which recognise the significance of biodiversity loss and guide nature recovery and restoration.

National planning policy and biodiversity enhancement

Scottish Planning regimes are evolving. The National Planning Framework 4 published in 2023 now requires that development proposals *"contribute to the enhancement of biodiversity, including by restoring degraded habitats and building and strengthening nature networks"*.⁷

The Planning Position Statement for the developing National Marine Plan 2 recognises the need for an updated vision for marine planning in Scotland that better supports commitments to achieving net zero and becoming Nature Positive.⁸



Box 2- Current policies, strategies and guidance

- ✚ [National Planning Framework 4- published 2023](#)
- ✚ [Scottish Biodiversity Strategy to 2045- published 2024](#)
- ✚ [Biodiversity: delivery plan 2024 to 2030- published 2024](#)
- ✚ [Investing in nature: a plan to support investment in biodiversity and climate adaptation in Scotland- published 2025](#)
- ✚ [Natural Capital Market Framework- published in 2024](#)
- ✚ [Ecosystem Restoration Code \(ERC\)- in development](#)
- ✚ Marine and Coastal Restoration Plan- in development

National approach to restoration

The Scottish Government is currently developing a **Marine and Coastal Restoration Plan**, fulfilling a commitment made under **Objective 1: Accelerate Restoration and Regeneration** in the Scottish Biodiversity Strategy (SBS) Delivery Plan.⁹

Current active restoration in Scotland focuses strongly on the restoration of species and habitats such as seagrass beds and native oysters, as well as adjacent terrestrial areas used by species that depend on the marine environment.

Passive restoration is addressed through high-level government programmes such as Marine Protected Areas, Priority Marine Features, the Marine Litter Strategy and the Seabird Action Plan.

In addition, the Scottish Government, in partnership with NatureScot, are currently developing an **Ecosystem Restoration Code (ERC) for Scotland**.¹⁰ This will help meet one of seven key interventions published within their Natural Capital Framework to help increase responsible investment in natural capital.

Shetland Islands Case Study

The Shetland Islands marine environment supports a diverse range of habitats and species, some of which have been designated for their international, national or local conservation importance. These habitats and species also provide a wide range of goods and services of cultural and socio-economic importance.

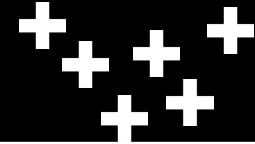
There was strong interest in Shetland for **locally tailored guidance** on marine restoration and enhancement from both marine industry stakeholders seeking to invest, to local communities identifying marine pressures and priority areas for action.

In response, UHI Shetland launched a project to **co-develop guidance with participation from local stakeholders**. This resulted in the publication of a resource (Box 3) outlining a range of potential restoration and enhancement initiatives that could be supported by marine industry, government or philanthropic investment in Shetland.

This bottom-up process identified **key considerations for marine restoration and enhancement tailored to Shetland's unique marine environment**. However, the issues and general principles identified align with those being discussed at the national level but provide an insight into how these can be applied at a regional scale.



Awareness event © Tanya Riley, Shetland UHI



Box 3- Shetland marine restoration and enhancement guidance

Publication

Riley, T.G., Giesler, R.J., Allan, K. & Shucksmith, R. (2025). Guiding Marine Restoration and Enhancement in the Shetland Islands. Shetland UHI report. p36.

Project webpage

[UHI Shetland - Guiding Marine Restoration and Enhancement in the Shetland Islands](http://www.shetland.uhi.ac/research/marine-spatial-planning/research)
(www.shetland.uhi.ac/research/marine-spatial-planning/research)

Regional tailoring

Every marine region in Scotland is distinct, with communities that hold their own unique priorities. During the development of the restoration and enhancement guidance in Shetland, it was widely acknowledged by both industry and local communities, that any actions or initiatives must be carefully tailored to reflect Shetland's specific environmental characteristics and socio-economic conditions.

Taking a regional approach and gaining a full understanding of the local issues, pressures and community aspirations ensures projects are not only effective but also valued and embraced by the communities they aim to support.

Choosing strategies for marine restoration

An inclusive approach which recognises the **value of integrating both active and passive strategies into restoration and enhancement efforts** can result in a more resilient marine environment. For example, a habitat that has undergone active restoration may not flourish if the pressures it is under are not managed and, equally, passive restoration may not be enough on its own to stop the loss or degradation of the habitat without the intervention of active restoration.¹¹

This approach was echoed in Shetland, where local stakeholders strongly supported a mixed strategy, one that thoughtfully integrates **both passive and active restoration methods to achieve meaningful and lasting outcomes**.

The balance between active and passive restoration requirements should be assessed at

a regional level. In some areas, the overall health of the marine environment may dictate the need for intensive active habitat restoration, whereas in others additional support for passive restoration activity may be needed to maintain and enhance healthy seas.

Taking a broader view of marine restoration

From input gathered during the consultation process in Shetland, **active restoration was one of several areas highlighted for action**. Actions were identified under the Key Themes of:



Access



Active Restoration



Communication, Education and Awareness

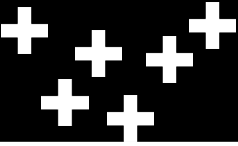


Pressure Management



Research, Innovation and Knowledge

Acknowledgement of the existing contribution and opportunities for actions under these wider key themes to support marine enhancement is important. For example, development of educational awareness of the impacts of disturbance has been shown to reduce pressures and complement active habitat creation.¹² **A holistic approach which integrates broader actions supports a more connected, cost-effective and meaningful delivery of passive and active restoration.** Considered under this lens, existing national projects and activities underpinning or contributing to ecosystem recovery could be further supported to deliver strategic marine enhancement.



Land-sea interface

The land-sea interface, our coast, can fall between the gap of marine and terrestrial governance. Separate planning regimes for land and sea can lead to policy conflict and confusion.¹³ However, **the land and sea are intrinsically linked, both environmentally and socio-economically.**¹⁴

Many species depend on both environments, using coastal areas for breeding, feeding and resting. Likewise, human activities on land can impact marine ecosystems, for example, agricultural practices can significantly affect water quality.¹⁵ For this reason, it may be beneficial for marine restoration and enhancement plans to take a **cross-boundary approach that acknowledges the interconnectedness of marine and coastal environments.**

Within the Shetland case-study example, stakeholders emphasised that both pressures and solutions often span land, coast, and sea. Local communities frequently highlighted coastal

Access boardwalk installed to protect sensitive habitats
© Tanya Riley

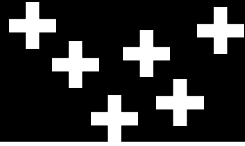


Shetland Islands Guiding Principles

Marine restoration and enhancement initiatives in the Shetland Islands should:

- ✚ Be appropriate to Shetland's unique marine environment.
- ✚ Recognise the value of local knowledge and robust long-term data gathering to understand natural and anthropogenic change.
- ✚ Recognise and safeguard Shetland's rich marine cultural heritage and identity.
- ✚ Consider the current and future needs of other marine users and activity.
- ✚ Consider how scale and location affect the delivery of meaningful action.
- ✚ Consider opportunities for coordinated and innovative action.
- ✚ Engage local stakeholders at all stages through planning, delivery and monitoring.
- ✚ Be adaptively managed to account for changing conditions.
- ✚ Include ongoing monitoring to assess long-term effectiveness.
- ✚ Ensure data, knowledge and learning are effectively shared and publicly available.
- ✚ Where development mitigation is required, consider opportunities for investment close to the area of impact.

Riley, T.G., Giesler, R.J., Allan, K. & Shucksmith, R. (2025). Guiding Marine Restoration and Enhancement in the Shetland Islands. Shetland UHI report. p36.



pressures such as marine litter, and impacts on nesting birds - issues that are more visible and relatable to the public, whose primary interaction with the marine environment is often at the coast. Environmental NGO's emphasised the importance of restoring and enhancing land or coastal areas that support critical life-stages of marine species such as seabirds.

Creating a healthier and more resilient marine environment will require identification of restoration and enhancement opportunities across land, coast and sea, which can be reflected in restoration and enhancement guidance.

A collective approach

During the process of creating guidance for the Shetland Islands, UHI Shetland undertook a comprehensive engagement process with a wide range of local stakeholders. This included representatives from marine industries, environmental organisations, community councils, local government, and members of the public. A two-phase consultation (Box 4) was used to identify common themes, sector-specific needs, and community priorities.^{16, 17} This staged approach enabled initial ideas to be evaluated and prioritised collaboratively.

Using an inclusive process ensures a wide range of perspectives, priorities, and local knowledge can be meaningfully integrated. Developing guiding principles in this way reflects a shared

vision that is both practical and locally relevant, ensuring guidance is tailored to the unique environmental, cultural, and socio-economic context of the area.

Box 4- Consultation method

Phase 1: multi-faceted engagement process with marine industry, environmental groups, local residents, and government bodies which included:

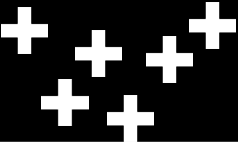
- ✦ Targeted 1:1 interviews with stakeholders from marine industries, environmental NGOs and government agencies,
- ✦ Public drop-in sessions across Shetland,
- ✦ Workshops at Community Council meetings,
- ✦ Online survey.¹⁶

Phase 2: assessing the level of agreement with key perspectives expressed during phase 1 and refine and prioritise guiding principles through:

- ✦ Online survey,
- ✦ Public engagement- presentations and interactive displays,
- ✦ Targeted engagement with participants of phase 1.¹⁷



Seals using coastal areas to haul out © Charlotte Anderson, Shetland UHI



Conclusion

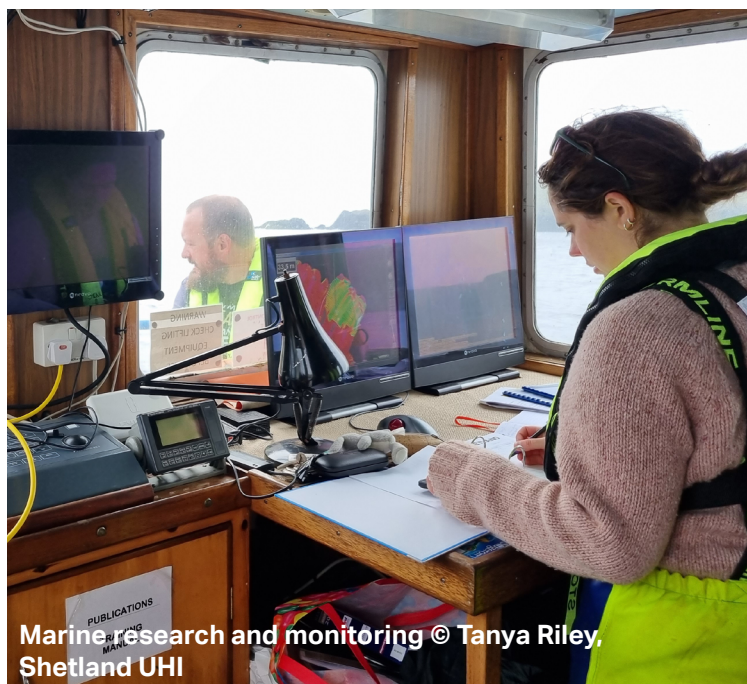
This policy brief presents key considerations that can be applied nationally and regionally to support the development of effective marine restoration and enhancement guidance in Scotland.

Central to this is the use of an inclusive, participatory process that captures a broad spectrum of perspectives and local knowledge. Such an approach ensures that the resulting actions or guiding principles are not only tailored to the distinct environmental, cultural, and socio-economic characteristics of each region, but are also supported by the communities and industries essential to their long-term success.

Effective guidance fully encompasses a range of active and passive measures and recognises actions that extend beyond traditional environmental restoration and enhancement efforts, such as education, awareness-raising, research and community engagement.

It is important to recognise the connections between land and sea, ensuring that marine restoration and enhancement efforts reflect ecological relationships across terrestrial and marine environments.

Embedding these considerations will help create guidance that is clear and inclusive, ensuring that restoration and enhancement efforts are not only ecologically effective, but also locally relevant, widely supported, and resilient over the long term.



Marine research and monitoring © Tanya Riley, Shetland UHI

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Dune system © Kathryn Allan, Shetland UHI

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For more information visit the UHI Project Webpage:

[UHI Shetland - Guiding Marine Restoration and Enhancement in the Shetland Islands](#)

(www.shetland.uhi.ac/research/marine-spatial-planning/research)

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Scottish Government
Riaghaltas na h-Alba

About this policy brief

This policy brief is part of a series presenting key results of marine science research being carried out at UHI Shetland. The full series can be found by following the link below or scanning the QR code:

<https://www.shetland.uhi.ac.uk/research/marine-spatial-planning/marine-spatial-planning-publications/policy-briefs/>



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