Proposal
National Seagrass Action Plan (NSAP) Wales: 2025-2050
Framework Document
July 2024

Glossary

GBF – Global Biodiversity Framework
HD – Habitats Directive
NGO – Non-Governmental Organisation
NRW – Natural Resources Wales
NSAP – National Seagrass Action Plan
SAC – Special Area of Conservation
SDGs – Sustainable Development Goals
SER - Society for Ecological Restoration
SNC – Seagrass Network Cymru
WFD – Water Framework Directive

Contents

1. Summary

Seagrass meadows are critically important allies to tackle the global climate and biodiversity crises with the habitat accounting for 10-18% of total ocean carbon storage despite covering less than 0.1% of the ocean floor and supporting as many as 4,700 more fish and 28 million more invertebrates than unvegetated habitats. Seagrass meadows have been shown to support 16 of the 17 United Nations Sustainable Development Goals – which provide a blueprint for peace and prosperity for the planet (Mariani et al, in press 2024).

However, over the last 100 years, the UK has lost up to 92% of its seagrass habitats. Wales has the opportunity to lead the way in recovery of this vital system for the wellbeing of people and planet.

The Seagrass Network Cymru, a collaborative group consisting of NGO's, academics, commercial business, government, and management agencies from across Wales, has created a national plan for seagrass protection and restoration which builds upon the fragmented efforts already underway across Wales to create a strategic coordinated programme targeting national priorities whilst trialling innovative approaches and positioning Wales as a global leader in this field. This plan is needed to deliver against the Programme of Government and Carbon Budget commitments and Biodiversity deep-dive recommendations.

The plan outlines a blue-print of action to be taken over the next five years to contribute to the achievement of the overall vision: Welsh seagrass meadows have been recovered and are supporting biodiverse, healthy and productive marine ecosystems, vibrant communities, a sustainable economy and making a valuable contribution to the climate emergency response.

6 key objectives have been identified:

1. Wales's seagrass fully mapped by October 2026
2. Identify and address evidence gaps
3. Seagrass loss is halted by 2030 in line with the Kunming-Montreal Global Biodiversity Framework (GBF)
4. Recovery of 266 hectares of seagrass by 2030 in line with the Kunming-Montreal GBF and double seagrass extent by 2050
5. Improved community awareness of the value of seagrass to the climate and biodiversity crises by providing examples and opportunities for community participation in monitoring and restoration work.
6. Pilot community focussed approaches in North Wales and Pembrokeshire to reduce localised pressures and provide a blueprint for national implementation.

To achieve these objectives, 4 priority action areas representing areas where action is urgently required have been identified. These will be supported by 2 cross cutting themes providing coordination, community engagement and evaluation. Through Welsh Government endorsement and funding of this plan, it will catalyse further investment from private and innovative funding sources and opportunities to further scale up the work outlined in the plan.

2. Introduction to the National Seagrass Action Plan (NSAP)

This document sets out a national programme of seagrass recovery across Wales over the next 25 years and provides a coordinated mechanism for the maintenance and protection of seagrass habitat in the longer term. The document has been drafted and endorsed by members of the Seagrass Network Cymru (SNC). The National Seagrass Action Plan (NSAP; hereafter referred to as 'the Plan') has been developed in response to a commitment in the (2021-2025) Programme for Government, and recommendation in the 2022 Biodiversity deep dive, "to establish a targeted scheme to support restoration of seagrass and saltmarsh habitats along our coastline".

It was agreed at a roundtable discussion, in March 2024, with the then Minister for Climate Change, Julie James, and subsequently endorsed by the Cabinet Secretary for Climate Change and Rural Affairs, Huw Irranca-Davies, that the SNC possessed the necessary expertise to develop a transformative seagrass scheme using the National Peatland Action Programme as a template. The Plan shall be submitted to government for endorsement and funding.

The Plan provides a collaborative programme that can be considered for funding, as well as a blueprint for the development of future policy in Wales, with stakeholders and government agencies working collaboratively to develop long term actions in response to the Nature and Climate emergencies.

2.1. Value of Welsh Seagrass

Seagrass meadows play a critical role in keeping our oceans healthy and stocked with food. Research in Wales has found that seagrass habitats harbour four times the fish of unvegetated habitats, providing spawning, nursery and feeding grounds to support important

commercial fisheries. In fact, 1/5th of the World's largest 25 fisheries are supported by seagrass as nursery habitat (Unsworth et al., 2019). One hectare of seagrass can support as many as 4,700 more fish and 28 million more invertebrates than unvegetated habitats.

Seagrass meadows *can* be highly efficient carbon sinks – healthy, dense meadows sequestering carbon at a rate of up to 0.5 tonnes of carbon per hectare per year, a higher rate than many other marine and terrestrial ecosystems (Greiner et al., 2014). Seagrass meadows account for 10-18% of total ocean carbon storage despite covering less than 0.1% of the global ocean floor.

Seagrass meadows also provide a suite of other valuable ecosystem services such as protecting property and beaches from coastal erosion and shifting sediments, as well as improving coastal defences by dampening wave action. As a result of climate change, the frequency and intensity of storms around the Welsh coast is predicted to increase; the loss of seagrass meadows has potentially resulted in exposure of coastal areas to storm damage (e.g. Abersoch storm damage in 2008, 2014 and 2018). Seagrasses can also buffer ocean acidification, thus contributing to the resilience of vulnerable species and ecosystems (e.g. cockles, dogwhelks). In addition, seagrass meadows improve water quality (removing pollutants and bacteria from the water column, including nitrogen) thereby benefiting local people and visitors. The ecosystem services provided by seagrasses are therefore an important support to marine-based economic sectors, such as tourism and fisheries.

2.2. Pressures and Condition of Welsh Seagrass

Despite their importance, seagrasses continue to be undervalued, under-protected and overlooked in decision-making. Although legally well protected within Special Areas of Conservation and specified as Section 7 species within the Environment Act, threats from things like poor water quality, boat anchoring and bait digging remain unmanaged. Over the last 100 years, the UK has lost up to 92% of seagrass habitat due to coastal development, pollution, fishing and water-based activities (Green *et al*, 2021), within Wales, extensive loss has also occurred. Seagrass meadows used to be widespread along the Wales coast, in sheltered bays, estuaries and shallow water. Whilst the exact figures of loss remain problematic due to variable data quality, the rapid industrialisation of Wales in the 1800's resulted in vast coastal development and alteration of coastal environments in areas that would have once been prime environments for seagrass. Newport Docks, Cardiff Docks, Swansea Docks, Barry Docks, Milford Haven, Porthmadog causeway, Pwllheli Harbour, the Conwy River Causeway, and the fundamental change to the Dee Estuary are major developments that have altered the Welsh coastline altering environments that would have once been suitable for seagrass and likely resulting in their loss. This is alongside the devastation to our oyster fisheries and the long-term degradation of estuarine water quality. Poor water quality is more recently associated to eutrophication (excess nutrients), but historically (and in some cases still active) due to heavy metal contamination from mining operations. Only seven of 33 estuaries in Wales now contain seagrass and cover, in most locations, is patchy and fragmented.

There now remains only an estimated 8.86km^2 of sparsely distributed and largely degraded seagrass habitat that is mostly subjected to poor water quality (excess nutrients). What remains is in a "perilous state" (Jones & Unsworth, 2016). Three species of seagrass exist in

Wales, eelgrass, (*Zostera marina*), dwarf eelgrass (*Nanozostera noltei syn. Zostera noltei*) and less common widgeon grass (*Ruppia maritima*).

Table 1: Summary of the impact of human & climate change pressures on seagrass. Adapted from the Marine Climate Change Impacts Partnership (2018)

HUMAN / CLIMATE CHANGE PRESSURE	EFFECT OF IMPACT ON SEAGRASS	
	POSITIVE	NEGATIVE
Eutrophication – nutrient loading from urbanisation, agricultural activities, sewage and aquaculture.	May lead to increased biomass and/ or flowering and sexual reproduction.	Increased risk of disease, reduction in net growth. Increase in growth of epiphytes on subtidal seagrass and smothering by opportunistic algae on intertidal habitats.
Siltation – adjacent land management, shoreline erosion, dredging, dumping, mineral extraction, boating activities, fishing and aquaculture.	Nutrient inputs associated with a small increase in sedimentation may benefit seagrass growth. Sand accretion may make more areas available for seagrass colonisation in shallow areas.	Decrease in shoot density and productivity. Increase in mortality due to reduced light availability for photosynthesis and burial. Risk of desiccation and dieback of seagrass due to overheating and increased exposure.
Physical disturbance of supporting sediment habitats – dredging, trawling, bait digging, hand gathering, anchoring, construction, land reclamation.	Some of these impacts may favour colonisation of seagrass pioneer species	Erosion of fine sediment, bed fragmentation and habitat loss. Plants uprooted by trawling gear and anchors. Compression of sediment and reduction in availability of oxygen to roots and rhizomes. Increased water turbidity prevents establishment and full development of seagrass beds.
Increase in seawater temperature from changing climate and industrial processes	Senescence (deterioration) in the winter may be reduced. Potential for habitats to be more suitable at more northerly latitudes.	Respiration exceeds photosynthesis at high temperatures, resulting in a negative energy balance within the plant.
Rise in sea level	Potential for shift of beds inland if new habitat is created.	Coastal squeeze and loss of supporting habitat. In restricted intertidal estuarine zones, populations may not be able to adapt quickly enough.
Increase in storminess	Sedimentation due to associated floods may make more areas available for seagrass colonisation.	Potential physical disturbance. Increase in mobilised sediment = reduced light availability for photosynthesis. Risk of smothering from burial and erosion.
Changes in rainfall	A decrease in salinity below ~22 parts per thousand reduces wasting disease activity. Lower salinities increase Zostera marina's germination rates	Higher sediment loads and reduced light availability. In a field experiment, negative effects were visible even at the lowest burial level (5cm) and shortest duration (4 weeks).
Ocean acidification	Raised aqueous CO2 levels enhance seagrass growth and proliferation at warm temperatures. Seagrass growth may maintain a lower CO2 concentration, reducing stress to calcifying organisms.	If calcifying organisms are stressed, there may be a reduction in epiphytic grazers which will lead to excess epiphytes, decreasing seagrass photosynthetic activity.

Breakdown of coastal food web		Overexploitation of marine fauna (particularly top predators) has led to an alteration of the food web resulting in changes in the abundance of lower order organisms such as Green Crabs and Ragworms, and predators such as Sticklebacks that have profound impact upon the structuring of seagrass meadows.

The threats faced by Welsh seagrass meadows are exacerbated by:

- Lack of comprehensive data on the extent of past seagrass areas and ongoing loss making it difficult to quantify loss and the actions needed to halt further decline.
- Lack of effective integrated coastal zone management.
- Limited public awareness of the role of seagrass as a nature-based solution to biodiversity loss, climate change and associated localised impacts (e.g. storm damage).
- Lack of investment in joined up seagrass conservation, restoration and management.

2.3. Seagrass Network Cymru

The SNC is a collaborative platform that provides a unified voice to secure a future for seagrass in Wales. The SNC is a network of organisations and individuals with an interest in seagrass protection and restoration in Wales, it comprises of NGOs, academics, government and management agencies and the private sector. The network works to increase public awareness of the value seagrass meadows across Wales, share expert knowledge and drive coordinated action to support the protection and enhancement of Welsh seagrass meadows into the future through improved science, monitoring, management and education.

3. Policy Landscape

The National Seagrass Action Plan is a direct response to the current condition of seagrass habitat and the need for a coordinated approach to deliver against current policy commitments. The following sections highlight a selection of commitments that the Plan would deliver against:

Table 2: Policy commitments delivered by NSAP

Policy commitments and obligations	Connection to NSAP
National Policy	
Climate Emergency Declaration	Recognising the urgent need to address the threat of climate change and nature loss
Nature Emergency Declaration	
Programme for Government (2021-2026)	"Establish a targeted scheme to support restoration of seagrass and saltmarsh habitats along our coastline."
WG Biodiversity deep dive recommendation	
Net Zero Wales Carbon Budget 2 (2021-2025)	
Environmental Principles, Governance and Biodiversity targets for a Greener Wales White Paper	Headline target proposed - Reverse the decline in biodiversity with an improvement in the status of species and ecosystems by 2030 and their clear recovery by 2050'
The Environment (Wales) Act 2016	Safeguarding and building the resilience of natural systems to continue to provide benefits over the long term. Seagrass beds have been identified as a habitat of principal importance under Section 7 of this Act
Welsh National Marine Plan (Nov 2019)	"promote the protection and enhancement of the marine environment to ensure that Wales has resilient marine ecosystems that can meet the needs of future generations".
The Well-being of Future Generations (Wales) Act (2015)	NSAP contributes across all 7 Wellbeing goals: A prosperous Wales; A resilient Wales; A healthier Wales; A more equal Wales; A Wales of more cohesive communities; A Wales of vibrant culture and thriving Welsh language; A globally responsible Wales
UK	
UK Biodiversity Action Plan	Seagrass as a priority habitat for conservation
The Climate Change Act 2008	Net UK carbon account for 2050 is at least 80% lower than the 1990 baseline. Seagrass meadows have a potential role to play in contributing to these targets
Seagrass Restoration Target for England	Restoring 15% of England's seagrass by 2043
International	
Convention on Biological Diversity	Identified restoration as key to delivering essential ecosystem services (Aichi Biodiversity Target 14). Many of the principles of the Aichi Biodiversity Targets exist within legislation at the devolved level.
Convention on the Conservation of Migratory Species of Wild Animals (CMS)	Signatories have to report on: migratory species that are using seagrass; the status of seagrass supporting those migratory species; and issues contributing to seagrass loss and status.
The Kunming-Montreal Global Biodiversity Framework	Signatories have committed to reducing the loss of areas of high biodiversity (e.g. seagrass) to close to zero by 2030; and 30% of high

	biodiversity areas to be effectively restored. In addition, 30% of these high biodiversity areas need to be effectively conserved and managed.
Paris Climate Agreement	Emphasises the critical importance of conserving seagrasses and other 'Blue Carbon' ecosystems
UN Decade on Ecosystem Restoration (2021-2030)	Prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean
UN Decade of Ocean Science for Sustainable Development (2021-2030)	Protect and restore ecosystems and biodiversity Develop a sustainable and equitable ocean economy Unlock ocean-based solutions to climate change Skills, knowledge and technology for all Change humanity's relationship with the ocean
International Decade of Sciences for Sustainable Development (2024–2033)	Advance scientific knowledge as a powerful force for humankind to achieve the goals of Sustainable Development
UN Seagrass Breakthrough	Building on the UNFCCC's Ocean Breakthroughs, the 2030 Seagrass Breakthrough has the following goals: Goal 1 - Halt loss Goal 2 - Double protection - Increase seagrass within protected areas from 26% to 50% Goal 3 - Facilitate the recovery of at least 25% of degraded seagrass by 2030 Goal 4 - Sustainably finance - catalyze financial flows of at least $122 million The 10 guiding principles embedded in the Seagrass Breakthrough **and NSAP**. Ecosystem Stewardship Science-Based Decision-Making Inclusivity and Collaboration Holistic Sustainability Adaptability Global Action with Local Solutions Empowerment and Capacity-Building Transparency and Accountability Innovation Resilience Beyond 2030
UN Sustainable Development Goals	Conserving and restoring seagrass meadows contributes to achieving 16 out of the 17 Sustainable Development Goals (Unsworth et al, 2022; Mariani et al, in press 2024)

4. Vision, Objectives and Structure

4.1. Vision

The National Seagrass Action Plan provides an innovative framework to enhance Welsh seagrass meadows as a foundation to rebuild marine ecosystems, communities, and livelihoods. The Plan outlines the following vision for seagrass in Wales:

Welsh seagrass meadows have been recovered and are supporting biodiverse, healthy and productive marine ecosystems, vibrant communities, a sustainable economy and making a valuable contribution to the climate emergency response.

4.2. Objectives

Current policy and legislative frameworks suggest the Plan should focus on six key objectives:

7. Wales's seagrass mapped by October 2026 (accounting for seasonality)
8. Identify and address evidence gaps through implementing cutting edge science, drawing on expertise from the SNC and associated networks.
9. Seagrass loss is halted by 2030 in line with the Kunming-Montreal Global Biodiversity Framework
10. Recovery of 266 hectares of seagrass by 2030 in line with the Kunming-Montreal Global Biodiversity Framework and double seagrass extent by 2050 (through recovery and restoration) from 886 ha in 2024 to 1,772 ha in 2050
11. Improve community awareness of the value of seagrass and nature-based solutions to the climate and biodiversity crises by providing examples and opportunities for community participation in monitoring and restoration work.
12. Pilot community focussed approaches in North Wales and Pembrokeshire to reduce localised pressures and provide a blueprint for national implementation.

To deliver the vision and objectives of the Plan, four priority areas for action and two cross cutting themes have been identified.

Priority areas for action:

- Mapping and knowledge
- Coalition building across land and sea
- Halting loss (protection)
- Reversing loss (enhancement)

Cross-cutting themes:

- Community Engagement
- Co-ordination
- Funding mechanisms

5. Priority Areas of Action

5.1. Mapping and knowledge

Before we can begin to protect and restore seagrass in Wales, we require improved baselines outlining what, where and how much seagrass exists. These baselines are vital to measure any ecosystem changes against. To meet seagrass conservation, restoration and protection targets outlined in this plan, and ensure no net loss of seagrass ecosystems in Wales, effective monitoring against this baseline is essential.

Currently, NRW produce maps of seagrass extent using existing datasets (e.g. Water Framework Directive, Habitats Directive and Special Area of Conservation monitoring). There are significant gaps in this data and methods are variable, limiting comparability, particularly across subtidal areas of *Zostera marina* and in areas not included in existing statutory monitoring schemes. Additionally, some extent data comes from monitoring 10-20 years ago, and reviews are required.

The first proposed priority action for the Plan will be determining a national seagrass inventory along with opportunity mapping, which will need to be conducted in close collaboration with NRW.

We propose 5 areas of work under the mapping theme:

1. Standardisation
Standardise mapping methodology for determining both extent and health of seagrass – at present a variety of methodologies have been used presenting compatibility issues and limiting data sharing and comparison. Global standards for seagrass mapping and health assessments exist (e.g. McKenzie et al. 2001), which can be drawn on to support the development of a common way of working under a clear set of standards in Wales. Project Seagrass are currently receiving Pro Bono assistance to examine seagrass spatial data in respect to global standards. The assessment will feed into this process.

2. Stocktake and database
Available seagrass mapping data is highly variable in terms of methods, limitations, and comparability across temporal and spatial scales. Following on from developing a standard, existing data should be assessed against this standard to validate existing seagrass maps (e.g., those that are less than 5 years old). This will enable a ‘stocktake’ of seagrass in Wales, incorporating all known spatial data across temporal scales. Project Seagrass are appointing a seagrass GIS technician in 2024 who will have some short-term capacity in this area, provision of match funding into this position could leverage stronger outputs.

3. Gap identification
Once spatial information is collated, gaps in knowledge of seagrass extent, distribution, condition, and ecosystem threats can be identified (e.g., areas with seagrass maps that are >5 years old). This will build on work already conducted at a UK level by Project Seagrass and colleagues to rationalise a map of UK seagrass identifying areas of seagrass occurrence and loss (Green et al. 2021).

4. Survey

Based on the gap identification, years 2 & 3 will focus undertaking the survey work required to address the gaps. Survey work is currently conducted in both intertidal and subtidal meadows which record meadow extent and percentage cover. Some programmes include more detailed parameters (e.g. Porthdinllaen Seagrass-Watch and Littlewick NRW surveys) but most data is comprised of the more simplistic metrics. Annual surveys are typically conducted at nine locations across Wales by NRW and Project Seagrass, with six additional locations surveyed at varying time scales. Sporadic investigations by Project Seagrass and Swansea University have led to more detailed assessment of environmental drivers (nutrients, light and temperature) in the system and provide a blueprint for improved methods that provide a better holistic view of the status and resilience of the seagrass as a sentinel of the health of the coastal environment.

Project Seagrass have an ongoing partnership with the technology company CGI to attempt to map seagrass in the UK with remote sensing. This has been examining case studies in Orkney and Porthdinllaen. Use of an established spectral analysis approach of Sentinel 2 imagery is creating ineffective and often inaccurate assessments. Through the use of a machine learning approach, outputs are becoming more accurate and likely to result in real usable outputs. These will not work in areas of high turbidity or extensive macroalgal coverage. Nantes University in France have conducted a spectral assessment of intertidal seagrass in Milford Haven Waterway, however the results are a gross underestimation on known coverage. Project Seagrass, together with a number of the Welsh Universities have capacity to undertake drone, sonar and in water mapping, and there is also opportunity to align mapping with initiatives such as the *SeaRangers*, bringing an 'opportunities for all' element into marine conservation. Project Seagrass have a fixed wing multispectral drone system and a BioSonics system for mapping seagrass.

5. Opportunity mapping

Towards the end of year 2 priority sites for protection and restoration will be mapped, based on information secured during the first 2 project years, and ground truthed by a combination of engaging with local stakeholders and scoping field survey work. This early engagement with local stakeholders will help ascertain whether there is social appetite for seagrass work and where the focus of pressure removal and restoration efforts should be to have greatest impact.

Table 33: Summary of Mapping Actions

Output	Action	When	Lead
Standardised protocol for seagrass data/collection across Wales	2 day workshop to develop a standardised protocol	Year 1	Project Seagrass / NRW
All Welsh seagrass data available on DataMapWales	Stocktake of current available seagrass data from all sources	Year 1	NRW
	Input data to DataMapWales	Year 2	NRW
Complete list of seagrass data gaps	Identify areas that: • have not been mapped/partially mapped	Year 1	Project Seagrass / NRW

	• have been mapped but data is incomplete/inadequate (based on new standardised protocol) • were mapped more than 5 years ago and require revisiting • include *Ruppia maritima,* the less well understood and unmapped UK seagrass species.		
Complete seagrass data for Wales	Survey of seagrass identified in gap identification	Year 2 & 3	Project Seagrass
Map of priority sites for protection/restoration activities	Risk mapping – identify areas losing/lost seagrass and cause of loss	Year 2 & 3	Project Seagrass / NRW
	Ground truthing: local engagement and scoping field survey work	Year 2 & 3	Project Seagrass / NRW/SACs

5.2. Coalition Building across land and sea

Across the UK, water quality is currently the biggest and most persistent driver of seagrass degradation. Reductions in water quality, through elevated levels of nutrients, result in eutrophication leading to seagrass loss.

Despite seagrass inhabiting coastal areas and estuaries, most water quality issues originate on land from a variety of sources, including agriculture, urban activities and sewage. Addressing water quality is complex and requires the expertise of those working terrestrially on, for example, sustainable freshwater and agriculture management. It would be beyond the skillset and resources of SNC to address terrestrial water quality issues directly, but we do see an action area within the remit of this seagrass strategy to build linkages with organisations and projects already working on or planning to work on improving watershed management in the hope of influencing that work and building understanding of coastal impacts.

We propose the following three steps to build these coalitions across land and sea and help reduce water quality pressure in key estuaries containing seagrass (e.g., Lougher, Severn, Cefni, Daugleddau, Foryd Bay, Lavan Sands).

1. Network and stakeholder mapping

- Map the study area boundaries
- Identify existing projects and partnerships working on issues that impact water quality in the study area.
- Identify local policy context for water quality work
- Identify key stakeholders and interests (draw on any existing stakeholder mapping work)
- Interrogate projects from other geographies adopting a catchment to coast type approach (eg. Tir Canol) to identify best practice for building collaborations across land, freshwater and sea. Replicate successful strategies used elsewhere to minimise impacts (e.g. to reduce nutrient load entering waterways from farming).

2. **Seagrass representation in terrestrial projects**

Network and provide regular seagrass representation in relevant stakeholder/coalition groups working on issues that impact water quality in the catchment. Provide a voice for coastal habitats in terrestrially based initiatives to provide understanding of downstream impacts and influence the design of monitoring and nature conservation interventions that influence coastal ecosystems.

3. **Building the evidence base for connectivity from land to sea**

Compile and undertake research to evidence the impacts of terrestrial activity on seagrass systems and coastal communities. Develop clear messaging and toolkits that explain impacts and water quality targets to enable seagrass to thrive. Seek to include seagrass impact considerations within existing water quality monitoring programmes and target setting occurring terrestrially. Feed coastal water quality data into terrestrial programmes of work as evidence of effectiveness of interventions providing a joined up catchment scale water quality monitoring programme. Foster recognition cross departmentally in government about this holistic view.

Table 44: Summary of coalition building actions

Output	Action	When	Lead
Welsh seagrass represented within water catchment management strategies	Seagrass representatives join terrestrial land and water management meetings	Year 1, ongoing	SNC appointed team
Clear, accessible list of toolkits explaining the impacts of water quality on seagrass	Targeted research published on water quality and seagrass condition	Years 2+	SNC delegated
Combined map of seagrass projects/extent and water quality management	Stakeholder mapping of terrestrial and seagrass projects Involve local stakeholders and key informants in project planning and results dissemination	Year 1 Year 1+	SNC coordinated (input from all members)

5.3. Halting seagrass loss

As well as seeking to reintroduce seagrass to areas where historically it may have existed, it is also essential to focus on looking after the seagrass that we currently have. Restoration encompasses both. In Armstrong (2021) restoration is defined as including both the re-establishment of natural processes, ecosystem functionality and biodiversity in degraded habitats, as well as re-creating habitat where it has previously been lost.

Looking after what we already have, helping it to recover, and enhancing it requires identification of and removal/minimisation of pressures and threats impacting upon seagrass (see Table 1). Actions have been identified to address priority pressures within scope of this NSAP, whilst acknowledging that additional pressures exist (especially in localised contexts) to be identifiedduring the mapping process.

a) Water Quality

Water quality is one of the most widespread pressures facing seagrass (as well as other important habitat and species) in Wales. Once well established, seagrass meadows can be part of the solution for reducing pollutant levels. However, there is a lack of understanding around the thresholds needed for healthy seagrass growth – and therefore no clear targets for management. In Pembrokeshire, Project Seagrass has already begun work to evaluate the water quality of the Cleddau and its likely impacts on seagrass, with a view to providing local guidance on the min. water quality requirements for seagrass. The NSAP strategy proposed here will seek to scale this work up in the ways described below and feed information into the Coalition Building work of section 4.2 and seek collaborations with terrestrial partners on catchment water quality improvement.

1. Implementation of an annual national sampling programme and development of a traffic light system for seagrass resilience in Wales

Project Seagrass will work in close collaboration with NRW to develop and implement an annual sampling programme of seagrass along the Welsh coast to understand it's long-term resilience in the face of growing global as well as local threats. This will also provide excellent information to test the efficacy of terrestrial water quality programmes, as seagrass will acts as 'canary in the [coastal] coalmine' to excess pollutants through meadow presence and health. The proposed work will feed water quality information into NRW's central database (DataMapWales).

Metrics of water quality, aligned to better environmental data and improved meadow scale parameters will facilitate the development of a stronger coastal resilience indicator (Report Card) analogous to products developed in Chesapeake Bay and the Great Barrier Reef that have strong stakeholder and general public support (see 2023 Integration and Application Network Report Card).

This will include collection of data not currently incorporated into national assessments, such as seagrass leaf samples that will be used evaluate the nutrient content of seagrass plants. These evaluations show the concentration of carbon, nitrogen and phosphorous of leaves which serve as an indicator of seagrass health, which has been adopted as a method across other areas of the world. Evaluation of stable isotopes, delta15 N, can be used to explore the source of nutrients e.g. fertilizers, sewage, which can facilitate identification of threats to seagrass ecosystems.

2. Integration of seagrass water sampling needs into broader sampling programmes

Include additional parameters that are useful to seagrass to ensure cost efficiency. Linking with other groups monitoring in catchment; and encourage citizen science, building on existing programmes where possible eg. SWEPT - Pembrokeshire Marine SAC .

Table 55: Summary of water quality Actions

Output	Action	When	Lead
Improved knowledge around how water quality impacts seagrass	Develop and implement a national water quality sampling programme for seagrass	Year 1 - 5	Project Seagrass
Clear parameters/targets for seagrass resilience which can be easily shared and understood	Develop a report card system for monitoring seagrass resilience	Year 1	Project Seagrass

b) Anchoring/Moorings

All areas containing seagrass need to have 100% uptake of seagrass friendly mooring systems. These are either rope-based moorings or Advanced Mooring Systems (AMS). Within the Yachting and marine conservation communities there is a strong focus on using AMS, however evidence collected in Wales and other locations confirms that rope-based moorings offer a genuine low-cost alternative to high-cost AMS (see Unsworth et al. 2022).

This requires a multi-pronged approach of building awareness amongst the sailing community of the damage traditional moorings and anchoring can do to seagrass meadows, whilst building trust within the community about the potential of alternative systems. We also need to integrate mapped seagrass (see section 5.1 above) as overlays in sailing community information and navigation platforms.

We also need to work with mooring area managers to build trust in seagrass friendly mooring systems, spread awareness about seagrass friendly mooring benefits, demonstrate use and functionality, and increase seagrass friendly mooring availability in Wales.

Table 66: Summary of anchoring/mooring Actions

Output	Action	When	Lead
Maps of existing seagrass extent alongside seagrass friendly moorings are integrated into nautical navigation charts and applications. Boaters are aware of seagrass locations and where not to anchor.	All Welsh seagrass meadows identified in package 5.1 are mapped, and added to nautical navigation charts and applications.	Year 3	NRW, Project Seagrass
Seagrass friendly moorings fully embraced and adopted across all Welsh seagrass meadows.	Dissemination of information on Seagrass friendly moorings and their benefits, rules and regulations about use to boaters, boating groups and harbours. Working with statuary bodies, institutions and key groupings (e.g. RYA, RNLI, Fisheries Associations)	Year 2 and 3	NRW, SACs, Project Seagrass
Welsh supply, technological and manufacture support for Seagrass friendly moorings	Develop partnerships with boat yards to build, sell, export, install and maintain seagrass friendly moorings		RYA

c) Vehicles

Table 7: Summary of vehicle Actions

Output	Action	When	Lead
Improved knowledge as to the impacts of vehicles on seagrass	Analysis and write up of existing (old but relevant) data collected by CCW on vehicle impacts	Year 1	NRW
National assessment of vehicle disturbance hot spots for seagrass.	Mapping the presence/ absence of vehicles in seagrass and observed impacts through the ongoing monitoring of seagrass ecosystem health and extent; spot checks and *SeagrassSpotter* uploads. Mapping disturbance; record what vehicles do in seagrass and investigate the impact of vehicles on seagrass.	Year 1 and 2	NRW
Improved enforcement on vehicle use	Work with land-owners (e.g. National Trust) and local authorities to identify and record incidences of vehicle use in seagrass. Work with land-owners and the police to prevent the illegal activity of driving vehicles onto land (intertidal) without the land owner permission. Co-operation with vehicle users to produce needs assessments; what will make transporting themselves across seagrass meadow easier. Collaboration with vehicle users and landowners to produce zonation of meadow to include avoidance of certain seagrass areas.	Years 1-5	NRW, National Trust, SACs the Crown Estate, Police
Community awareness of the impact of vehicle use on seagrass health	Awareness raising through engagement with users of local area and appropriate signage	Years 1-5	Project Seagrass, NRW, SACs, National Trust, the Crown Estate, Port Authorities

5.4. Reversing seagrass loss

Given the valuable role seagrass plays in ecosystem service provision, we need to not just halt seagrass loss by reducing pressures, but in areas where pressures have been reduced, and with the help of our opportunity mapping work in section 5.1, we need to undertake active restoration of lost seagrass habitat in areas identified as suitable for restoration and where there is local support for such work. We propose under the Plan to:

a) Build on existing restoration work already underway in North Wales and Pembrokeshire

This Plan seeks to expand upon existing seagrass restoration efforts already underway by SNC members in Gwynedd, Ynys Mon, Carmarthenshire, Pembrokeshire, and Cardiff. Continued foundational stakeholder engagement, site feasibility assessments, and established delivery partnerships will leverage existing experience in restoration, thereby reducing costs and risks associated with restoration efforts. The goal is to establish a network of self-sustaining and connected seagrass meadows in these regions.

Funding is essential to scale up existing restoration work at these sites starting from 2026, incorporating community participation in restoration activities and citizen science monitoring programs. Future expansion efforts must integrate key aspects of climate change adaptation, such as incorporating seagrass traits from populations further south, a practice mandated in some parts of the world (e.g. Jellinek and Bailey 2020).

The objective is to double the extent of seagrass in Wales by 2050, increasing from 886 hectares in 2024 to 1772 hectares by 2050. By 2030, an additional 266 hectares are targeted for recovery in line with the Kunming-Montreal Global Biodiversity Framework, which advocates for restoring at least 30 percent of degraded marine and coastal ecosystems.

b) Developing a restoration programme aimed at reconnecting the Welsh Coastline

Resilient seagrass ecosystems are genetically diverse and well-connected (Unsworth et al., 2015). In Wales, the fragmentation of seagrass meadows into isolated patches, with most sheltered soft sediment inshore waters no longer supporting seagrass, has likely resulted in limited gene flow among populations. As environmental conditions shift due to climate change, there will inevitably be "winners and losers" among these populations, leading to the loss of some. Reconnecting these sites through restoration can create a network of seagrass meadows with greater resilience to changing climate conditions.

To identify new potential sites for reconnecting Welsh seagrass meadows, opportunity mapping work will be conducted alongside climate and habitat suitability modeling. These potential sites will be validated for restoration feasibility through scientific environmental surveys and local expert knowledge. Dr. Chiara Bertelli at Swansea University is developing climate change models for UK seagrass, which will be critical in selecting future restoration sites.

Seagrasses are just one component of the coastal seascape. Creating a climate-resilient seascape requires enhancing connections both within and between different habitats. As part of the site identification process, the project will also identify other coastal habitat restoration initiatives in Wales, such as oyster and saltmarsh restoration projects. If opportunity mapping indicates potential for seagrass restoration in the same areas, collaborative efforts will be explored to achieve seascape-scale restoration.

c) Nursery – centre of excellence for restoration

While Wales is home to world-leading seagrass scientists, including current and former Presidents of the World Seagrass Association, significant knowledge gaps remain. These

gaps range from understanding the molecular and genetic foundations of seagrass restoration to developing and implementing large-scale restoration methods and planting practices.

To ensure successful, scientifically sound, and socially resilient restoration efforts, we must advance the science underpinning seagrass restoration. Novel research is essential to fill these knowledge gaps, presenting a significant opportunity to establish a Welsh centre of excellence for seagrass restoration.

Led by world-renowned scientists at Project Seagrass, we propose the creation of a science and research hub to serve as an international centre for knowledge exchange. This facility will focus on the critical research needed to advance seagrass restoration and will expand the current Project Seagrass nursery facility in Carmarthen. It will have the capacity to host visiting researchers and global talent, and support the education of the next generation of seagrass restoration scientists, including PhD students and postdoctoral researchers.

Additionally, the general public will have the opportunity to engage with seagrass and restoration practices through the National Seagrass Restoration Exhibit, a dedicated visitor experience centre. This comprehensive approach will foster a deeper understanding and appreciation of seagrass ecosystems while driving forward the scientific advancements necessary for their restoration.

d) Other

To build capacity for future delivery, we need to create opportunities for learning and development in ecosystem restoration across educational and professional sectors. While several UK universities offer short courses, modules, or master's programs focusing on land and ecological restoration, none currently include marine restoration. Through this Plan SNC will identify and outline the skills required for individuals to be employable in future restoration projects and deliver advice to Welsh skills development projects to increase skill development and uptake of paid roles from coastal communities.

Although this is not a direct action of the Plan, the SNC will, through its academic and NGO members, advocate for the adoption of certified Ecosystem Restoration courses and programs at academic institutions, reviewed by the Society for Ecological Restoration (SER). For reference, see the Restoration Resource Center Academic Program Directory.

To meet designated restoration targets, seagrass restoration processes and practices need to be scaled up. Mechanisation of restoration work is crucial for this capacity building. Project Seagrass is currently in the research and development phase to mechanise seed collection, sorting, and planting. Additionally, efforts are being made to improve the efficiency and effectiveness of seed storage and the technology used in habitat mapping at the seagrass nursery in Wales. Support is required through endorsement and financing for the ongoing operations as the seagrass nursery which will be a restoration centre of excellence.

Table 8: Summary of reversing loss Actions

Output	Action	When	Lead
Double seagrass extent in Wales by 2050	Recovery and restoration from 886ha in 2024 to 1772ha in 2050 Protection of existing seagrass leading to natural increases in seagrass extent and condition. Seagrass planted across 500 ha of seabed utilising wild harvest and nursery seed stock (24 million seeds)	Work begins year 1	SNC to coordinate targeted action from members
Recovery of 266 hectares of seagrass by 2030	Protection, and reduction of threats leading to improvements in seagrass condition from 'poor' to 'good' status (using the traffic light system developed in Australia for the Great Barrier Reef Seagrass Monitoring programme). Restoration action plans conducted to aid connectivity and seed dispersal for self-recovery. Targeted re-seeding of degraded seagrass areas and prioritised restoration areas.	Years 2+	SNC to coordinate targeted action
Stakeholders engaged in restoration project planning from the outset	Local knowledge integrated into all restoration planning, Standardised protocols for engaging with local stakeholders	Year 1	SNC coordination
Wales is a global research and scientific hub for seagrass restoration	Build/develop a Centre of Excellence for Seagrass Restoration	Year 1+	Project Seagrass
Welsh organisations included as Certified Ecological Restoration Practitioner (CERP) Program	Ensure all restoration conforms to guidelines set out by SER.	Years 2+	SNC coordinated
Upscaled restoration processes that are fit for purpose	Mechanise seed collection, seed sorting, and seed planting procedures. Engage technologies to facilitate site selection for conducting restoration at scale e.g. remote sensing	Years 1-3	Project Seagrass

6. Cross cutting themes

There are a series of cross-cutting themes which are needed to help deliver the actions outlined in section 4 above and ensure effective implementation of the Plan. These cross-cutting programmes of work include:

1. Community engagement
2. Coordination
3. Funding mechanisms

6.1. Community engagement

Generally, societal awareness of the value of seagrass habitats in Wales is limited, except in some coastal areas where current projects exist. The decline of seagrass habitats is accompanied by a diminished local awareness of their historical extent and ecological value, which undermines local protection efforts. The interdependence between the environment and communities necessitates consultation, collective decision-making, and collaboration to engage key stakeholders and communities in restoration work, monitoring, and protection. This need for engagement aligns with recent changes in the Welsh National Curriculum, which now emphasizes local learning and requires more locally focused educational content.

The Plan proposes two main areas of work under community engagement that are integral to delivering the priority action areas: raising awareness and building capacity. These initiatives will enhance understanding and involvement in seagrass conservation, fostering a community committed to protecting and restoring these vital habitats.

a) Awareness raising

SNC members have developed a diverse range of seagrass educational materials, suitable for both school curriculums and the general public. However, staff time is essential to extend outreach activities and distribute these materials more widely.

At sites where seagrass has been identified, we will engage with local communities and schools to disseminate information and promote the use of these education packs. We plan to collaborate with other organizations involved in local conservation education, such as the Wildlife Trusts and the National Trust, to integrate seagrass components into their existing programs. This may involve training outreach officers to effectively convey seagrass-related content.

Our efforts will also target key stakeholders who use coastal environments, emphasizing the importance and protection needs of seagrass. In areas where active restoration is planned, a comprehensive stakeholder engagement program will be implemented to garner support and participation in project design and delivery. Once protection and restoration initiatives are underway, we will maintain engagement through volunteer programs focused on monitoring and restoration activities.

Our existing work with young people Seagrass Ocean Rescue Champions has demonstrated that seagrass volunteering fosters learning, skill development, confidence, and interest in environmental careers. By continuing and expanding these efforts, we aim to build a well-informed and actively involved community dedicated to seagrass conservation

We also need to provide educational materials and training to partnerships working inland in target catchments identified in section 5.2. New materials will need to be co-developed that

focus on the linkages between land, river and sea and the importance of good water quality for the health of the catchment, particularly downstream habitats, where pollutants accumulate.

We will work with other existing networks, such as The Wales Coasts and Seas Partnership (CaSP Cymru) where stakeholders are working to improve marine resilience in Wales and support the co-development of a broad ocean literacy strategy including seagrass systems.

b) Capacity Building

Our seagrass conservation capacity building efforts to date have yielded significant successes, presenting numerous opportunities for scaling up. For instance, the Project Seagrass *SeagrassSpotter* citizen science initiative has effectively engaged the community, leading to increased data collection on seagrass extent and health. We aim to maintain and replicate these activities while building capacity in water quality monitoring. This approach feeds into coalition building with local communities, essential for the long-term sustainability of our projects.

- Maintaining existing activities: Sustaining ongoing projects like *SeagrassSpotter* to ensure continuous seagrass extent data collection and community involvement.

- Monitoring and App upgrades: Updating the existing *SeagrassSpotter* app. integrating a broader seagrass monitoring program with the app to streamline data collection and improve efficiency.

- Replication of activities: Expanding successful models to new locations.

- Water quality: Building local skills in water quality monitoring

- Coalition building land to sea**:** Coordinating capacity building activities across different stakeholders, such as landowners, fishermen, and farmers, to ensure cohesive action and knowledge sharing for example on water quality.

- *SeaRangers* initiative: This social enterprise program, recently launched in Wales, trains young people in marine environment tasks, providing upskilling and paid positions.

- Local community upskilling: Upskilling local companies and individuals through training and direct work with local boat yards, for example building and maintaining alternative mooring systems. This initiative not only creates jobs but also ensures the sustainable management of marine environments

- Volunteering opportunities around restoration activities are abundant. Volunteers can engage in survey work, seed picking, preparation, bag filling, planting, and monitoring. Additionally, activities such as summer camps, events, and talks provide educational and engagement opportunities, fostering a community dedicated to seagrass conservation.

6.2. Coordination

A dedicated Coordinator role is essential for effectively driving the delivery of the Plan. Governance structures are needed to support this role, ensuring a delivery-focused approach that clearly defines who is responsible and how the initiatives are driven. There is a potential need for a secretariat, ideally situated within an organization like NRW, SNC, or Project Seagrass, to avoid reliance on external entities. The Plan coordinator will focus on coalition building, integrating existing work and reports, and enhancing knowledge and mapping. Additionally, connecting stakeholders along the coast through initiatives like the Sustainable Farming Scheme will be vital.

Effective project management is key, encompassing the coordination of delivery, meetings, and reporting. It is proposed that one full-time Project Manager be appointed, along with a part-time Finance Officer to manage project finances and explore new funding options. Support from a part-time GIS specialist would be crucial for mapping work, ensuring all geographic data is accurately represented and utilized in decision-making processes. This coordinated approach will facilitate the successful execution and scaling of our conservation activities.

6.3. Funding

To date, most seagrass restoration projects in the UK have been supported by public and/or philanthropic funding. Funding has enabled restoration practitioners to trial different methodologies and engage local communities in projects, enhancing ocean literacy and inspiring ocean stewardship throughout Wales.

There is recognition however that public and philanthropic funding will not be sufficient to reverse past declines in coastal and marine biodiversity. Globally, there is an estimated financing gap of US $149.02 billion per year to deliver Sustainable Development Goal 14 (Life Below Water; UN 2014). This gap in funding, coupled with an increasing recognition of the benefits marine and coastal ecosystems provide to society, has encouraged some nations to consider innovative financing mechanisms that encourage private-sector investment in the recovery of our coastal and marine systems.

Seagrass, and the ongoing scientific, restorative and monitoring work of SNC members provides an attractive platform from which funding for delivery of the Plan can be sought. A coordinated NSAP, endorsed by Welsh Government with some financial commitment will boost opportunities to scale the work outline in the Plan.

Other potential areas of investment may come from, for example, Offshore Renewable Energy companies, Water companies, philanthropic donors, corporate donors/investors, Marine Fund Cymru (tbc), and emerging natural capital markets.

Within the UK, stakeholders across the four nations have fed into the development of a roadmap towards high-integrity marine natural capital markets (Crown Estate, 2024). The roadmap reflects the breadth of work underway to advance marine natural capital markets in the UK and identifies actions to help overcome initial barriers to market development.

Different stakeholder groups and organisations are identified as key delivery partners against each action, with roles across government, academia, the private sector, as well as third sector organisations such as community groups and non-governmental organisations. Collective action is needed to ensure that funding flows towards the protection and restoration of ecosystems whilst delivering for both people and nature, delivering benefits to local communities and ensuring projects align with wider environmental and social commitments.

Table 9: Summary of the barriers and recommendations identified by stakeholders to enable the development of high-integrity marine natural capital markets in the UK. Each recommendation contains several actions that require input from different stakeholders. For more detail on the specific actions please refer to the full report, available here: https://www.thecrownestate.co.uk/sustainability/case-study-high-integrity-marine-natural-capital-markets

Barrier	Recommendation
Lack of consensus on prioritisation and target areas for habitat conservation and restoration	1. Identify priority opportunities for marine and coastal conservation and restoration
Limited track record of pilot projects to prove efficacy of restoration methods, revenue streams and the business case for marine and coastal ecosystem services	2. Deliver seascape-scale natural capital projects through combined public and private funding
Lack of demand drivers and obligations to pay for marine ecosystem services	3. Implement policy and regulatory requirements to drive demand for marine natural capital
Nascent and fragmented nature of existing codes and insufficient funding for their development	4. Accelerate the development of UK-wide codes for ecosystem services
Key data and evidence gaps including extent and condition of habitats, impacts of human activities and benefits from ecosystem services	5. Address critical evidence gaps for the development of marine natural capital markets
Data is held in multiple overlapping depositories, is often poorly managed and organised and can be of varying quality	6. Develop publicly accessible and standardised approaches to data collection, hosting and monitoring
There is currently a shortage of key skills and knowledge to deliver marine natural capital projects and at scale	7. Build the necessary skills and capacity to harness marine natural capital opportunities

A number of the recommendations to deliver high-integrity marine natural capital markets in the UK are relevant to a NSAP in Wales, namely: 1) identifying priority opportunities for marine and coastal conservation and restoration; and 2) delivering seascape-scape natural capital projects through combined public and private funding. By developing larger scale projects that cover multiple habitat types this work can help demonstrate the feasibility of different marine natural capital projects and help to demonstrate scalability to future investors. The data and evidence collected in these seascape-scale projects can then be used to support refinement of policy and regulation relating to natural capital markets, help inform the development of codes for ecosystem services (e.g., carbon sequestration, nutrient cycling, flood risk management) and address critical evidence gaps.

Piloting natural capital projects in Wales is critical to building the local evidence base. Having a Welsh-specific evidence base will help ensure that any codes developed for different ecosystem services are geographically suitable for Wales and enable those codes to be applied at a time where there is clear guidance on natural capital approaches for Wales.

Pilot natural capital projects will also enable us to test community engagement and benefit-sharing approaches within a project, helping to ensure that any future markets deliver for nature as well as local communities in Wales.

In order to develop pilot natural capital projects, support is needed to convene project developers and natural capital experts in order to develop robust restoration plans and investment cases. Once a seascape-scale natural capital project has been scoped out, grant opportunities combining public, philanthropic and private finance can be sought.

The following actions are recommended:

- Actions in Year 1: Develop a seascape-scale restoration plan for one area where active seagrass restoration is already identified as a priority. Funding will be used to bring together different project developers looking to restore other habitats (e.g., saltmarsh, native oysters) within the region and to develop a seascape-scale restoration plan.

- Actions in Year 2: Develop business cases for different components of the seascape-scale restoration plan, drawing in professional advice on the data and monitoring needs for investment, as well as the different legal and financial considerations for projects looking to market environmental benefits.

- Action in Year 3-5: Deliver the seascape-scale restoration plan through a combination of public and private grant funding, with on-going monitoring of the restoration sites on a range of ecosystem service benefits.

7. Plan delivery: staffing and structure

Establishing effective coordination for our seagrass conservation efforts may involve creating a standalone entity or integrating the role within an existing organization. There is a strong desire for the staffing to sit with NRW; if this is not feasible, a delivery partner should be considered. Understanding if NRW can host staff is a critical next step.

An agreement has been reached on the initial staffing requirements, which include one full-time Project Manager and one part-time Finance Officer. These roles will be responsible for secretariat duties, coordination, funding scoping, and mapping in the first year.

In the second year, additional staffing needs are anticipated, such as a Communications Officer and a Programme Officer. The justification for these roles includes the increased need for effective communication and expanded program management as the project scales.

Coordination costs will include quarterly online meetings and at least one in-person meeting per year, along with overheads and additional expenses such as workshop facilitation.

Effective governance structures must be established to oversee these efforts, ensuring strategic alignment and accountability throughout the plan’s lifecycle.

8. Plan Costing

This document outlines a long-term plan for the recovery of seagrass systems in Wales. Coordination and baseline assessments are required in year 1, with subsequent scoping and activity scaled in years 2-5, restoration efforts redoubled to meet 2030 targets beyond which monitoring and scaling will continue to 2050. A five-year national action programme will begin the process of addressing the ambition.

A core funded Plan providing a central hub to direct activity in a coordinated manner is essential. The core-funded Plan will help give other funders and funding mechanisms confidence that investment is contributing to endorsed national priorities within a strategic coordinated programme.

The initial five-year Plan would benefit from significant investment by Welsh Government to allow development of Plan actions to be delivered with this match funding in place. An annual capital investment of £1,000,000 and supporting revenue expenditure for key positions as outlined in the table below is required to fully deliver this Plan.

Furthermore, additional funding will be pursued through a phased approach for project initiatives. The strategy includes mechanisms for the SNC to capitalize on emerging funding opportunities, thereby ensuring flexibility in funding acquisition and utilization. Projects offering co-funding from the Welsh Government will bolster confidence among other funders, fostering greater support for nationally coordinated efforts aimed at maximizing habitat recovery.

Activity	**Year 1 £K**	**Year 2 £K TBC**	**Year 3 £K TBC**	**Year 4 £K TBC**	**Year 5 £K TBC**
Coordination and staffing	170	282	294	302	308
Priority areas of action					
Mapping and knowledge	224	500	500	230	200
Coalition Building across land and sea	200	200	200	200	200
Halting seagrass loss	316	576	574	274	276
Reversing seagrass loss	2,000	2,000	1,000	1,000	1,000
Total	**2,910**	**3,558**	**2,568**	**2,006**	**1,984**

9. Plan progress and development

Review and Reporting
Within three months of the end of year one the Plan Project Manager will report on delivery of year one objectives and against priority areas and cross cutting themes. Within six months of the end of year one the Project Manager will report on and provide access to completed baseline maps and standardised protocols for use in delivering the long-term objectives of the Plan. Annual reporting will be delivered in this way focusing on targeted objectives, priority areas and cross cutting themes.

Monitoring and Evaluation
Monitoring is needed to evaluate progress towards achieving the project outcomes and to assess and where necessary modify the range of techniques and delivery mechanisms employed. Monitoring data are also required to feed into a range of wider reporting obligations which satisfy compliance requirements and also policy monitoring and development, including State of Natural Resources Reporting, Natural Capital Accounting, Article 17 and protected sites reporting.

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