

# RESTORING THE SEA

The role of marine spatial planning

EDS Oceans Reform Project Working Paper 1



Environmental  
Defence  
Society

Raewyn Peart, Deidre Koolen-Bourke and Salif Sidibe



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First published December 2024

Published by:

Environmental Defence Society Incorporated

P O Box 91736 Victoria St West

Auckland 1142

Phone (09) 302 2972

[manager@eds.org.nz](mailto:manager@eds.org.nz)

[www.eds.org.nz](http://www.eds.org.nz)

[www.environmentguide.org.nz](http://www.environmentguide.org.nz)

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Front cover image: Tiritiri Matangi

Other images: Raewyn Peart unless otherwise stated

Design and artwork: Neale Wills, Wilsy Design and Production Ltd.

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## List of abbreviations

<b>EDS</b>	Environmental Defence Society
<b>DOC</b>	Department of Conservation
<b>Fiordland Marine Area</b>	Fiordland (Te Moana o Atawhenua) Marine Area
<b>Fisheries NZ</b>	Fisheries New Zealand
<b>Forest and Bird</b>	Royal Forest and Bird Protection Society of New Zealand
<b>Kaikōura Marine Area</b>	Te Whata Kai o Rakihouia i Te Tai o Marokura - Kaikōura Marine Area
<b>MFE</b>	Ministry for the Environment
<b>MPA</b>	Marine protected area
<b>MPI</b>	Ministry for Primary Industries
<b>MSP</b>	Marine spatial planning
<b>Ngāti Kuta</b>	Ngāti Kuta ki Te Rawhiti
<b>Pou Rāhui</b>	Pou Rāhui, Pou Tikanga, Pou Oranga: Reigniting the mauri of Tikapa Moana and Te Moananui-ā-Toi project
<b>RMA</b>	Resource Management Act 1991
<b>Sea Change</b>	Sea Change Tai Timu Tai Pari
<b>Sea Change Plan</b>	Hauraki Gulf Marine Spatial Plan
<b>Sustainable Seas</b>	Sustainable Seas National Science Challenge
<b>SWG</b>	Stakeholder Working Group
<b>Te Korowai</b>	Te Korowai o Te Tai o Marokura
<b>Treaty</b>	Te Tiriti o Waitangi/Treaty of Waitangi

## **Acknowledgements**

EDS would like to thank the financial supporters of this work which are the Michael and Suzanne Borrin Foundation and the Ministry for the Environment. We would also like to thank Professor Kura Paul-Burke for her contributions and all those who gave their time to be interviewed and share their knowledge and insights with us. Due to the confidential nature of the interviews we have not specifically identified those we have spoken to.



# 1 Introduction



*Recreational fishing in a Coromandel mussel farm*

Aotearoa New Zealand faces considerable challenges in managing its oceans well. Not only are they very large, spanning some 4 million km<sup>2</sup> (15 times the land area), they contain much of importance. The oceans support the large bulk of the country's wildlife (an estimated 85 per cent), comprising a wide variety of species, living across a very diverse range of habitats. Over half of the some 17,000 reported marine species are endemic. Many are yet to be discovered.<sup>1</sup>

"A 2008 global study on known marine wildlife found that New Zealand ranked the highest in the world for our proportion of native species. This is because of the isolation of Australia and New Zealand, which separated from other land masses about 83 million years ago."<sup>2</sup> (Department of Conservation)

The oceans support the harvesting and farming of food, the movement of goods and people, and coastal tourism. They could potentially generate much needed renewable power. There is also a wealth of minerals on the seabed including phosphate and manganese nodules, massive sulphides, cobalt crusts and methane hydrates.<sup>3</sup>

Because of these potentially significant economic opportunities, other non-market values can be easily overlooked. The oceans have high recreational value. But it is also critical to recognise the enormous cultural importance

of the oceans to Māori who whakapapa back to Tangaroa and Hinemoana (male and female deities of the sea) and their respective children (all marine species).<sup>4</sup> Many non-Māori also have deep spiritual and cultural relationships with the sea.

Other non-use values include benefits from knowing certain species and habitats exist, the desire to bequeath them to future generations, and a willingness to pay to preserve them in the broader public interest. Many people, for example, obtain value from knowing that Māui and Hector's dolphins are safeguarded for future generations despite never personally seeing them in the wild.<sup>5</sup> It has been estimated that recreational, cultural and other non-use values comprise almost half the total economic benefits derived from the sea.<sup>6</sup>

Although often perceived as wild and untouched, the oceans are experiencing more profound impacts from human activity, than anything on land. Absorbing most of the excess heat and much carbon dioxide from carbon emissions, the oceans are rapidly warming, rising and acidifying.<sup>7</sup> Located closer to human populations, it is the coastal ecosystems that are degrading the most, due to the multiple pressures from activities on land and sea that we are placing on them.<sup>8</sup>

Whatever perspective one has, it is clear we need to better look after our oceans, given their importance to us all. Achieving this is the focus of the Environmental Defence Society's (EDS) Oceans Reform Project.

This working paper is the first output of Phase 2 of the project. Its focus is on integrated, place-based marine planning, which is more commonly termed marine spatial planning (MSP). It follows on from Phase 1 which reviewed the current oceans management system, considered how the management toolkit might be improved, explored the design of oceans-related laws and institutions, and pondered what a new model might look like. The results of that work were published, in 2022, in 'The Breaking Wave' report.<sup>9</sup>

Phase 2 of the project is developing more tangible propositions for change. This first working paper explores experience with, and the potential applicability of, MSP to Aotearoa New Zealand's marine areas. It then presents initial proposals for a National MSP Framework. Working Paper 2, to be produced early next year, will focus on the development of new marine protection area legislation. The final report (due in mid-2025) will bring together, and further develop and refine, these analyses as well as explore national integrative mechanisms such as an Oceans Commission, Oceans Act and National Oceans Strategy.

At the same time as preparing the working papers we are undertaking three place-based case studies of marine management. The first is focused on the Marlborough Sounds and it will be followed by case studies on the Otago and Northland coasts.

In Chapter 2 of this working paper we investigate the concept of MSP, and its relationship with other approaches, such as ecosystem-based management and marine restoration. We also explore what climate change might mean for future marine planning approaches.

In Chapter 3 we review the Sea Change Tai Timu Tai Pari project (Sea Change) in the Hauraki Gulf, which was the first fully integrated MSP process in the country, incorporating both catchments and the sea. In Chapter 4 we describe several other marine place-based planning processes around the country. In Chapters 5 and 6 we describe a range of marine protection and active marine restoration initiatives respectively.

## Endnotes

- 1 <https://www.doc.govt.nz/nature/habitats/marine/new-zealands-marine-biodiversity/#:-:text=We%20have%3A,stars%20and%20other%20spiny%20creatures>
- 2 Ibid
- 3 Brake L and R Peart, 2015, *Sustainable seas: Managing the marine environment*, Environmental Defence Society, Auckland, at 254
- 4 Paul-Burke K, 2015, *An investigation into marine management of taonga species in Aotearoa New Zealand: A case study of kutai, Perna canaliculus, green-lipped mussels in Ohiwa harbour*, PhD thesis, Te Whare Wananga o Awanuiarangi
- 5 Yeoman R, D Fairgray and B Lin, 2019, *Measuring New Zealand's blue economy*, Market Economics Consulting, Auckland, at 41

These case studies focus on marine-based projects but the importance of catchment based initiatives should not be overlooked in the context of MSP.

In Chapter 7 we explore the extent to which MSP might help address current challenges in Aotearoa New Zealand's oceans management system. Finally, in Chapter 8, we present several options for a new National MSP Framework. These are designed to promote constructive discussion over coming months so we can further refine our recommendations in the final report.

## A spotlight on terminology

In this paper we have used the term 'marine spatial planning'. This is the term that is well recognised internationally, for strategic marine planning, as well as in Aotearoa New Zealand. However, we are not certain this term best describes the kind of ecosystem- and place-based marine planning that we explore in this working paper. In some people's minds 'spatial planning' connotes a process that divvies up and allocates marine space for private use.

A better term could be 'marine ecosystem planning' which emphasises that the focus of the exercise is (foremost) marine ecosystem health rather than use, which is provided for, but within an ecosystem framework. Alternatively, a suitable Māori term for the planning process could be 'mahere moana' which simply means 'to plan for the ocean'.

For clarity of communication we use the term marine spatial planning (or MSP) in this working paper but suggest that Aotearoa New Zealand could adopt a suitable indigenous term (such as Mahere Moana) for the roll out of a new marine planning framework to highlight its innovative and bi-cultural characteristics

- 6 Ibid, at 43-44
- 7 World Meteorological Organization, 2024, *State of the global climate 2023*, World Meteorological Organization, Geneva, at 5-10
- 8 See for example Hauraki Gulf Forum, 2023, *State of our Gulf 2023*, Hauraki Gulf Forum, Auckland
- 9 Severinsen G, R Peart, B Rollinson, T Turner and P Parson, 2022, *The breaking wave: Oceans reform in Aotearoa New Zealand*, Environmental Defence Society, Auckland

## 2 What is marine spatial planning?



*People enjoying Point Chevalier Beach in the inner Waitematā Harbour*

“MSP is a strategic, practical, and internationally recognised process to ensure society benefits from the ocean while protecting the marine environment.”<sup>1</sup> (Dalhousie University)

businesses, the community and the environment. A key strength of MSP is that it can cross the land-sea divide and provide an integrated planning focus on both land and marine based impacts on the marine environment.

MSP applies an integrated and strategic approach to planning for a marine space in order to address key management challenges. Such challenges might include environmental degradation, impacts of climate change, conflicts between existing uses, or the desire to expand existing or support new uses in the marine space. MSP is a broad concept rather than a definitive approach. It has been applied in very different ways in different places. It can include spatial delineation and allocation of marine space (reflecting ‘spatial’ in the title). But it can also incorporate an integrated and interconnected ‘systems approach’ to marine management. A strength of the concept is that it can be tailored for different localities, socio-economic contexts and marine management challenges.

“Spatial planning means that society’s various goals have to be integrated into a sustainable whole, where the spatial context is made visible and determined in a planning document.”<sup>2</sup> (Swedish Agency for Marine and Water Management)

Such a strategic and integrated approach can provide many benefits: it can bring Māori, stakeholders and community members together to work collaboratively towards a common vision; it can build stronger relationships and synergies between management agencies; it can focus efforts on the things that matter; it can bring together and apply scientific research and multiple forms of knowledge; it can use existing resources more effectively and leverage additional resources; it can provide for new uses in a sustainable manner; and it can provide more certainty for



*Multiple uses of the marine area at Port Taranaki*

MSP emerged internationally during the 1990s and has since become commonplace. UNESCO's 2024 'State of the Ocean' report records that 126 countries and territories now have MSP initiatives in place.<sup>3</sup> This is a 20 per cent increase on the previous year, indicating how the adoption of MSP is accelerating globally. The widespread uptake of MSP means there is a rich body of experience in applying the approach to diverse contexts.

### Spotlight on Sustainable Oceans Plans

A related concept to MSP is the development of 'Sustainable Oceans Plans' which are being promoted by the High Level Panel for a Sustainable Ocean Economy (a grouping of 19 national leaders seeking to build momentum towards a sustainable ocean economy).<sup>4</sup> Sustainable Ocean Plans are developed at the national level and aim to "advance long-term economic and social development, while simultaneously promoting the health of marine ecosystems".<sup>5</sup> They can provide a useful national planning framework for regional and local level MSP processes. Aotearoa New Zealand is not currently a member of the Panel. Australia is a member and the federal government is currently developing a Sustainable Oceans Plan.

## 2.1 Key characteristics of MSP

UNESCO's 2009 step-by-step guide identified six key characteristics of MSP, highlighting that it is forward-looking and strategic, responsive to change, integrative, participative, and underpinned by concern for the health of ecosystems at place. Although now 15 years old, the approach is still broadly reflected in current conceptions of MSP. In 2024, the Sustainable Seas National Science Challenge (Sustainable Seas) distilled its guidance on MSP, drawing on ten years of research (see spotlight below). This indicates that MSP should be undertaken at local and regional scales, address cumulative stressors, and inform the allocation of marine space for economic activities (or the 'blue economy').

### Spotlight on key elements of MSP

An early conception of MSP, as set out by Ehler and Douvère in UNESCO's formative 2009 guide, has six key characteristics:<sup>6</sup>

- a) *Ecosystem-based* to enable the continuing maintenance of ecosystem structure and functioning. It recognises that ecosystems are dynamic, changing and sometimes poorly understood.

- b) *Integrated* across sectors and agencies and among levels of government, to address silos, facilitate coherence and integration, and support mutually reinforcing decisions and action.
- c) *Place-based* focusing on a specific ecosystem and the range of human activities affecting it. This ensures planning and management is tailored to the specific local context, values, pressures, information and needs.
- d) *Adaptive* to ensure a responsive framework able to address emerging issues, operate in a constantly changing environment, and incorporate new data, learnings and information.
- e) *Strategic and anticipatory* to focus on the long-term, respond to upcoming challenges, and ensure strategic thinking, funding and planning.
- f) *Participatory* so that stakeholders and local communities are actively involved to reduce conflicts and increase acceptance, trust and the legitimacy of the framework.

Sustainable Seas 2024 guidance on MSP recommends that it is:<sup>7</sup>

- a) Applied at small (eg rohe moana scale) and regional (Hauraki Gulf, Kaikōura) scales
- b) Underpinned by *participatory processes* that are accessible to all relevant parties
- c) *Evidence-based* but not stalled by lack of 'perfect' data
- d) Used to enable decision-makers to consider and integrate *multiple and cumulative stressors* into spatial planning
- e) Informed by *ecosystem-based management* principles and integrated across multiple activities and stressors
- f) Used to consider *ecological scales* that may cross management or legislative area-based boundaries
- g) Used to inform the *allocation* of marine space to support economic development opportunities that uphold blue economy principles.

Both approaches reference the application of an ecosystem-based approach. Ecosystem-based management has been defined as "an integrated approach to management that considers the entire ecosystem,

including humans” the goal of which is “to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need”.<sup>8</sup> It can be distinguished from approaches that focus on a single species, sector, activity or concern. It enables multiple and cumulative impacts from different sectors to be considered in a more integrated and holistic way.

Sustainable Seas has defined marine ecosystem-based management as “a holistic and inclusive way to manage marine environments and the competing uses for, demands on, and ways that New Zealanders value them”.<sup>9</sup> It has fleshed out this definition with a series of principles.<sup>10</sup> There is considerable overlap between these and the six key elements of MSP identified by Ehler and Douvère above, but with some important differences. In particular, Sustainable Seas has included collaboration (not just participation), and has added co-governance, which is relevant in Aotearoa New Zealand in the context of Te Tiriti o Waitangi/Treaty of Waitangi (Treaty).

A key point to note is that MSP is not just about planning, with implementation of the plan being a key consideration. The need to facilitate implementation informs choices about the design of the planning process, who is to be involved, and the ultimate status of the plan (and whether it is statutory or not). We return to these issues later in the working paper.

## 2.2 MSP and marine restoration

“... ecological restoration is broadly being recognized as a main pillar of ocean management in aiming to reverse degradation trajectories of nature in peril.”<sup>11</sup> (Elisabetta Manea et al)

As the degradation of marine ecosystems has become more acute, there have been stronger calls to better integrate MSP with marine restoration. MSP has the potential to strengthen restoration efforts, through considering the big picture, and identifying connected restoration opportunities at seascape scale.

Through identifying inter-connected habitats suitable for both passive and active restoration, MSP can help ensure “their positive interactions mutually benefit each other to stabilize and even accelerate ecosystem recovery”.<sup>12</sup> Such a strategic restoration approach prioritises foundation species which can trigger further synergistic ecological interactions. MSP

can also help to link supply populations with recruitment areas (see spotlights below).

### Spotlight on marine foundation species

“Foundation species” are the ‘backbone’ of an ecosystem, providing structural habitat, food and protection for a range of other plants and animals.<sup>13</sup> In the marine space they include seagrass beds, kelp forests, bryozoan beds, salt marshes, shellfish beds and the like. They are crucial to restoration, as when the abundance of these species increases, it generates benefits for a wide range of other species thereby initiating positive chain reactions throughout the ecosystem. This can result in what is called a “facilitation cascade” which leads to more rapid restoration as a range of species recolonize the area.<sup>14</sup>

### Spotlight on reproductive connectivity

The importance of spatial planning identifying and enhancing reproductive ‘connectivity’ was highlighted in research undertaken on the contribution of the snapper population in the Cape Rodney to Okakari Point marine reserve to the wider snapper stock. The marine reserve which covered just 1.3 per cent of the study area (or 5.2 km<sup>2</sup>), contributed an estimated 10.6 per cent of the juvenile snapper population in the broader study area (comprising 398 km<sup>2</sup>). This supported earlier predictions that the reserve acts as a reproductive reservoir for the surrounding fished area.<sup>15</sup>

Lester et al (2020) argue that spatial planning for marine restoration, especially at scale, has the potential to deliver significant ecosystem benefits and drive much more effective restoration.<sup>16</sup> A restoration-focused approach to MSP also enables economies of scale to be achieved, and initiatives to be sited where they can deliver the most significant socio-economic benefits to water quality, fisheries, mahinga kai and climate change resilience.

MSP can help identify areas where restoration is likely to be more successful, where restoration projects can support each other, and where the benefits from restoration can be maximized.<sup>17</sup> This, in turn, can help accelerate the pace and scale of at which marine systems recover.

## 2.3 MSP and climate change

“Adapting to a changing ocean requires an entirely new way of thinking ... As climate change affects the ocean, the places where we need to ‘draw the lines’ in MSP will likely be different than they are now and will continue to change over time”.<sup>18</sup> (Santos et al)

Around 90 per cent of excess heat trapped by greenhouse gas emissions since 1971, has been absorbed by the oceans, along with roughly 25 per cent of anthropogenic carbon dioxide generated each year. The Southern Ocean, surrounding Antarctica, is the largest reservoir of heat on the planet. Marine heatwaves have become more frequent, intense and longer lasting. Ocean warming is now irreversible on centennial to millennial timescales.<sup>19</sup>

Sea temperatures in Aotearoa New Zealand are already rising, with a projected sea surface temperature warming of between 2.5 and 3 degrees by 2100.<sup>20</sup> Salt concentrations, the acidity of seawater, and wave frequency are now fluctuating. Changes in the intensity of rainfall and storm events are accelerating erosion, increasing sedimentation and threatening important fish habitats.<sup>21</sup>

These changes are already impacting marine organisms and ecosystems. Large shellfish beds are decreasing around the country.<sup>22</sup> An exceptional period of warm water in 2020 caused a mass die-off of thousands of mussels in Northland.<sup>23</sup> Another marine heatwave that hit Fiordland and the west coast of the South Island in 2022 saw sea temperatures 5 degrees hotter than usual, causing the mass bleaching of sponges.<sup>24</sup>

Shifts in species distribution and abundance are challenging fisheries management and will require a strengthened focus on protecting ecosystem integrity.<sup>25</sup> Warming waters are also challenging marine farmers. For example, the 2022 marine heat wave killed 40 per cent of the total salmon stock in the Sounds, leading to some 1,300 tonnes of dead fish being disposed of in landfill.<sup>26</sup> The Moana Project is now seeking to predict when heatwaves will affect the country's coastal and oceanic waters so that fishers and marine farmers have some advance warning.<sup>27</sup>

More severe storm events are also taking their toll. In 2023, Cyclone Gabrielle delivered vast amounts of freshwater, sediment and debris into the Hawkes Bay marine environment. Subsequent trawl surveys, undertaken to ascertain the likely impact of the cyclone on fisheries, found significant wood debris on important nursery sites for juvenile fish.<sup>28</sup>

Seawater warming is also likely to magnify the impacts of invasive species. Numbers of the sub-tropical long-spined sea urchin (*Centrostephanus rodgersii*) in the Poor Knights Island Marine Reserve have increased more than nine times over the past two decades with consequent threats to the rocky reef ecosystems.<sup>29</sup> The recent incursion of tropical and sub-tropical exotic *Caulerpa* species (*bracyopus* and *parvifolia*) in the Bay of Islands and Hauraki Gulf<sup>30</sup> has likely been assisted by seawater warming.

As well as impacting Māori seafood enterprises, climate change driven degradation and loss of indigenous ecosystems impact traditional cultural practices and mahinga kai. Many taonga species are vulnerable to increased ocean acidity and there is a potential for loss of systems of knowledge along with the species themselves.<sup>31</sup>

On the positive side, Aotearoa New Zealand's coastal and ocean areas are thought to have considerable potential to sequester more human-emitted carbon dioxide through the restoration of marine habitats (see spotlight) below.

“Managing and restoring marine ecosystems or creating new habitats could protect existing carbon stores and enhance natural carbon uptake. These actions can also help build resilience to climate change impacts such as sea-level rise, improve water quality and protect the habitats of birds, fish and other species.”<sup>32</sup> (First Emissions Reduction Plan)

### A spotlight on blue carbon

‘Blue carbon’ means the sequestration and storage of carbon by marine systems. ‘Coastal blue carbon’ refers to the carbon sequestration potential of plants rooted in the wet coastal zone such as mangroves, seagrasses and salt marshes. These are thought to be “some of the most carbon-rich ecosystems on Earth”.<sup>33</sup>

The soils of these plant-based coastal ecosystems are largely anaerobic, enabling carbon dioxide to be stored in them for hundreds or more years. Sequestration rates can be higher than terrestrial forests on a per hectare basis. However, if degraded or lost, these coastal systems release sequestered carbon back into the atmosphere.<sup>34</sup> This makes the ongoing care of remaining systems important.

In Aotearoa New Zealand it is estimated that up to 80 per cent of salt marsh areas have already been lost. This will likely increase with sea

level rise if such systems lack room to move inland.<sup>35</sup> A recent analysis identified 87,861 ha of 'carbon opportunity' on drained land in the coastal zone, with Waikato having the highest available area followed by Northland, Otago and the Bay of Plenty.<sup>36</sup> Work is currently underway on developing a blue carbon credit scheme in Aotearoa New Zealand with a focus on coastal wetlands.<sup>37</sup> Restoration of coastal plant systems also provides added biodiversity and climate adaptation co-benefits.

'Deep sea carbon' is less well recognised internationally but includes carbon sequestered in nearshore and offshore marine sediments through the deposition of organic matter. In particular, the Fiordland marine area is thought to bury "the largest amount of organic carbon per unit area in the world". This is due to plant material and soils from adjacent indigenous forest washing into the marine area, being contained by the fiords, and being rapidly buried in the sediments of the fiord basins.<sup>38</sup>

Rich seaweed beds adjacent to deep submarine canyons also provide potential for long-term carbon burial. However, the extent to which macroalgae actually provides carbon sequestration benefits is still an open scientific question.<sup>39</sup> In Aotearoa New Zealand, kelp carbon sequestration in the Kaikōura and Cook Strait canyon systems, which are located close to the coast, is currently being investigated.<sup>40</sup>

A recent study in the Hauraki Gulf investigated the carbon offsetting values of kelp forest, which was found to be 100 times more efficient in storing carbon than urchin barrens. It estimated that carbon standing stocks in kelp forests within the Hauraki Gulf Marine Park, if reforested, would be worth up to \$7.9 million based on the 2021 carbon price.<sup>41</sup> Such values help build the case for investing in kelp forest restoration.

Other potential methods to sequester more carbon in marine systems include giant seaweed farms, fertilising the oceans to promote algal blooms, and enhancing seawater alkalinity to promote faster absorption of atmospheric carbon dioxide.

It is important to appreciate that blue carbon is still an emerging and complex area, the science is very preliminary, and it is not yet clear where efforts (if any) are best deployed. In addition, the country lacks a "clear strategy for assessing risk and developing the most beneficial solutions".<sup>42</sup> MSP can help provide a framework for the application of blue carbon approaches at the local and regional levels, and in a way that can maximise co-benefits, while minimizing any dis-benefits.

In response to all these opportunities and challenges, emphasis is now being placed on integrating climate change considerations into ocean planning to ensure it is 'climate-smart'.<sup>43</sup> There are several approaches that can help MSP to be more responsive to climate change. 'Dynamic ocean management' uses near real-time data to adjust the boundaries of management areas in response to shifts in ocean resources and uses. Dynamic solutions are used for fisheries management in the United States (New England, California and Hawaii) and Australia, for marine mammal protection on the east coast of the United States and Canada, and for offshore aquaculture operations in Tasmania.<sup>44</sup>

'Anticipatory zoning' allocates areas for future ocean uses, or identifies areas where specific activities will be excluded in the future, in anticipation of climate change impacts. An example is preferred sand extraction zones which were established in the Netherlands to support the protection of low-lying coastline against sea level rise. A third 'climate-smart' planning approach more familiar in the Aotearoa New Zealand context, is 'adaptive management' or 'learning by doing', where actions and strategies are adjusted according to results. To be effective, this requires timely monitoring, evaluation and revision of management settings, something which is frequently missing from current planning approaches.<sup>45</sup>

MSP can also consider ways to support climate mitigation and adaptation. This can be through enhancing carbon sinks (through protecting and restoring blue carbon ecosystems), allocating space for renewable energy production, and supporting ecological resilience through protecting climate refugia and restoring marine habitat. In addition, MSP can help ensure that marine adaptation actions targeted at one sector are not maladaptive for others.<sup>46</sup>

"Resilience-based management reduces threats and identifies and prioritises management actions that protect and build [the natural system's] capacity to withstand and recover from disturbances."<sup>47</sup>  
(Great Barrier Reef Marine Park Authority)

MSP, as an integrated and strategic approach to marine planning, is now widely adopted internationally. It commonly incorporates ecosystem-based management approaches. More recently there have been calls to more strongly link MSP with marine restoration and climate change responses. In the context of Te Tiriti, the application of MSP requires a stronger cultural element in Aotearoa New Zealand than is commonly framed in other jurisdictions.

## Endnotes

- 1 <https://clearseas.org/insights/is-marine-spatial-planning-the-key-to-safer-and-healthier-oceans/>
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## 3 MSP in the Hauraki Gulf



*Recreational vessels at Tiritiri Matangi, Hauraki Gulf*

Sea Change is Aotearoa New Zealand's most prominent example of MSP. The project was initiated in 2013. In 2016 it culminated in the country's first fully integrated marine spatial plan: the Hauraki Gulf Marine Spatial Plan (Sea Change Plan).<sup>1</sup>

The Sea Change Plan was a significant achievement, encompassing more than 12,000 km<sup>2</sup> of marine space, which is the most highly utilised marine environment in the country. The greater Auckland region is home to more than 1.7 million people and the Hauraki Gulf is used extensively for boating, shipping, tourism and aquaculture as well as recreational, commercial and customary fishing. In addition, the country's most intensive dairy farming catchment (the Hauraki Plains) drains into the Gulf. This makes it one of the busiest and most contested marine spaces in the country.

One Auckland Council evaluation estimated that the Hauraki Gulf Marine Park generates more than \$2.7 billion in economic activity.<sup>2</sup> When the value of the ecosystem services it provides, is also taken into account, that figure rises to more than \$5 billion per annum. The total asset valuation of the Park sits somewhere between \$40 and \$100 billion.<sup>3</sup>

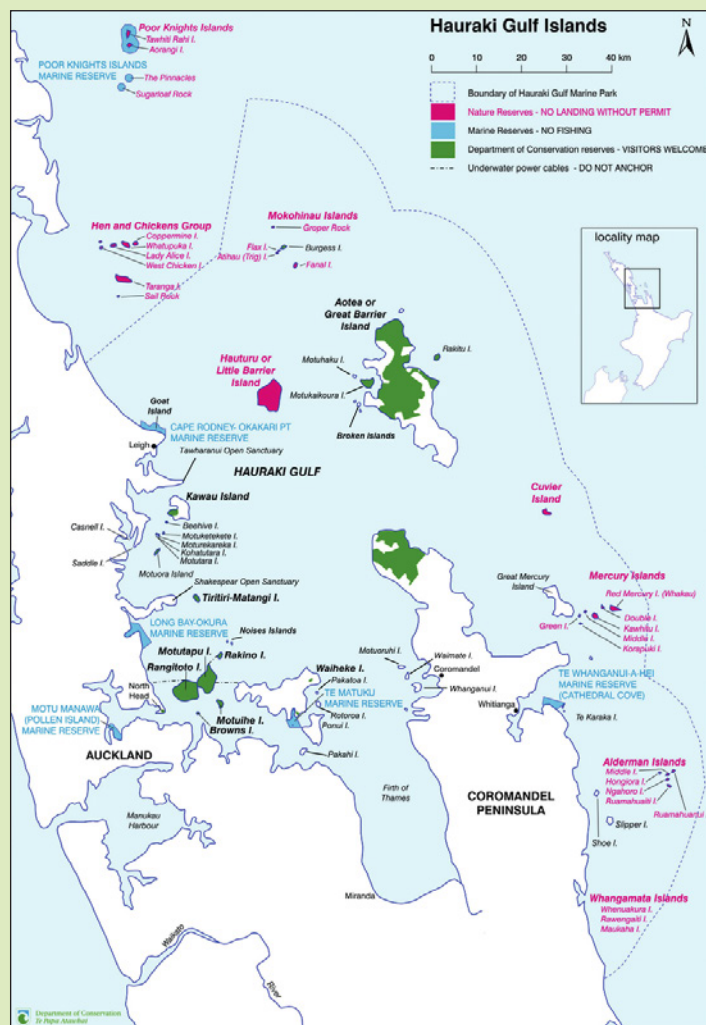
### 3.1 Historical context

The Hauraki Gulf has had a bespoke management approach dating back to the 1960s. The Hauraki Gulf Maritime Park was established in 1967, along with a Hauraki Gulf Maritime Park Board to manage the maritime park land. The Maritime Park comprised a network of islands and coastal reserve land. It was driven by concerns that sensitive coastal areas were being purchased by overseas interests leading to alienation from public use.<sup>4</sup> The model operated successfully for over twenty years, with the Board not only spearheading the first open sanctuary in the country (at Tiritiri Matangi),<sup>5</sup> but also championing the health of the Gulf more broadly.

The Maritime Park and Board were both disestablished in 1990, as part of the quango-busting policy of the Fourth Labour government, and efforts to rationalise the conservation system. DOC took over management of the coastal reserves. There were various attempts to fill the gap created by the demise of the Maritime Park. Bespoke legislation was finally passed, in 2000, in the form of the Hauraki Gulf Marine Park Act.

## Spotlight on the Hauraki Gulf Marine Park

The purpose of the Hauraki Gulf Marine Park Act is to provide for the integrated management of the natural, historic and physical resources of the Hauraki Gulf (including its islands and catchments), establish objectives for their management, and recognise the historic, traditional, cultural and spiritual relationship of tangata whenua with the Gulf.<sup>6</sup> The Act established the Hauraki Gulf Marine Park (which covers the entire eastern coastal area managed by Auckland Council and Waikato Regional Council – See Figure 3.1) and the Hauraki Gulf Forum.



**Figure 3.1 Hauraki Gulf Marine Park** (Source: Department of Conservation)

Representation on the Forum must include seven members from Auckland Council, one from Waikato Regional Council and four from specified local authorities in the Waikato area. There are also six tangata whenua representatives and the Ministers of Conservation, Fisheries and Māori Affairs each appoint a member.<sup>7</sup> This brings the total to 21. Local and central government parties are required to contribute to the Forum's operational costs,<sup>8</sup> ensuring base-line funding, and enabling the Forum to employ a full-time executive officer in 2007. Renumeration for tangata whenua representatives is also provided for.<sup>9</sup>

The Forum does not have any regulatory powers and it is prohibited from appearing before any court or tribunal, except if called by a party to proceedings, or from taking part in any statutory decision-making processes.<sup>10</sup> However, it does have a clear mandate to advocate for the integrated management of the Hauraki Gulf and it may commission research to support its work.<sup>11</sup> All “constituent parties”, including relevant local and central government agencies, are to supply information and reports as the Forum requires.<sup>12</sup> The Forum is also tasked with publishing a state of the environment report every three years.<sup>13</sup> These provisions have triggered increased sharing and communication of information amongst the parties.

Section 7 of the Act recognises the national importance of the Hauraki Gulf (including its islands and catchments) and of sustaining its “life-supporting capacity”. Section 8 sets guiding management objectives. These are focused on protection, and where appropriate, enhancement of the life-supporting capacity of the environment; of the natural, historic and physical resources of the Gulf; of the cultural and historic associations people and communities have with them; and of the Gulf's resources with which tangata whenua have a relationship.<sup>14</sup> These objectives are very broad and multi-faceted, and it is not made clear how conflicts between the various values and uses are to be resolved.

Together, sections 7 and 8 constitute a coastal policy statement under the Resource Management Act 1991 (RMA),<sup>15</sup> and statement of general policy under the Conservation Act 1987.<sup>16</sup> Regional councils and territorial authorities must ensure their relevant regional policy statements, and regional and district plans, do not conflict with them.<sup>17</sup> Consenting authorities must also “have regard” to the sections when considering resource consent applications.<sup>18</sup> However, largely because of their broad ambit, these provisions have not been effective in protecting the many important values of the Hauraki Gulf.

The establishment of the Hauraki Gulf Marine Park, along with the Hauraki Gulf Forum, created a valuable platform for Sea Change. It effectively gave the Gulf ‘a voice’. Significantly, from 2005, the triennial Hauraki Gulf state of environment reports started documenting the poor state of the Gulf. This helped raise awareness of the issues but proved insufficient to generate an effective response to the ongoing environmental degradation.<sup>19</sup>

In order to explore new approaches, that might be more effective, the Forum commissioned an international review of MSP. This culminated in the release of the ‘Spatial Planning for the Gulf’ report, in March 2011, which documented what MSP had achieved overseas and how it might be applied to the Gulf.<sup>20</sup> Then, in August 2011, the Forum released a groundbreaking State of the Gulf report.<sup>21</sup> For the first time, this compared the Gulf’s current environmental state to what it would have been like prior to European settlement. This was to overcome the ‘sliding baseline’ effect where a degraded state becomes the new norm or baseline.

The report brought to light the large-scale transformation and environmental degradation that had occurred over more than a century and which was still continuing. It very effectively communicated the dire state of the Gulf and was vigorously picked up by media.<sup>22</sup> The idea of applying MSP to the Hauraki Gulf started to gain political traction. Both the Hauraki Gulf Forum and EDS strongly promoted the idea to Auckland Council and Waikato Regional Council over succeeding months.

“This report highlights the incredible transformation the Gulf has undergone over two human lifespans ... It is inevitable that further loss of the Gulf’s natural assets will occur unless bold, sustained and innovative steps are taken ....”<sup>23</sup> (Hauraki Gulf Forum)

It took over two years to get political sign off for the project. Finally, in late 2013, Sea Change was jointly launched by the Hauraki Gulf Forum, Auckland Council and Waikato Regional Council. The two councils agreed to share the costs of the planning process. The Department of Conservation (DOC) and Ministry for Primary Industries (MPI) also came on board providing some additional funding and technical support.

### 3.2 Project structure and process

A detailed description and evaluation of Sea Change is contained in the 2018 EDS publication ‘Turning the Tide’.<sup>24</sup> We summarise key elements in

the sections below before reporting on our 2024 review of the project. A timeline of relevant dates for the project is set out in Figure 3.2

Date	Action
2000	Hauraki Gulf Marine Park Act 2000
2005	State of the Gulf Report 1
2008	State of the Gulf Report 2
2011	Spatial Planning for the Gulf: An international review of marine spatial planning initiatives and application to the Hauraki Gulf (Hauraki Gulf Forum report)
2011	State of the Gulf Report 3
2013 Feb	Project approved by Auckland and Waikato Councils
2013 Sept	Project Steering Group appointed and Project launched
2013 Nov	Stakeholder Working Group established
2014 Jan	‘Love our Gulf’ campaign launched, listening posts commenced
2014 July	Roundtables established, Independent Review Panel appointed, Hauraki Gulf 100+ meeting
2014 Aug	Love our Gulf campaign (#2)
2014 Oct	Mātauranga Māori Roundtable established, mana whenua engagement
2014 Nov	Hauraki 100+ meeting
2015 Feb	Roundtables reported back
2015 March	Second Independent Review Panel Report, Summary Report on public feedback
2015 May	<i>Project Pauses</i>
2015 Sept	Māori Representative Group established
2015 Oct	<i>Project resumes</i>

Date	Action
2016 Sept	Final report of the Independent Review Panel
2016 Nov	SWG handed over draft plan to Project Steering Group for approval
2016 Dec	Sea Change – Tai Timu Tai Pari Hauraki Gulf Marine Spatial Plan publicly released
2017	Auckland Council established Sea Change Political Reference Group
2018	Auditor and Controller-General performance audit
2019	Independent Sea Change Tai Timu Tai Pari Ministerial Advisory Group established
2021	Revitalising the Gulf: Government action on the Sea Change Plan released
2022	Hauraki Gulf Fisheries Plan Advisory Group and Benthic Spatial Planning Group established
2023	Hauraki Gulf Fisheries Plan approved
2023	Consultation on bottom fishing access zones in the Hauraki Gulf (trawl corridors)
2023	Hauraki Gulf/Tikapa Moana Marine Protection Bill introduced to the House

**Figure 3.2: Timeline of Sea Change** (brown shading indicates tasks undertaken as part of the Sea Change planning process)

The project structure of Sea Change comprised a complex array of entities (see Figure 3.3) designed to engage management agencies, tangata whenua, stakeholders and community members as well as ensure effective project management, oversight and technical robustness.

The project was launched in September 2013 with the first step being the establishment of the Stakeholder Working Group (SWG). To progress this, stakeholders were invited to two community meetings designed to socialise the project and discuss potential candidates for SWG membership. A third community meeting was held in November 2013 where SWG stakeholder membership was finalized. Four mana whenua representatives were selected at a separate hui to which 26 iwi and hapū were invited.



**Figure 3.3: Structure of Sea Change** (Source: Office of the Auditor General)<sup>25</sup>

The SWG first met in December 2013 and was given just 18 months to complete the Sea Change Plan, with a deadline of June 2015. The process was split into three, six-month phases: (1) engagement, listening and information collection (Jan – June 2014); (2) identification of solutions utilising Roundtables (July 2014 – December 2014); and (3) drafting and finalisation of the plan (January – June 2015). The precise methodology for plan development was left undefined to provide flexibility for the SWG to do its work. It was largely a ‘learning by doing’ approach.

There were concerted efforts to engage stakeholders and the broader public early on in the project. During the first six months, 25 two-hour ‘Listening Posts’ were held around the region canvassing community views and aspirations. A ‘Hauraki 100+’ forum was created, and convened on a 6 monthly basis, to enable those who had attended the preliminary SWG selection meetings to stay engaged with the project. Public input was also sought through public meetings, surveys and a ‘Love our Gulf’ campaign and website.

Phase 2 of the project began in July 2014, with the establishment of six issue specific Roundtables focusing on water quality and catchments, fish stocks, biodiversity and biosecurity, Gulf infrastructure, aquaculture and accessibility. These were tasked with investigating problems and

developing solutions over a six month timeframe. They reviewed existing information and held in-person sessions with scientists and other technical experts. The Roundtables also undertook fieldtrips to collectively view issues first hand.

A mātauranga Māori hui led to the formation of a mātauranga Māori working group, in August 2014, which was later formalized into a Mātauranga Māori Roundtable. A mana whenua engagement plan was developed, an online survey undertaken, and a series of seven hui convened between late 2014 and early 2015. This all meant that mechanisms to support the integration of mātauranga Māori and mana whenua perspectives into the plan were one of the last aspects of the process to be finalised.

Phase 2 of the project ran over time and into early 2015, with Roundtables reporting back to the SWG in February 2015. A summary report detailing the findings and insights drawn from public engagement was provided by the communications team in March. Pulling these threads together, SWG meetings in February and March centered on the framing and structure of the plan as well as its vision, goals and objectives. A dedicated writing team was also established.

As might be expected, some Roundtable issues were more complex than others, and the extent of agreement and progress varied. Discussion around marine protected areas was especially challenging, and although a draft list of prospective areas was compiled by the Roundtable, no consensus amongst SWG members was reached. In addition, mana whenua perspectives and mātauranga Māori had not yet been properly integrated into the draft plan. Many unresolved tensions and issues became apparent at this critical juncture and relationships became strained.

A preliminary draft plan was circulated for comment, in April 2015, followed by a decision to halt the project on request of mana whenua representatives. The project was paused for six months and underwent a strategic re-set. There was renewed commitment to integrate mātauranga Māori into the plan and to more closely connect mana whenua with the writing team. The Mātauranga Māori Roundtable evolved into an ongoing Mātauranga Māori Reference Group to support this work.

Work on the plan recommenced in October 2015 with a new project deadline of September 2016. However, there was limited resource to cover the extended project timeline. Communications and engagement processes were largely dropped and a decision was made by the Project

Steering Group not to release the draft plan for public consultation as originally planned.

The final plan was subsequently approved by the Project Steering Group and publicly released in December 2016. Both the SWG and Project Steering Group were disbanded at that point, and had no further role in supporting implementation. It was effectively left up to the various councils and government agencies to pick up the parts of the Sea Change Plan they saw value in.



*Water Quality and Catchments Roundtable field trip to the Hauraki Plains*

## Spotlight on content of Sea Change Plan

The Sea Change Plan is an aspirational document setting out an overarching vision and outcomes across four main kete or baskets:

1. *Application of a kaitiakitanga or guardianship approach*: This aims to involve communities, enhance the Gulf for future generations, and promote a sense of place, shared ownership and responsibility.
2. *Mahinga kai, pātaka kai or 'replenishing the food basket'*: This recognises the Gulf as a food basket and the need to balance protection and enhancement of food production capacity alongside other needs. Chapters dealing with fish stocks and aquaculture attach to this basket.
3. *Holistic ki uta ki tai management 'from mountains to sea'*: This kete acknowledges linkages between the terrestrial and marine environments. Chapters on biodiversity and water quality fall into this kete.
4. *Kotahitanga or 'prosperous communities'*: This seeks to enable collective goals and individual needs to be met. This kete links to chapters dealing with coastal infrastructure, transport, access and visitor management.

The Plan sets out more specific objectives and management actions to implement the goals. In total, 181 proposals are contained in the Plan. In terms of spatial allocation, the plan recommends 13 new aquaculture areas and 13 new marine protected areas, as well as an extension in size of two existing marine reserves. In addition, an extensive area is identified as being unsuitable for aquaculture due to its proximity to the Auckland metropolitan area where there are many potentially conflicting uses of the water space.

### 3.4 Plan implementation

As a non-statutory plan, and absent of any bespoke oversight or implementation agency, pathways for implementation of the Plan were always unclear. This has led to a varied and rather ad hoc approach by the various agencies.

Following the release of the Plan, Auckland Council's Planning Committee established the 'Sea Change Hauraki Gulf Political Reference Group' which reviewed how the Plan's objectives could be progressed through existing work programmes and incorporated into Auckland's Long Term Plan.<sup>26</sup>

This led to the approval of an initial work programme.<sup>27</sup> However, it is unclear the extent to which the Council's ongoing work programme is implementing the Sea Change Plan.

Waikato Regional Council also initiated an analysis phase that matched Sea Change themes against Council functions and activities. This led to the formulation of a draft implementation plan in June 2017 to inform the 2018 long term plan process. This also sought to connect Sea Change with the Waihou-Piako and Coromandel zone plans and the regional coastal plan (with a proposed plan notified in August 2023). Preparation of non-statutory harbour and catchment plans was also commenced in 2018 and 2019 providing another potential implementation mechanism. However, the extent of progress is difficult to determine in the absence of clear and separate reporting on Sea Change Plan implementation.

At the central government level, following the 2017 general election, there was renewed support from the new Minister for Conservation Green Party MP Eugenie Sage. Alongside the Minister of Fisheries, she established the Sea Change Tai Timu Tai Pari Ministerial Advisory Committee, in July 2019. A partnership model was adopted, with 50 per cent of members, including one of the co-chairs, being mana whenua. Two members had been part of the SWG providing some continuity. Members provided advice to officials and Ministers as a draft strategy was developed. Officials also engaged with key stakeholders and mana whenua.



Fish Stocks Roundtable field trip to Leigh Fisheries

The government released its response strategy 'Revitalising the Gulf' in June 2021.<sup>28</sup> This drove the development of the Hauraki Gulf Fisheries Plan (approved in August 2023), consultation on trawl corridors (in August 2023), and the introduction of the Hauraki Gulf / Tikapa Moana Marine Protection Bill (in August 2023) which is currently before the House. The latter extends the footprint of two existing marine reserves and establishes 12 'high protection areas' and five 'seafloor protection areas' increasing the amount of high protection areas from 0.3 to 6 per cent of the Hauraki Gulf Marine Park. The response also provided support for Ahu Moana pilots (see spotlight below). All these steps amount to tangible progress but, as noted by the Ministerial Advisory Committee, are a patchy and rather ad hoc approach to the integrated Sea Change Plan.<sup>29</sup>

### Spotlight on Ahu Moana pilot projects

One recommendation in the Sea Change Plan, that has considerable potential to support local restoration efforts, is Ahu Moana. This is a collaborative governance and power-sharing model, where mana whenua and the local community join together to manage fisheries and other activities within their inshore areas (from high tide out to 1 km).<sup>30</sup>

While providing the opportunity for local community involvement in coastal management, Ahu Moana are also intended to assist mana whenua to fulfil ancestral kaitiaki obligations ...<sup>31</sup>

In Revitalising the Gulf, government agreed to support piloting of the Ahu Moana approach in order to better understand its practical application. It plans to use existing fisheries tools to support the pilots, rather than devolving regulatory powers to Ahu Moana management bodies, as envisaged by Sea Change. Lessons from the pilots are to inform the development of an Ahu Moana Framework.<sup>32</sup>

Fisheries New Zealand (Fisheries NZ) is providing support for two pilots at Aotea Great Barrier Island (under the auspices of Ngāti Rehua Ngātiwai ki Aotea Trust and the Aotea Great Barrier Local Board) and Te Mata-Waipatukahu on the west coast of the Coromandel Peninsula (under the auspices of Ngāti Tamaterā) but progress has been slow.

For MPI, Ahu Moana is built on four main pillars: people, place, knowledge and action. This concept brings together mana whenua and the local community and uses their combined knowledge and skills to deliver shared goals in their local fisheries and environments.<sup>33</sup>

Efforts at Aotea have so far focused on community ecological monitoring at Katherine Bay and Schooner Bay to evaluate the current state of ecological health. By March 2024, a total of 15 survey dives had been undertaken in nine different locations. This has supported the development of "place-based ecological literacy", and initial discussions about management responses, which could potentially include seasonal closures for kōura (crayfish) harvesting during the breeding season.<sup>34</sup>

The project has become more complex, than initially envisaged, due to the invasion of Schooner Bay by exotic *Caulerpa* seaweed. Since September 2021, the area has been subject to a Controlled Area Notice under the Biosecurity Act 1993 which prohibits anchoring and stationery boat-based fishing.<sup>35</sup> This has effectively created a partial marine protected area, enabling some recovery, although shore-based fishing, drift fishing and hand gathering is still permitted.

The concept of Ahu Moana has much community support even if the practicalities of its implementation are still unclear. Many submissions on the Hauraki Gulf / Tikapa Moana Marine Protection Bill called for the mechanism to be added to the framework to enable joint iwi/hapū and community driven solutions at the local level to support restoration and protection work.

The most exciting innovation is Ahu Moana. It's a great model for restoration. Mana whenua have agency, its locally driven, its being widely embraced by communities. It shows a pathway forward that's practical, a starting point that can grow and then be joined up.<sup>36</sup>

### 3.5 Key insights

Eight years on from the completion of the Sea Change Plan we interviewed 17 stakeholders and experts to gather updated feedback and insights. Overall, these emphasised the enduring benefit the project has had in terms of building trust and generating enduring social networks. Interviewees cited the numerous iwi-led projects and iwi-community partnerships now operating, the local restoration initiatives that have arisen as a result of increased understanding of the state of the Gulf, and shared aspirations to make a difference. This continues to enhance relationships and connections at place:

Partnerships with mana whenua, who are tied to the Gulf through whakapapa, is so vital. It's been transformative because there is so

much passion and commitment. A degraded Gulf created deprivation. One thing the Plan has done is mobilise action, raised that momentum, joined mana whenua and communities.

MSP can help build partnerships between iwi, hapū and local communities and strengthen connections to place.

On a personal level, Sea Change participants continue to value the relationships gained and learning experience provided by the process. The ability to listen, to understand others' points of view and have challenging conversations, was identified as essential to the high degree of consensus achieved across stakeholders:

Sea Change completely changed my perspectives and preconceptions. It made me question things, understand the complexity. It's essential to keep fora like this going.

Interviewees said that the collaborative process provided them with a more nuanced appreciation of the pressures and constraints others were operating under and the diversity that existed within sector groups:

The heart to hearts we had made me so much aware of the bigger picture and policies people are forced to adhere to that make them behave like they do. Lovely people get hamstrung by the management, the policies in place.

I hear people call for fairness a lot, and people get labelled as the bad guys, but its more complex than that. It's our settings and policies that are to blame ... It's actually not working for anyone. Talk to the aquaculture guys about sedimentation and the control of things on land.

The diversity within fisheries isn't understood. Small scale operators are in it for the long haul, but everyone gets lumped together. I understand first-hand how difficult it is to come into these collaborative things and not be immediately on the defensive.

MSP can help build connections and relationships between different sectors that support other related initiatives.

However, there were difficulties obtaining genuine engagement and discussion with some sector groups, which may have been exacerbated by the non-statutory nature of the plan. This led to disputes about how representative the SWG actually was:

Industry weren't part of the process and I get annoyed when people say it was a collaborative project. There may have been some fishermen in there but they had no mandate, no ability to speak for the sector or capacity to deliver.

We had the main two big inshore fisheries players involved, we targeted the ones actually in the Gulf. Taking it any wider, bigger would've made things even more difficult.

We never got buy in from the biggest people. Fisheries, forestry and farming were all weak.

The inability to get effective engagement from large corporate interests was seen as both a bane (to implementation at central government level) and a boon (because they may have restrained the vision and impeded consensus). However, a reoccurring theme was how difficult it was to do something different from the status quo, and to overcome vested interests:

It became clear that industry reps really aren't operating in the same space as the rest of us. You aren't dealing with an individual, because they are accountable to someone else, controlled and constrained from things high up. They aren't free to speak in the same way. They aren't flexible and able to bend like the rest of us.

There were concerns over how to navigate unbalanced power dynamics between economically powerful sectors and local entities and communities. As one interviewee noted "it takes skills to deal with the big guys". Interviewees also called for more resource and support for community participants, including small business owners, so they had greater capacity to effectively engage:

It became clear we weren't going to shift those with entrenched positions, and we can't afford the time to persuade them. The Gulf is on its way over the precipice ... Most aren't even connected to the Gulf and just oppose protection in principle.

These processes need help to navigate practical aspects, and support the complexity of working with big players like Fonterra,



Fed farmers, to help local communities and reps have open balanced conversations with them.”

Mechanisms need to be incorporated into MSP processes to help address power imbalances.

Overall, the piecemeal and uneven implementation of Sea Change left many feeling disillusioned and some stakeholders have again become polarized. Interviewees emphasized that proposals had been carefully designed to complement each other, so that separating them had practical implications, undermining the overall effectiveness of the Plan. All interviewees considered selective implementation had generated unacceptable inequities.

The Plan's recommendations have essentially been meddled with. Commercial fisheries has copped it all. That's an unfair outcome and it's not what was agreed. Where's the changes for rec fishing? Land based effects of nitrogen, forestry?

Everything has become political now, binary. People are back in their corners because what it's driving is unclear. That means it's all up for grabs again.

Piecemeal implementation of plans can undermine the benefits of collaborative integrated MSP processes.

Stakeholders reiterated the huge investment of time, energy, resource and personal commitment they had dedicated to the process. For small businesses this came at no small personal cost. Sea Change was highly aspirational, the plan engendered a high degree of community and stakeholder pride and ownership, and correspondingly there were high expectations that it would deliver for all.

We invested so much in Sea Change but it's not really being honoured, especially the land based commitments, its gutting and so disheartening.

The Sea Change project effectively ceased before proper implementation planning was possible. In addition, the design and scope of the project did not include sufficient supports to ensure implementation was tracked and reported on, or the Plan updated in response to new information

or availability of new tools. This meant that implementation relied on disconnected and siloed agencies with no additional funding or support for the work.

Many interviewees considered this represented a significant wasted investment given the funding already sunk into the project. It was seen as a missed opportunity which failed to take advantage of the wide support and momentum generated by the planning process. It also led to delays and inertia, patchy implementation and 'start-stop' ad hoc work cycles.

A lack of resource to maintain channels of communication with mana whenua, stakeholders and the community at large was also identified as a strategic failing. Cost efficiencies could have been captured through better harnessing the significant capacity and contributions these parties could provide:

Some of those involved as technical advisors thought a lack of clarity and connection between the SWG and agency advisors undermined a robust evidence-informed approach. It also created tensions, with stakeholders concerned that technical staff were attempting to constrain their process, and technical staff concerned about the workability and quality of the SWG's outputs.

SWG members were asked to undertake blue skies thinking which was not constrained by existing legislative frameworks. This was to promote innovation, on the basis that current approaches had failed to deliver, and new thinking was required. However, time and resource limitations meant the costs, risks, feasibility and likely effectiveness of each option being considered were not fully explored. Agency interviewees considered inadequate attention was paid to practical realities on the ground:

You can't have stakeholders responsible for identifying options, that just doesn't work. It can't deliver effective responses. Agencies were kept at arm's length and that had practical implications for the quality of the plan and implementation.

The establishment of an independent scientific and technical group in MSP processes could help create a clearer separation between science and technical advice and values-based priority setting.<sup>37</sup>

Implementation was also dependent on the good will and patchy resource of agencies already stretched thin. Unsurprisingly the Sea Change

Plan struggled to compete with pre-existing and mandatory regulatory functions and priorities.

There was never any mandate for implementation, no budget, no team to ensure the plan was operationalised as a whole and not cherry picked – as it has been.

Council will always focus first on existing regulatory commitments, as resources are scarce.

It needed an implementation plan with a focus on delivery and timeframes, over 10 years. I think everyone knows that. Things remain siloed.

The lack of an effective mechanism for joint agency implementation has also proven a barrier to implementing an integrated MSP plan.

Until agencies have a better idea of how to work together, clarity about who leads, how the different lens intersect, the political boundaries undermine integrated management.

A critical defect was insufficient cross agency work on how to navigate the plan, achieve those things, time to get those people together to think it through.

Providing extra time for agencies to identify and chart out each other's roles and responsibilities for implementation could have set the Sea Change project on firmer ground.

Almost all interviewees said they would not re-engage in a process like Sea Change again without significant changes to the model. The most universal changes called for were the establishment of a permanent governance entity and a statutory mechanism to give the plan 'teeth. Indeed it remains a source of astonishment to many that such an entity was never formed as a core part of the project design.

There is no vehicle for responsibility. Without that there's just lots of ball throwing... and gaps.

A more permanent lead entity for councils to report to would give more traction, more visibility and accountability. Make sure things aren't just dropped."

If a governance entity had remained on for delivery, holding on to the buy-in we achieved, that would have been a key

accountability check. It would have retained connections and relationships, retained stakeholders' commitments, and kept it on the politicians' radar.

MSP would benefit from a permanent governance entity tasked with coordinating implementation, providing oversight and accountability, tracking and reporting on progress, and undertaking future plan revision.

Interviewees emphasised that, without a statutory mandate, the plan was left with no real levers to gain traction, secure resource or drive a regulatory response and the continuing engagement of key agencies. As well as promoting implementation, supporting legislation could help ensure ongoing monitoring and provide for compliance and enforcement if required:

The plan needs a statutory framework. It needs levers, reporting processes, mandated participation. There are tools that could be used but they are optional for agencies because the plan has no teeth, it can't trigger anyone to do anything.

Legislate it, then agencies will have the mandate to provide money for it. Otherwise it will just be dropped when other priorities come down the pipe and council pulls back to basics.

MSP would benefit from a statutory framework that gives plans some form of legal status.

Overall, the causes of patchy implementation of the Sea Change Plan are multiple, but key problems were the lack of implementation funding and institutional continuity once the plan was completed. Since the concept of integrated, ecosystem-based MSP is a new approach, it lacks a supporting regulatory environment. Novel policy proposals often necessitate innovation, unusual use of existing tools, and agencies to work on matters that are outside their core priorities and functions (and comfort zones). Under those circumstances, there are strong drivers to revert to business as usual.

Despite these issues, there have been some clear achievements through central government's Revitalising the Gulf response to the Sea Change Plan. There also remains a high degree of pride in what was produced through the process. That such a diverse array of stakeholders were able to come together and set a unified, overarching and aspirational vision for the Hauraki Gulf represents a significant achievement.

## Key lessons from Sea Change

Sea Change remains world-leading. It stands as a rare example of a collaborative, co-governance based approach to MSP that successfully brought together a diverse array of voices to focus on achieving better environmental outcomes at place. It delivered a consensus based and widely supported MSP reconciling those varied interests.

### ***Enduring benefits***

The open and inclusive process, and strong community engagement, secured a strong social licence for the Plan and vision it set. This led to strengthened relationships at place, provided deeper understanding of the diversity of needs, values and aspirations, and greater appreciation of the challenges different sectors were facing.

Since the plan-making processes came to fruition, Sea Change has helped mobilise communities around the Gulf, generating significant momentum for restoration and leading to numerous iwi-led and iwi-community partnerships and initiatives (some which are described in the sections below). It has also supported new thinking and ensured sustained political pressure for action, keeping the health of the Gulf on the political agenda.

### ***Critical flaws in design and delivery***

The short timeframe, limited resources, broad scope and insufficient connectivity with agencies, significantly increased the pressures on the policy process. By their nature, collaborative processes bring a diversity of views into the room. Solutions are typically highly brokered and require hard conversations. There needs to be sufficient time for participants to build trust with each other and reach agreement. Staff with critical competencies in knowledge translation, mediation, negotiation and conflict resolution are important to support that work.

### ***Pitfalls of a non-statutory plan***

The lack of a supporting regulatory environment, funding for implementation and permanent governance entity have been significant barriers to effective implementation. The Plan was left to be delivered through multiple, siloed, unaligned and uncoordinated agencies. Implementation has been slow, piecemeal and unintegrated. Slow implementation has led to a loss of momentum, as elected officials and personnel in councils and government agencies have changed, leading to a loss of institutional memory of the genesis and rationale for the plan.

Overall this has undermined the coherence of the Plan and its overall effectiveness. It has also created inequities and resulted in a return of stakeholder conflict. There is now disillusionment about the outcomes achieved and a sense of betrayal as the deal that was brokered has been broken. The lesson here is that if innovative policy development is not implemented in a timely way it can 'wither on the vine'.

### ***Need for a statutory mandate and governance entity***

In order to overcome systemic inertia, and ensure existing power imbalances do not undermine implementation, a MSP must have 'teeth'. Establishing a permanent governance entity with key coordinating, reporting and oversight responsibilities is important, not only to support implementation and track progress, but to ensure plan review and update as required. Adaptive management is not feasible if this is lacking. A statutory mandate is also important, to ensure a plan can influence planning and decision-making regimes, and can direct agency action across multiple sectors. Both of these can also assist with securing ongoing resource and funding.

### ***Empowering transformational system change***

With appropriate supports MSP remains an important vehicle for integrating and coordinating management at place. However, it is telling that the most lauded aspect of the Sea Change project remains how open and inclusive it was. There is an increasing call from communities to be more empowered, have their voices heard, and be able to do something that makes a difference.

What the Sea Change process highlights most clearly is the potential for MSP to build relationships and resolve stakeholder conflict by setting a unified vision that points all parties in the same direction. It can empower and mobilise tangata whenua, local communities and businesses to act and work together to address marine degradation and support restoration.

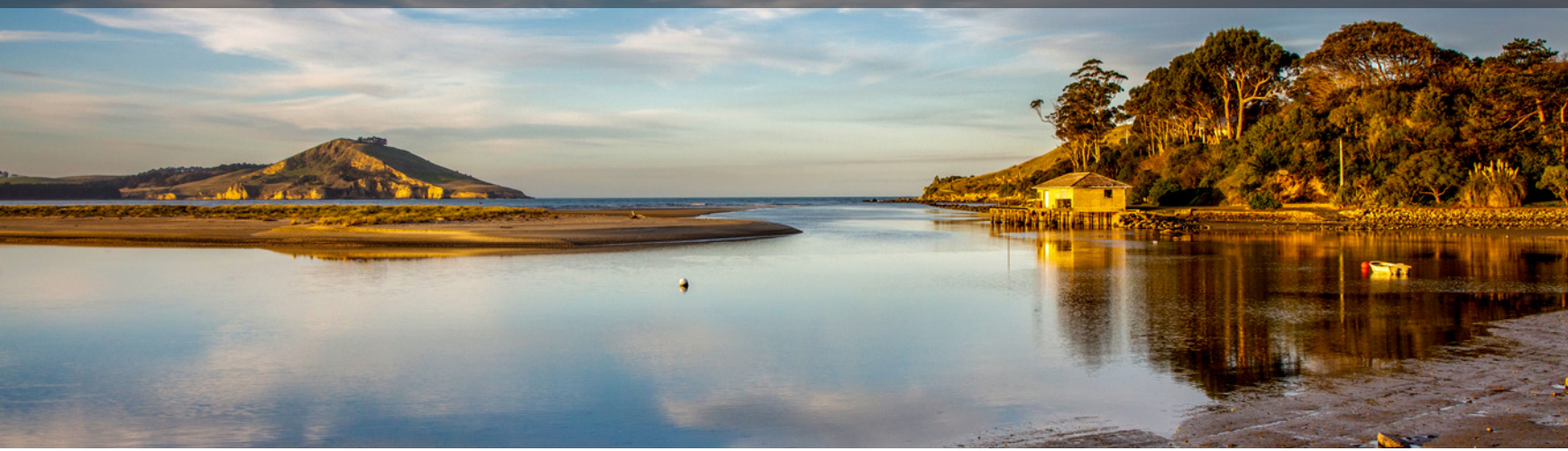
### ***The importance of delivering outcomes***

Overall the Sea Change process is still a work in progress when it comes to delivering actual results for the Hauraki Gulf. The state of the Gulf has declined since the Sea Change Plan was released and implementation of core elements (such as marine protected areas) are still pending at the time of writing. This highlights the importance of focusing more strongly on the end outcomes rather than process.

## Endnotes

- 1 Sea Change Tai Timu Tai Pari, 2017, *Sea Change: Hauraki Gulf marine spatial plan*, Waikato Regional Council, Hamilton
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- 4 Peart R, 2009, *Castles in the sand: What's happening to the New Zealand coast?*, Craig Potton Publishing, Nelson, at 197-198
- 5 Peart R, 2016, *The story of the Hauraki Gulf: Discovery, transformation, restoration*, David Bateman Limited, Auckland, at 302-310
- 6 Hauraki Gulf Marine Part Act 2000, section 3,
- 7 Ibid, section 16
- 8 Ibid, section 19,
- 9 Ibid, section 29
- 10 Ibid, section 18(3)(b)
- 11 Ibid, section 17(1)(k)
- 12 Ibid, section 26
- 13 Ibid, section 17(1)(g)
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- 15 Ibid, section 10
- 16 Ibid, section 11
- 17 Ibid, section 9
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- 19 See Hauraki Gulf Forum, 2011, *State of our Gulf*, Hauraki Gulf Forum, Auckland, at 13
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- 24 Peart R, 2018, *Turning the tide: Integrated marine planning in New Zealand*, Environmental Defence Society, Auckland
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- 26 Auckland Council, Planning Committee meeting minutes, 2 May 2017, at 5
- 27 Auckland Council, Environment and Community Committee meeting minutes and attachments, 12 September 2017, Item 11 'Incorporating Sea Change objectives into Auckland Council group activity', at 79
- 28 Department of Conservation, Fisheries New Zealand and Ministry for Primary Industries, 2021, *Revitalising the Gulf: Government action on the Sea Change Plan*, New Zealand Government, Wellington
- 29 Sea Change Tai Timu Tai Pari Ministerial Advisory Committee, 2020, *Report from the Sea Change Tai Timu Tai Pari Ministerial Advisory Committee to Hon Stuart Nash Minister of Fisheries and Hon Eugenie Sage Minister of Conservation*, Sea Change Tai Timu Tai Pari Ministerial Advisory Committee, Auckland
- 30 Sea Change Tai Timu Tai Pari, 2017, *Hauraki Gulf marine spatial plan*, Waikato Regional Council, Hamilton, at 49
- 31 Ibid
- 32 Department of Conservation, Fisheries New Zealand and Ministry for Primary Industries, 2021, *Revitalising the Gulf: Government action on the Sea Change Plan*, New Zealand Government, Wellington, at 5
- 33 Aotea Great Barrier Environmental Trust, 2024, 'The Ahu moana vision', *Environmental News*, 49, 1 March
- 34 Ibid
- 35 Exotic Caulerpa Aotea and Ahuahu Controlled Area Notice 2024
- 36 Interviewee
- 37 EDS has examined the complexities at the science-policy interface in more depth in Koolen-Bourke D and R Peart, 2022, *Science for policy: The role of science in the National Policy Statement for Freshwater Management*, Environmental Defence Society, Auckland

## 4 Place-based marine management



*Waikouaiti Estuary, Otago*

In order to provide a deeper understanding of the context for MSP in Aotearoa New Zealand we survey a range of existing marine-related initiatives in the next three chapters. In this chapter we investigate three place-based marine management initiatives: the East Otago Taiāpure, Fiordland (Te Moana o Atawhenua) Marine Area (Fiordland Marine Area) and Te Whata Kai o Rakihouia i Te Tai o Marokura – Kaikōura Marine Area (Kaikōura Marine Area).

We have largely drawn the material for the three chapters from literature reviews. Where possible, we fleshed this information out with a semi-structured interview with a key individual from each initiative. We also attended a committee meeting of the East Otago Taiāpure, snorkelled over a kelp restoration site at the Noises Islands, in the Hauraki Gulf, and visited the Tūtūkākā kelp restoration community laboratory.

### 4.1 East Otago Taiāpure

“... the East Otago Taiāpure provides a model for inclusive place-based management of natural resources with hapū (sub-tribe) in a leadership role.”<sup>1</sup> (Anne-Marie Jackson et al)

The East Otago Taiāpure was established in 1999. It covers 22 km<sup>2</sup> stretching along a 20 km length of the south-eastern coast of the South Island, just north of the Otago Peninsula, and adjacent to the small town of Karitāne (see Figure 4.1). It includes Blueskin Bay and the Pūrākaunui

Estuary on the northern edge of the Otago Peninsula. The Taiāpure is supported by the Waikouaiti Mātaitai (established in 2016) located over the estuarine area at Karitāne and extending further upstream into the Waikouaiti River. Both are within “the cultural landscape of Kāti Huirapa ki Puketeraki who hold mana whenua and mana moana in the area.”<sup>2</sup>

The Taiāpure was first applied for in 1992, due to concerns over depleted pāua stocks, and the wish of mana whenua to reassert rangatiratanga over the area to ensure its health and well-being. Providing accessible and relatively sheltered waters close to Dunedin, within an otherwise largely exposed coastline, the area had proved popular with recreational fishers. The Taiāpure application initially proved controversial. It divided the community and took seven years to achieve gazettal under section 175 of the Fisheries Act 1996.<sup>3</sup>



*Blueskin Bay, Otago*

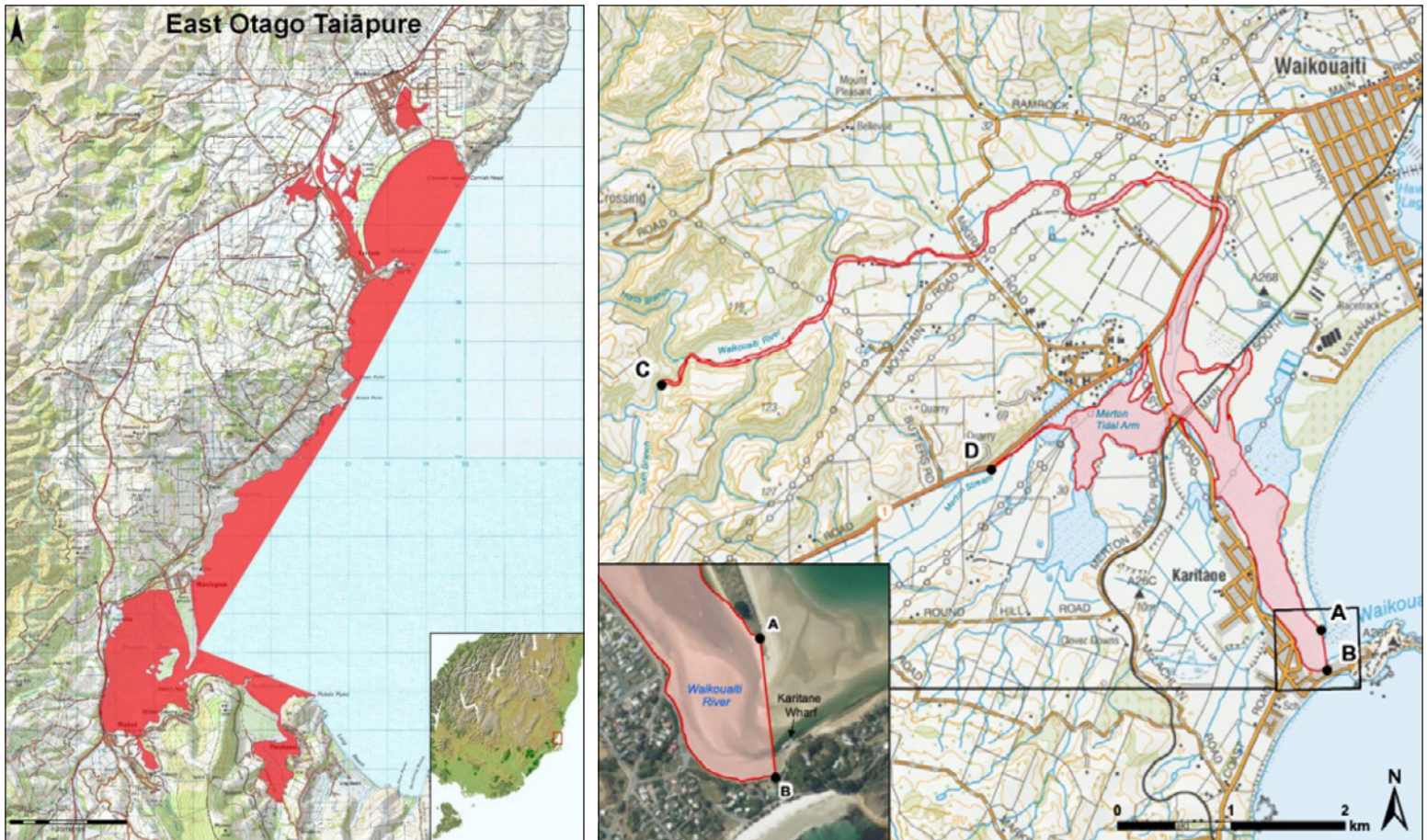


Figure 4.1 East Otago Taiāpure (left) and Waikouaiti Mātaimai (right) (Source: Ministry for Primary Industries)

### Spotlight on process to establish a taiāpure

The process to establish a taiāpure is set out in Part 9 of the Fisheries Act and has multiple steps. First, a proposal is lodged with the Chief Executive. At that point it can be stopped in its tracks if the Minister “does not agree with it in principle”. If the proposal avoids such a veto, it is publicly notified for submission and objection, and these are heard by a tribunal chaired by a Māori Land Court judge. The tribunal then reports to the Minister at which point appeals on questions of law can be lodged. Once any proceedings are disposed of the Minister makes the final decision.

The vision for the East Otago Taiāpure is “a sustainable, healthy, abundant and accessible fishery inside the Taiāpure that provides for the community’s customary, recreational and commercial needs.”<sup>4</sup> The

intention is to ensure access to “abundant supplies of fisheries resources” as well as to “actively promote the use of traditional tikanga (customs) and kawa (protocols) such as rāhui (temporary closures) ...”. In addition, “the adverse impacts of human activities on the marine environment, nursery areas, spawning grounds, fisheries habitat and associated dependent species” are to be “avoided, remedied or mitigated”.<sup>5</sup>

The area is managed by the East Otago Taiāpure Committee which was formally established in 2001. Half of the Committee members are representatives from Kāti Huriapa Rūnaka ki Puketeraki with the other half being made up of representatives from the local community. The Committee meets monthly and decisions are generally by consensus.<sup>6</sup> Under section 185 of the Fisheries Act, the Committee is able to recommend to the Minister of Fisheries the making of regulations to conserve and manage fish, aquatic life and seaweed within the Taiāpure. Fisheries NZ then puts the proposals out for public consultation before providing final advice to the Minister for decision.

### Spotlight on fisheries regulations within the East-Otago Taiāpure

Various regulations have been passed within the Taiāpure as follows:<sup>7</sup>

- Requirement for fishers to stay with set nets at all times within Taiāpure (2007)
- Reduction in bag limits from 10 to five for pāua; 50 to 10 for kina; 150 to 50 for combined shellfish; and 150 to 50 for tuaki (cockles) (2010)
- Commercial harvesters of tuaki restricted to current areas of harvest (2010)
- Temporary closure on all take of pāua around the Huriawa Peninsula (2010)
- Renewal of temporary pāua closure (2012)
- Renewal of temporary pāua closure (2014)
- Closure of the Huriawa and Mapoutahi peninsulas to recreational and commercial pāua harvesting (2016)
- Closure of the entire Taiāpure to the harvest of pāua and taking of seven kelp species and a prohibition on set netting and filleting of fish at sea throughout the area (2019).

The process to change the rules is somewhat cumbersome. It can take two years or longer to get a Ministerial decision, during which time much damage can occur to fish stocks. When a closure is required, because the depletion of fish stocks has become so acute, this is regarded as a failure.

“When we close fisheries, cultural connection can be lost, that is why if fisheries get to a state where we need to close it, it’s a terrible thing.” (Interviewee)

As well as managing seafood harvest, the Committee has become involved in a range of other issues impacting the health of the Taiāpure, including taking legal action on the disposal of sediment associated with Otago Harbour dredging.<sup>8</sup> There have also been efforts to re-seed hatchery grown pāua within the Taiāpure, in order to help restore the stock, but these have yet to prove successful with poor survival rates.<sup>9</sup>

Along with the application of mātauranga Māori, management of the Taiāpure has been strongly supported by a partnership with Otago

University, with academics and students assisting with ecosystem monitoring and research. As were told by an interviewee, “mātauranga Māori drives the questions and then we use science approaches [to answer them]”. This has enabled the Taiāpure Committee to be better informed about the state of the marine area, and changes within it, and it has also enriched the experience of university students.<sup>10</sup>

“Successes are based on local leadership, local knowledge and mātauranga supported by external expertise and other data as needed.”<sup>11</sup> (Anne-Marie Jackson et al)

### Spotlight on taiāpure and mātaikai

Taiāpure and mātaikai are customary marine management tools focused on better recognising rangitiratanga over areas of special significance to iwi or hapū for food gathering or spiritual or cultural reasons. They were provided for as part of the 1992 Māori Fisheries Settlement.<sup>12</sup> There are subtle differences between the two tools, with mātaikai being a more modern version of taiāpure.

For a taiāpure, the Minister appoints the members of the management committee on nomination of the local Māori community. Commercial and recreational fishing are permitted unless specifically restricted, and any fisheries controls recommended by the committee, need to be approved by the Minister via regulation.<sup>13</sup>

In contrast, mātaikai are managed by Tāngata Tiaki/Kaitiaki appointed by the tāngata whenua. In the South Island, commercial fishing is excluded unless an exemption is included in the application or commercial fishing is subsequently reinstated by regulation. In the North Island commercial fishing is automatically excluded and can only be reinstated by regulation. Fisheries controls can be imposed through bylaws made directly by the Tāngata Tiaki/Kaitiaki, but only after approval of the Minister.<sup>14</sup>

There are currently 11 taiāpure nationwide, covering 411 km<sup>2</sup> of water space, and 58 mātaikai (see Figure 4.2). Of the mātaikai, 13 are in the North Island (covering 280 km<sup>2</sup>) and 45 in the South Island (covering around 330 km<sup>2</sup>). Many customary management areas are small, being less than 1 km<sup>2</sup>, but others are much larger. The Kawhia Aotea Taiāpure is the largest at 162 km<sup>2</sup>, followed by Te Kopa o Rongokānapa Mātaikai Reserve off East Cape comprising 70 km<sup>2</sup>.<sup>15</sup>

Taiāpure tend to be larger. A set of tougher criteria need to be met in order to establish a mātaimai. These include that it will not “unreasonably affect” non-commercial harvest by the local community and “unreasonably prevent” such harvest by other persons; not “prevent” commercial fishers taking their quota entitlements; and not “unreasonably prevent” non-quota commercial fishers exercising “their right to take fisheries resources”.<sup>16</sup>

This can be compared with the criteria in the Marine Reserves Act 1971 for establishing marine reserves which must not “interfere unduly” with commercial fishing or “interfere unduly with or adversely affect” any recreational use of the area.<sup>17</sup>



**Figure 4.2 Customary management areas** (Source: Fisheries New Zealand)

The East Otago Taiāpure has been in place now for 25 years. During that time the Committee has had to overcome slow and bureaucratic processes, lack of agency support, and conflict within the community over fisheries closures. It has also lacked the tools to manage broader impacts on fishery habitat. However, despite these obstacles, significant progress has been achieved by mana whenua through the operation of the Taiāpure with support from the local community and the University of Otago.

## 4.2 Fiordland Marine Area

“Our vision is that the quality of Fiordland’s marine environment and fisheries, including the wider fishery experience, be maintained or improved for future generations to use and enjoy”<sup>18</sup> (Fiordland Marine Guardians)

The Fiordland Marine Area was established in 2005 through the Fiordland (Te Moana o Atawhenua) Marine Management Act 2005 (see Figure 4.3). The area covers the entirety of Fiordland’s marine area out to 12 nautical miles. The legislation also established the Fiordland Marine Guardians, which acts primarily as an advisory body to management agencies and Ministers, focused on the effectiveness of measures in the Marine Area and threats to it. The Guardians body is also tasked with facilitating and promoting integrated management and assisting agencies to disseminate information, monitor the state of the Marine Area, and plan for enforcement and compliance.<sup>19</sup> The remit extends across the biosecurity, fisheries, marine protection and resource management areas.

“Under the Act, the Guardians and the government agencies with management roles ... were required to work together in a more integrated way.”<sup>20</sup> (Fiordland Marine Guardians)

The Guardians has between five and eight members who are appointed by the Minister for the Environment and must “reflect a balanced mix of knowledge and experience” in relation to the Fiordland Marine Area; with one member nominated by Te Rūnanga o Ngāi Tahu and at least five members who are “ordinarily resident in the Otago or Southland regions”.<sup>21</sup> The Ngāi Tahu nominee has brought extensive knowledge of the customary use of Fiordland to the table.<sup>22</sup>



The Ministry for the Environment (MFE) provides administrative support to the Guardians as well as its annual budget of around \$80,000. This covers a modest honorarium paid to Guardian members and operating expenses. However, most of the community effort is voluntary and unremunerated. In addition, each of the management agencies (DOC, MPI Biosecurity, Fisheries NZ and Environment Southland) commit budget and resources to fulfil their responsibilities in the area. Most special projects the Guardians takes on are co-funded by multiple agencies.

The impetus for the Guardians and accompanying legislation stems back to 1995, when a fisheries liaison group was established for Fiordland by the then Ministry of Fisheries. This was in response to concerns over depletion of crayfish and blue cod and growing pressures from tourism and recreational fishing. But it was also a pre-emptive move to head off a proposal to turn the area into a marine park through effectively extending the World Heritage status of the Fiordland National Park to the adjacent marine area.<sup>23</sup>

In 1998, the Ngāi Tahu Claims Settlement Act 1998 included a statutory acknowledgement for Te Mimi o Tū Te Rakiwhānoa / Fiordland Coastal Marine Area highlighting the tribe's strong cultural, spiritual, historic and traditional associations with the area.

“The tūpuna had considerable knowledge of whakapapa, traditional trails and tauranga waka, places for gathering kai and other taonga, ways in which to use the resources of the area, the relationship of people with the coastline and their dependence on it, and tikanga for the proper and sustainable utilisation of resources. All of these values remain important to Ngāi Tahu today.” (Schedule 102, Ngāi Tahu Claims Settlement Act 1998)

At its inception, the group comprised only commercial and recreational fishers and charter boat operators alongside Ngāi Tahu. But it was later broadened out to include members from the local community and an environmental representative.<sup>24</sup> The work of the group was initially supported by the Ministry of Fisheries, but in 2000, it received funding from MFE's Sustainable Management Fund to develop an integrated strategy.<sup>25</sup>

This funding enabled the engagement of an independent facilitator who managed the collaborative process. This saw the diverse group, consisting of several warring factions, reaching agreement on a Fiordland Marine Conservation Strategy eight years later (in 2003).<sup>26</sup> That such a diverse group could reach agreement on a cohesive conservation strategy was

credited to the application of a 'gifts and gains' approach. Each sector was encouraged to offer a 'gift', such as withdrawing harvest from a specified area, which would be a 'gain' for the wider Fiordland marine environment.<sup>27</sup>

“It's not rocket science. It's common sense, finding a common goal, or vision, and then being able to compromise in order to reach it.”<sup>28</sup>  
(John Steffens)



**Figure 4.3 Fiordland (Te Moana o Atawhenua) Marine Area** (Source: Department of Conservation)

The Conservation Strategy was given effect to in the Fiordland (Te Moana o Atawhenua) Marine Management Act. This created eight new marine reserves<sup>29</sup> (in addition to two pre-existing reserves) while placing a moratorium on any further marine reserves for seven years<sup>30</sup> (which expired in 2012). It also directly made amendments to the Southland Regional Coastal Plan to implement more stringent policies and rules for structures, vessel anchoring, moorings, diving activities, biosecurity and impacts on 13 mapped 'china shops' (fragile and highly biodiverse areas).

Fisheries regulations were also put in place to implement the agreed strategy. All the inner Sounds were closed to commercial fishing and a two-year restriction was placed on the recreational take of blue cod in Patea / Doubtful Sound and Piopiotahi / Milford Sound (which was subsequently extended).

The formal establishment of the Fiordland Marine Guardians, once the legislation was enacted, provided continuity and effectively enabled the group that developed the conservation strategy to oversee its implementation. The Guardians has now been operating for 19 years. Over that time its approach has changed from putting in place the measures identified in the conservation strategy, to addressing new pressures on the marine environment. As explained in 2016 by Guardians Chairperson Rebecca McLeod:

Once the Act was in place there were marine reserves to establish, compliance and monitoring programmes to set up, biosecurity to consider, sensitive areas to protect and growing tourism and visitor pressures to manage. The Guardians focused largely on improving communications both among agencies and with the community... Over the last few years the Guardians have been transitioning in to the next chapter – a clear focus on identifying and responding to risks that threaten what we value about Fiordland.”<sup>31</sup>

The Guardians meets quarterly and has been involved in a wide range of activities impacting the Fiordland Marine Area. The body has protocols to guide its working relationship with agencies, is considered an affected party for all resource management applications in the Fiordland Marine Area, and comprises an advisory committee for marine reserves in the area.

“We are the local knowledge holders. We are on the water and we know the place inside out. So we very often find issues with consents that the Council hasn't picked up on.” (Interviewee)

The Guardians operates sub-committees that include representatives from the management agencies on matters relating to compliance, monitoring, marine biosecurity and communications/engagement. Each of these sub-committees works to an agreed strategy and work plan that is signed off by the Guardians chairperson and senior management within each agency.

A particular highlight has been the development of the Fiordland Marine Regional Pathway Management Plan, which was adopted in 2017 and was a national first, and the complete local eradication of the invasive seaweed *Undaria pinnatifida* from Taiari / Chalky Inlet. A more recent achievement has been changes to recreational fishing controls which came into effect in April 2024. These were the result of three years hard work by the Guardians. As explained by McLeod in 2023:<sup>32</sup>

We began by collating all the information we could find on the current state of the fisheries and fishing pressure. Here, we placed high value on local knowledge: the observations and experience of those who know this place inside out. We worked with these knowledge holders to define the problem, and then began developing workable solutions that aligned with the Guardians philosophies.

We took these proposed solutions back to the community and bounced them around – testing whether the proposals would be likely to solve the problems, and critically, whether they had the support of the community. We listened, we learnt new things, and we revised our proposal. Then finally, we took our recommendations to the Minister for Oceans and Fisheries.”

“Our work is busier than ever and becoming more relevant than ever. The fact we are still going strong, and leading management for the Fiordland area, may be a bit of a surprise – that it is a sustainable and effective model.” (Interviewee)

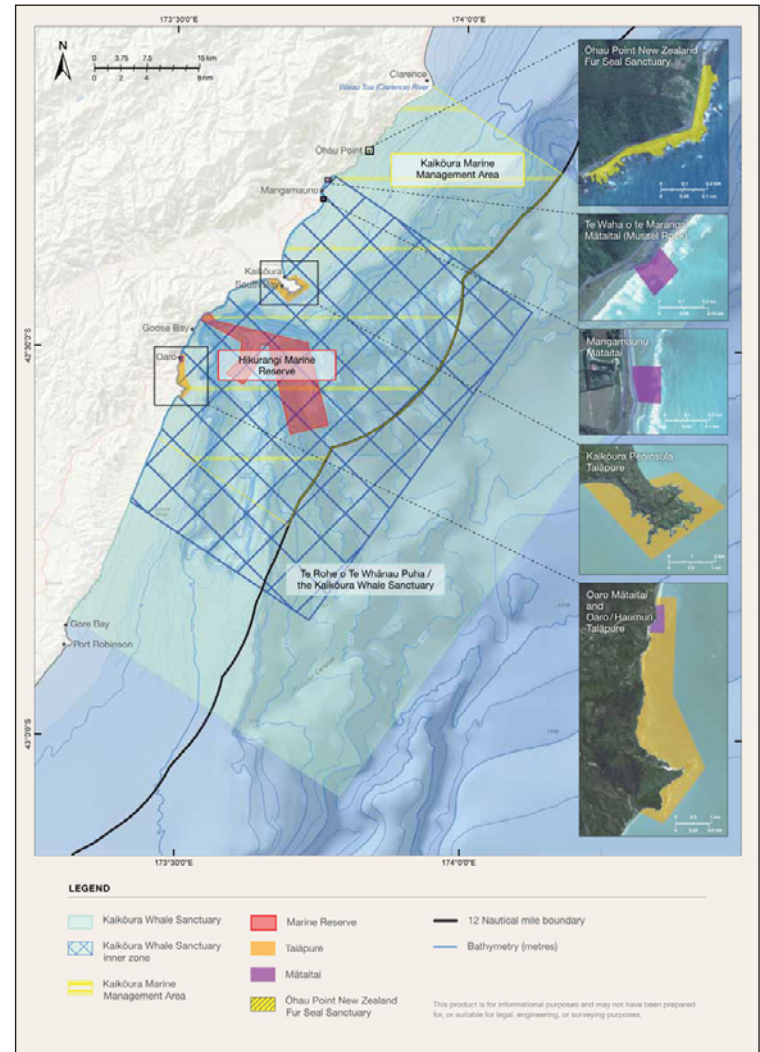
There has been much interest in the guardians model (including in Rakiura Stewart Island and the Marlborough Sounds) given the evident success of the Fiordland Marine Guardians in harnessing local knowledge, energy and commitment to achieve more integrated and effective marine management of the Fiordland Marine Area.

### 4.3 Kaikōura Marine Area

“Te Korowai is committed to sustaining Te Tai ō Marokura as the food basket of the Kaikōura community while ensuring prosperity for local commercial fishers and good fishing for customary and recreational fishers. It is all about using local knowledge and Ngāti Kuri tools...”<sup>33</sup> (Gina Solomon)

The Kaikōura (Te Tai o Marokura) Marine Management Act 2014 defined the Kaikōura Marine Area (see Figure 4.4) and established the Kaikōura Marine Guardians. The legislation gives the Guardians a narrower remit than the Fiordland body, being purely advisory, and with the advice encompassing biosecurity, conservation and fisheries (but not resource management) matters. If the advice relates to any area within the Kaikōura Marine Area then the party receiving the advice must take it “into account” giving it some statutory clout (which was not the case in Fiordland).<sup>34</sup>

Guardian members are jointly appointed by the Ministers of Conservation and Fisheries and membership must represent Te Rūnanga o Ngāi Tahu, the Kaikōura community and a long list of other interests (biosecurity, conservation, education, environment, fishing, marine science and tourism).<sup>35</sup> A terms of reference for the Guardians has been agreed with the two Ministers. It provides that the body is comprised of 11 members, six nominated by the public, two nominated by Te Rūnanga o Kaikōura, one nominated by Te Rūnanga o Ngāi Tahu and two ministerial appointments. The Guardians meet quarterly. Members are paid a nominal fee for meeting attendance (but not an honorarium as paid to Fiordland Marine Guardian Members) with the expense shared equally between DOC and MPI. DOC provides administrative support but the Guardians has no dedicated budget.<sup>36</sup>



**Figure 4.4 Kaikōura Marine Area** (Source: *Te Korowai o te Tai ō Marokura*)



*Blanket Bay, Fiordland Marine Area*

The legislation followed the Te Korowai o Te Tai o Marokura (Te Korowai) process which started in 2005 and took nine years.<sup>37</sup> The impetus for Te Korowai was multi-faceted. Thousands of people had begun arriving off the Kaikōura coast during the summer months to recreationally fish, and in particular, hand gather pāua. Ngāti Kuri were worried that “their traditional food basket might not sustain them”. They also lacked an iwi management plan that addressed coastal issues. In addition, the Royal Forest and Bird Protection Society of New Zealand (Forest and Bird) had applied to establish a marine reserve around the Kaikōura Peninsula, so there were fears the area might be ‘locked up’.<sup>38</sup>

In response to all these issues, Ngāti Kuri called a public hui at its marae to discuss the need for a coastal strategy. Around 150 people turned up, a very large number in such a small coastal community. This provided further impetus to initiate a planning process.<sup>39</sup> The vision for the plan was to create a flourishing, rich and healthy environment where “opportunities abound to sustain the needs of present and future generations.”<sup>40</sup>

There was an existing strong relationship between Te Korowai members and DOC, due to rūnanga members being on the Nelson Marlborough Conservation Board, and the initiative was able to draw on this. The Department provided financial assistance for plan development including funding a facilitator (the same person who had worked on the Fiordland strategy), administrator and plan writer. The Kaikōura District Council was also supportive of the initiative.<sup>41</sup>

Ngāti Kuri members were inspired by the approach applied in Fiordland. They adopted the ‘egg’ organisational model, where local interests comprised the central ‘yolk’ of the planning process, and agencies formed the surrounding supportive ‘white’. They also applied the ‘gifts and gains’ approach “where each stakeholder group gifted concessions to sustain the integrity of the whole resource for the future”.<sup>42</sup> About 30



*Kaikōura coast*

people were involved in the plan development process including agency representatives. The meetings typically ran from 2-7 pm followed by dinner which the marae provided.<sup>43</sup>

“It’s really hard to be angry if you’re sitting across the table from someone and eating a meal. Food brings people together. That was the rūnanga’s gift to the process: that we would provide tea at every meeting.”<sup>44</sup> (Gina Solomon)

The Kaikōura Marine Strategy was eventually completed in 2012 with many of its proposals implemented through the Kaikōura (Te Tai o Marokura) Marine Management Act (see spotlight). Unlike in Fiordland, the Kaikōura legislation included a 10 year Ministerial review clause, with the review tasked with examining the “operation and effectiveness” of the Guardians and the marine management measures put in place by the legislation.<sup>45</sup> The review recently commenced and is being undertaken by DOC and Fisheries NZ staff. Public consultation is scheduled for August to September 2025 with any final Ministerial decisions flowing from the review expected in late 2025 or early 2026.<sup>46</sup>

### Spotlight on spatial tools applied in Kaikōura

The Kaikōura (Te Tai o Marokura) Marine Management Act established:

- A New Zealand Fur Seal Sanctuary at Ōhau Point, to limit human disturbance to fur seals, while allowing the public to view the colony from a safe distance
- A marine reserve that encompasses the Kaikōura Canyon area and connects to the coast south of the Kaikōura township
- A Whale Sanctuary (Te Rohe-o-Te-Whānau-Puha–Kaikōura) restricting level 1 and 2 marine seismic surveys and including other whale protection mechanisms
- Two taiāpure to provide traditional food gathering areas around the Kaikōura Peninsula that allow commercial fishing to continue
- Three mātaimai reserves where commercial fishing is prohibited to protect the traditional food gathering areas and allow for recreational fishing.

“We knew that once we had the customary tools locked in, that all the other solutions would follow to complement the customary tools ... regional measures such as significant recreational bag limit changes. All these tools acting in combination set Te Korowai apart. In most other regions of our takiwā, the customary tools sit as stand-alone tools, and they are more vulnerable to surrounding pressures.”<sup>47</sup> (Nigel Scott)

The Guardians its their inaugural meeting in August 2016.<sup>48</sup> Three months later the magnitude 7.8 Kaikōura earthquake occurred, and the Kaikōura coast was uplifted, in some places by up to 6.5 metres. This had a devastating impact on much marine life, including pāua stocks, which were now high and dry. It also shattered the local community, with many homes damaged, and a substantial number lacking insurance. The community was further impacted when, in 2015, Te Korowai and the Guardians became disconnected from the local rūnanga. This further fractured community cohesion, and the effectiveness of implementation, particularly with the management of the customary fisheries areas (taiāpure and mātaimai).

Despite these setbacks, the Guardians has been busy seeking to facilitate better outcomes for the marine environment. The body has sought to coordinate a flurry of research (generated by a \$2 million Kaikōura earthquake marine recovery package) through the development of a Research and Monitoring Plan. Guardian members were active participants in the Earthquake Restoration Liaison Group which contributed to plans to reconstruct the road and rail line along the coast.<sup>49</sup> In addition, the earthquake led to closure of shellfish and seaweed gathering and the instigation of a pāua reseeded programme. More recently, the Guardians has proposed that Kaikōura (from the mountain tops to the canyon floor) be placed on the World Heritage Tentative List.

Te Korowai (the rūnanga-led initiative) has continued as a separate group to the Guardians in order to provide continuity for plan implementation. It works with the community on the ground and has picked up elements of the Strategy that were not included in the legislation. However, once the Guardians was established, Te Korowai lost its funding and therefore the ability to pay a full-time co-ordinator, so now has to rely heavily on

volunteers. The Guardians body itself is not resourced or supported to level that Te Korowai expected and lacks funds to undertake independent work.

The Kaikōura Marine Guardians has faced a serious of significant challenges in implementing the vision it took the community nine years to develop. The current review may enable more supportive arrangements to be put in place so that vision can be fully realised.

#### 4.4 Key insights

A number of insights can be drawn from these three case studies. Place-based marine management initiatives can be highly effective. This is particularly the case if they are founded on a collaborative approach and are sufficiently resourced and supported. Place-based approaches can mobilise the knowledge and energy of mana whenua and local community members who often have deep local knowledge and commitment to place.

“A key difference between the Fiordland and Kaikōura Guardians is the administrating agencies – Fiordland falls under the Ministry for the Environment while Kaikōura is under DOC.” (Peer reviewer)

Connections with universities and other research institutions can help strengthen local understanding of ecosystem dynamics and impacts, as well as provide students with grounded research opportunities. Such place-based initiatives can serve to fill gaps in agency responses to marine issues which operate at a less granular level. They can also serve to integrate agency efforts at place and act as an effective conduit between agencies and local communities.

The experience with bespoke mana whenua and community-led bodies in Fiordland and Kaikōura could inform the development of a more generalized framework which could support similar local initiatives elsewhere in association with MSP approaches.

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## 5 Marine protection initiatives



*Cape Brett, Bay of Islands*

In this chapter we review four initiatives focused on marine protection: the Motiti Protection Areas in the Bay of Plenty, Ecologically Significant Marine Sites in the Marlborough Sounds, Te Hā o Tangaroa Protection Areas in Northland and the work of the South-East Marine Protection Forum in Otago. The first three provided marine protection under the RMA and the fourth is focused on protection under the Marine Reserves Act and Fisheries Act.

### 5.1 Motiti Protection Areas

“The decision came through an Environment Court case. It’s not the normal pathway which is looking region-wide at all areas that could be on the table for marine protection.” (Interviewee)

In October 2011, the container ship MV *Rena* grounded on Ōtāiti (Astrolabe Reef) in the Bay of Plenty. Three hundred and fifty tonnes of heavy fuel oil leaked into the marine area and several hundred containers fell overboard. The ship eventually broke into two pieces which remain on the reef.<sup>1</sup> In response to the disaster, a customary rāhui was laid down, and the harbourmaster placed a three nautical mile exclusion zone around the wreck for five years (under Bay of Plenty Regional Council by-laws) to enable the salvage operation to be safely undertaken. This effectively excluded fishing and saw a rapid rebound of marine life on the reef.

“It was like the Poor Knights with fish everywhere.”<sup>2</sup> “I saw the largest schools of kahawai I’ve ever seen.”<sup>3</sup> (Darryl Torckler)

When the salvage operation was concluded, and the maritime exclusion zone was slated to be lifted, the Motiti Rohe Moana Trust made an urgent request for a 2-year temporary closure under section 186A of the Fisheries Act. The application was lodged in January 2016, and was seen as a short-term holding operation until a mātaítai reserve or marine protection mechanism could be established over the area, in order to allow marine biodiversity to continue its recovery.<sup>4</sup> However, despite the urgency, the exclusion zone was lifted (in April 2016) prior to a decision being made on the temporary closure application and marine life was rapidly depleted once again.<sup>5</sup>

“There is undisputed evidence that overfishing of snapper and crayfish, in particular, has allowed kina to flourish and destroy kelp forests that nurture other species, leaving near-monocultures that are known as kina barrens ... The Minister of Fisheries might have halted fishing in the same areas to protect them and the aquatic environment, but did not.”<sup>6</sup> (Court of Appeal)

Having failed in its efforts to deploy fisheries management measures to protect the reef the Trust looked to other methods. In 2014, the Bay of Plenty Regional Council had notified its proposed Regional Coastal Plan and the Trust had lodged a wide-ranging submission on it. Amongst the relief sought was “an expanded network of restored island and marine protected areas”, “integrated management of fisheries resources”, and “integrated methodologies for the marine environment similar to the use of structure planning, spatial planning or integrated whole of catchment management applied on land”.<sup>7</sup> Although these were broad concepts they were effectively asking for a MSP approach to be applied with associated marine protection measures.

After the Council heard the Trust’s submission, and made a decision to reject it (in September 2015), the Trust lodged an appeal to the Environment Court. This sought the identification of a rāhui or conservation management area incorporating Ōtāiti (and the water associated with it) and the prevention of removal, damage or destruction of any indigenous flora or fauna and taonga species in the area.<sup>8</sup>

It was at this point that the Council sought to strike out the entire appeal on the basis that the original submission was not valid, but this proceeding failed.<sup>9</sup> The Trust then sought a declaration from the Environment Court that it was lawful to spatially define areas in the regional coastal plan where fishing methods were controlled to protect biodiversity, significant habitat, natural character or the relationship of Māori with waters and taonga species.

After an in-depth consideration of the interface between the RMA and the Fisheries Act, the Court confirmed (in its decision released in December 2016) that a regional council may impose controls on fishing activity, provided the *sole or dominant purpose* is a specified resource management purpose.<sup>10</sup> This decision was then appealed to the High Court by the Attorney-General on behalf of government. At that stage other parties joined the proceedings, highlighting its broader significance, including Forest and Bird, Hawkes Bay Regional Council, fishing industry interests, Marlborough District Council (which had proposed marine protected areas in its region as discussed below) and several iwi interests. The High Court largely upheld the Environment Court decision, but tightened up the criteria, confirming that a regional council may perform its function to maintain indigenous biodiversity “but only to the *extent necessary* to perform that function”.<sup>11</sup>

This decision was then appealed to the Court of Appeal by the Attorney-General. Additional parties joined the proceedings at that point including the New Zealand Māori Council, NZ Rock Lobster Industry Council, Fisheries Inshore New Zealand and the Pāua Industry Council. By the time the case was heard both the government (via the Attorney-General)

and the Council had changed their positions. The Council now agreed to prohibit fishing in three areas of outstanding natural character (Ōtāiti, Motunau Island and Motuhaku Island) and the Attorney-General supported the argument that it had power to do so.

It was fishing industry parties that were now seeking to overturn the High Court decision to prevent councils from intervening in what they saw as solely Fisheries Act matters. However, in the end they failed.<sup>12</sup> The Court of Appeal effectively upheld the High Court decision, but provided more detail around the constraints on council powers (see spotlight below).

### Spotlight on the Motiti marine protection indicia

In confirming that regional councils did have power, under the RMA, to exclude fishing activities the Court of Appeal endorsed five “indicia” that it stated “may provide some objective guidance when assessing whether a given control would contravene” the relevant RMA provisions “in any given factual setting”:<sup>13</sup>

- *Necessity*: whether the objective of the control is already being met through measures implemented under the Fisheries Act.
- *Type*: controls that set catch limits or allocate fisheries resources among fishing sectors or establish sustainability measures for fish stocks would likely amount to fisheries management.
- *Scope*: a control aimed at indigenous biodiversity is likely not to discriminate among forms or species.
- *Scale*: the larger the scale of the control the more likely it is to amount to fisheries management.
- *Location*: the more specific the location, and the more significant its biodiversity values, the less likely it is to amount to fisheries management.

Following the Court of Appeal’s decision, the Environment Court confirmed its decision on the substance of the Motiti Rohe Moana Trust’s appeal in 2020, some six years after the proposed plan was first notified. The regional coastal plan now prohibits the temporary or permanent damage, destruction or removal of plants or animals inside three marine protection areas: MPA1 – Astrolabe and Okaparū Reefs and the Brewis Shoal, MPA2 – Schooner Rocks and MPA3 – Motunau Plate Island (see Figure 5.1).<sup>14</sup>





**Figure 5.1: Motiti Protection Areas** (Source: Environment Court)

The Council was also directed to undertake environmental monitoring, in collaboration with tangata whenua and educational and scientific institutions, to inform future integrated management of the broader Motiti Natural Environment Management Area which was also defined (see Figure 5.1).

The case proved somewhat controversial in terms of tribal response. In a 2017 decision the Environment Court found that Te Patuwai and Te Whānau o Tauwhao were tangata whenua and kaitiaki of Ōtāiti, with mana whenua over Motiti and its associated islands and reefs.<sup>15</sup> The standing of the Motiti Rohe Moana Trust to seek marine protection of these areas was challenged by the Te Patuwai Tribal Executive Committee on the basis that the Trust did not represent any hapū or iwi of Motiti Island.<sup>16</sup>

The Trust had originally been set up in 2009 by the Motiti Marae Committee to “conserve, protect and enhance the biological diversity, ecological integrity and cultural legacy of the Motiti Rohe Moana while facilitating compatible use”.<sup>17</sup> This was in response to frustration at the lack of progress on those issues under the Te Patuwai tribal committee. But the tribal

committee did not support the Trust’s establishment and the relationship between the Trust and the Marae Committee later broke down.<sup>18</sup> This meant that the Motiti Protection Areas were not supported by the tribal entities that had mana whenua over the areas.



*Motiti Island viewed from Papamoa Beach*

The *Motiti* decision has provided marine protection in the Bay of Plenty marine area as well as more broadly confirming the ability of regional councils to control fishing activity in certain circumstances. This means there is likely a “need for other regional councils to turn their minds to the protection of the habitats of species classified as threatened in the territorial sea.”<sup>19</sup>

## 5.2 Marlborough Ecologically Significant Marine Sites

“Ecologically significant marine sites; it’s a great programme, the best in the country and well resourced.” (Marine scientist)

The ecologically significant marine sites programme, which began in 2010, is led and funded by the Marlborough District Council with financial and in-kind support from DOC. In 2011, the programme released its first report that identified and ranked 129 ecologically significant marine sites.<sup>20</sup> The identification process drew on Council resource consenting information, a DOC study into soft sediment biogenic habitats in the Sounds, scientific papers and reports, and consultation with scientists and fishers.<sup>21</sup>

The seven authors of the 2011 report (brought together as an ‘expert panel’) developed seven criteria to assess the relative biological importance of each marine site: representativeness, rarity, diversity, distinctiveness, size, connectivity and adjacent catchment modifications.<sup>22</sup> Although the description of each criterion has been tweaked over the years they are still currently in use.<sup>23</sup>

A sub-set of the sites has been surveyed annually since the summer of 2014/15. The first survey was of 21 sites (and subsites) in Tōtaranui (Queen Charlotte Sound), Kura Te Au (Tory Channel) and Te Anamāhanga (Port Gore). This indicated that significant ecosystems were being lost or degraded at an alarming rate when compared to 2010 when council monitoring began. It found that a net 1,318 ha of biogenic habitat, the size of Blenheim and its suburbs, had disappeared from the Sounds since the late 1980s. Nine sites, ranked as significant because of their biological values, had decreased in area by 72 per cent.<sup>24</sup>

The cause of the loss was trawling, dredging and sedimentation. Direct damage from regular dredging was observed between Ships and Cannibal Coves, which resulted in physical disturbance and smothering by disturbed sediments. Recreational dredging in outer Tōtaranui was “resuspending

sediment at sufficient levels to obscure the underwater camera” and anchor damage was found at Perano Shoal. In the authors’ view, if these sites were not protected, they would be gradually degraded and lost.<sup>25</sup>

This was a wake up call and prompted Marlborough District Council to include the protection of 44 sites from dredging and bottom trawling (as well as anchoring, deposition of material and reclamation) when its proposed Marlborough Resource Management Plan was notified in 2016. This was a somewhat controversial move, as the *Motiti* case was still winding its way through the courts, and there was some uncertainty and mixed views around the ability of councils to exclude fishing activities.

Ongoing monitoring surveys (from 2016 to 2021) identified additional sites that met the criteria for biological significance, and which were in need of protection, as well as boundary changes to existing protected sites. In March 2023, the Council notified Variation 2 to its proposed Plan, which sought to add 64 new significant sites and adjust boundaries of 44 existing sites.<sup>26</sup>



**Figure 5.2: Ecologically significant marine sites in Kura Te Au / Tory Channel** (Source: Marlborough District Council)

Te Ātiawa lodged a submission opposing Variation 2 on the basis of cultural and commercial impacts and asked for a cultural effects assessment to be prepared. The iwi subsequently completed such an assessment (in February 2024) which concluded that the Variation would frustrate customary harvest, compromise future land access, and did not provide for effective partnership.<sup>27</sup> Ngāti Koata and Ngāti Toa Rangatira also lodged opposition to the proposals on the basis that tangata whenua was not sufficiently involved in the ecologically significant marine sites programme. Council notified its decision on submissions, in 3 July 2024, and essentially retained the proposals as notified with some minor changes.<sup>28</sup>

### Spotlight on kina dredging ban in Kura Te Au

The kina dredge fishery in Kura Te Au (Tory Channel) was harvesting a significant bycatch of seaweed, sea cucumbers, octopus and starfish which at times was considerably larger in volume than the kina harvest itself.<sup>29</sup> The Marlborough District Council's ecologically significant marine sites programme found the area to have some of the best remaining biogenic habitat in the Marlborough Sounds.<sup>30</sup> This prompted Fisheries NZ to propose a ban on dredging for kina in the area, which was confirmed by the Minister, and came into effect in October 2023. This is a positive example of the Council and Fisheries NZ working constructively together to protect the health of the Marlborough Sounds marine area.

One of the challenges of the marine sites programme has been to bring together the wealth of information collected over more than a decade so it is more accessible to iwi and hapū, users of the Sound and the broader public.<sup>31</sup> This is important, as the more people understand about the special marine sites within the Sounds, the more likely they are to support protection of them.

The ecologically significant marine sites programme has been supported by a constructive partnership between Marlborough District Council and DOC, with a collective pooling of funding, information and expertise. Although focused on discrete high value areas (the benthic 'jewels' of the Sounds), it has made a positive contribution to public awareness (through frequent monitoring), and addressing threats through protection in the regional coastal plan. However, iwi have yet to be meaningfully engaged in the programme.

### 5.3 Te Hā o Tangaroa Protection Areas

"Marine reserves in the North-eastern bioregion, of which the northern and eastern coast of the Northern [regional council] territorial sea is part, cover 7,900 hectares or just 0.2% of the bioregion."<sup>32</sup> (Environment Court)

In September 2017, while the Motiti legal proceedings were still underway, the Northland Regional Council notified its proposed Regional Plan (which included the coastal marine area). A local community group, Bay of Islands Maritime Park Inc, lodged a submission seeking the inclusion of "policies

addressing the Regional Council's role in protecting marine ecosystems from the adverse effects of fishing activities". Forest and Bird also lodged a submission which similarly sought that the Plan "include policies and rules to control the effects of fishing on the values of Significant Ecological Areas".<sup>33</sup> Neither submission identified any specific areas for protection or included any maps. They were lodged in the context of extensive kina barrens developing along the Northland east coast thought due to heavy recreational fishing pressure.

"The highest percentage of urchin barrens (80%) were found on the rocky reefs around Tapeka [Russell peninsula] which are very accessible and heavily fished by recreational fishers."<sup>34</sup> (Victoria Froude)

At the Council hearing of the submissions, environmental scientist Victoria Froude presented evidence in support of the two parties. She outlined the poor condition of Northland's rocky reefs and extent of kina barrens, before reviewing the current spatial protections in place, and their effectiveness. She concluded that the temporary closure under section 186A of the Fisheries Act, which had been applied to Maunganui Bay (near Cape Brett) under the leadership of Ngāti Kuta ki Te Rawhiti (Ngāti Kuta) and Patukeha hapū, was the most effective as it prohibited the taking of all marine life except kina.

However, use of the section 186A tool required repeated applications every two years. The Maunganui Bay closure had been rolled over for its fourth two-year term and the hapū were "seeking an alternative process which secures longer-term (generational) protection without the perceived ceding of sovereignty/rangatiratanga that they consider comes with Marine Reserve Act protection status".<sup>35</sup>

"After eight years of no fishing (except for kina) [at Manganui Bay] there has been a demonstrable recovery of the populations of lobsters, large snapper and other large possible predators of kina."<sup>36</sup> (Victoria Froude)

In terms of protecting specific areas, Froude proposed this be achieved through a variation to the Plan, or through rules setting out a process to apply for specific areas to be protected. However, other than the reference to Manganui Bay, no other specific areas were identified at that stage as meriting such protection.<sup>37</sup>

Council notified its decisions on submissions, in May 2019, and rejected the protection proposals. Bay of Islands Maritime Park Inc appealed to the Environment Court seeking policies and/or rules that provided for a site nomination process. Forest and Bird also lodged an appeal. This identified four large areas for which protection was sought (the entire tip of the North Island, Whangaroa Bay, the outer Bay of Islands and Mimiwhangata) along with rocky reefs affected by kina barrens more generally.

Many parties joined the appeals including several iwi and hapū, commercial and recreational fishing interests, aquaculture interests, the Ministers of Conservation and Fisheries and Te Ohu Kai Moana. Ngāti Kuta and Te Uri o Hīkīhiki supported the protection of four discrete areas within their roha moana, and these became the focus of the Environment Court hearing (see Figure 5.3):<sup>38</sup>

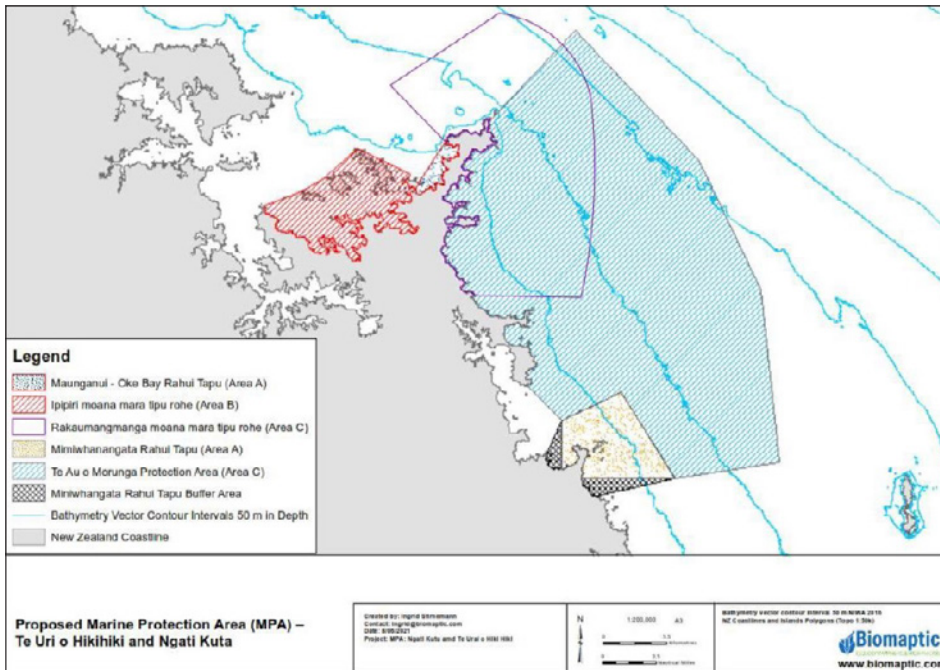
- a) Area A: Maunganui Bay – Oke Bay Rāhui Tapu (to become a closed area – with removal of all aquatic life and damage to the seabed

prohibited). *Part of this area (Maunganui Bay) had already been protected by temporary fisheries closures for eight years.*

- b) Area A: Mimiwhangata Rāhui Tapu (to become a closed area as above). *Commercial fishing had been excluded from the area since 1983 but recreational fishing had been allowed subject to controls on fishing methods. A 2004 marine reserve proposal by DOC had not proceeded.*
- c) Area B: Ipipiri/Inner Bay of Islands (bottom trawling, Danish and purse seining and dredging to be prohibited but other fishing to be permitted). *This area had already excluded trawl, Danish seine, large purse seine nets and commercial scalloping since at least 2004.*
- d) Area C: Rakaumangamanga Moana Mara Tipu Rohe/ Te Au o Morunga Protection Area (Bottom trawling and Danish and purse seining to be prohibited with dredging and other fishing to be permitted). *The area was currently open to all types of fishing.*



*Mimiwhangata, Northland*



**Figure 5.3: Marine protected areas as proposed by Te Uri o Hikihiki and Ngāti Kuta** (Source: Environment Court)<sup>39</sup>

None of the areas were to exclude customary fishing, and kina management, mussel restoration activities, monitoring and scientific research would also be permitted in all areas. The Northland Regional Council supported the proposals. That the areas had high ecological values, was not in dispute, but there was contention over the appropriate method to protect them.

“The main issue at the heart of the case is: What is the most appropriate way to achieve protection of marine ecological values?”<sup>40</sup> (Environment Court)

There was broad support for marine protection among many parties, but significant differences in the specifics of what should be protected, and under which legislative framework. The positions ranged from strong support for broad protections, to conditional support for protection of certain areas, to outright opposition to any RMA protection due to concerns about duplication of controls and impacts on existing rights. Those with commercial and recreational fishing interests were mostly opposed to protections under the RMA, preferring Fisheries Act tools.

There was also disagreement amongst Māori groups. Representative bodies such as Te Rūnanga a iwi o Ngāpuhi, Te Ohu Kai Moana and Te Rūnanga o Ngāti Rēhia were largely against RMA protection, claiming it could undermine commercial fishing Treaty rights. However, hapū who had a more direct relationship with the rohe moana in question, were broadly supportive of full protection of the identified areas. The differing views highlight the complexity of balancing environmental protection with traditional rights, and showcase the nuanced positions within Māori communities on marine conservation.

In November 2022, the Environment Court released its decision, which was just over five years after the proposed Plan was first notified. It confirmed full protection for the two parts of Area A as “It was clear from the evidence ... that both these areas display very high biodiversity values”.<sup>41</sup> Protection from bulk fishing methods was also provided for Area C but only out to the 100 metre depth contour (see Figure 5.4). This was on the basis that the Court lacked evidence to support biodiversity values in deeper waters.



*Tapeka Point, Russell where 80 per cent of the rocky reefs have urchin barrens*

Fisheries restrictions already prevented the activities sought to be excluded in Area B so protection under the RMA was not considered necessary. During the proceedings, the Minister of Fisheries had closed the scallop fishery in Northland (from 1 April 2022) due to a collapse of the stock, and this filled the last gap in protection of Area B.

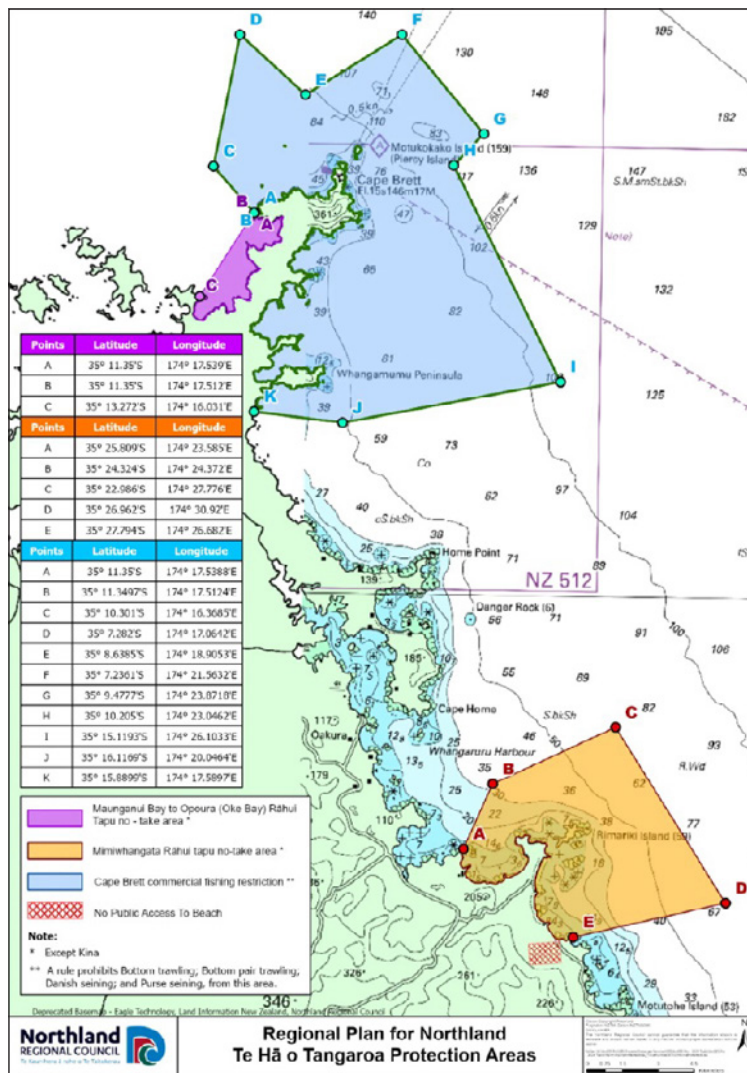


Figure 5.4 Te Hā o Tangaroa Protection Areas (Source: Northland Regional Council)

Somewhat strangely, Fisheries NZ commenced work on a possible prohibition of bottom trawling and Danish seining in Area C, during the Court proceedings. It notified proposals to protect Area C, in September 2022, just prior to the Court decision being released.<sup>42</sup>

“The reef systems around Rakaumangamanga/Cape Brett to Mimiwhangata support significant marine biodiversity ... Fisheries New Zealand considers that commercial fishing with mobile bottom-contact gear is the main potential threat to benthic marine biodiversity in the Cape Brett to Mimiwhangata area.”<sup>43</sup> (Fisheries New Zealand)

Local hapū and environmental groups worked together to successfully achieve protection of highly biodiverse areas on the Northland coast. This was in the absence of sufficient measures being taken under the Fisheries Act.

#### 5.4 South-East Marine Protection Forum

“The principal objective of the Forum will be to provide a report for Ministers recommending levels of marine protection for the Otago subregion of the Southern South Island biogeographic region, consistent with the MPA Policy and MPA Guidelines.”<sup>44</sup> (South-East Marine Protection Forum)

The South-East Marine Protection Forum was established in April 2014 to deliver recommendations to government on a marine protected area (MPA) network for the south-east coast of the South Island. It followed on from the joint development of the 2005 Marine Protected Areas Policy and Implementation Plan, by DOC and the then Ministry of Fisheries, which had the objective to:<sup>45</sup>

Protect marine biodiversity by establishing a network of MPAs that is comprehensive and representative of New Zealand’s marine habitats and ecosystems.

Development of a MPA network for nearshore areas was to be achieved through regional planning by ‘marine protection planning forums’ which were to be jointly convened by the Ministry of Fisheries and DOC.<sup>46</sup> The South-East Forum followed two earlier initiatives:

- The *West Coast Marine Protection Planning Forum*, which was established in 2005, and released a recommendation report in 2010. Members reached consensus on four primary locations for protection but not on the size or marine protection tools to be used. The wide divergence in views is illustrated by the two

options provided for Kahurangi which covered 85km<sup>2</sup> and 665km<sup>2</sup> respectively. Five new marine reserves (which generally adopted the smaller options proposed), were created in 2013 using the Marine Reserves Act, increasing protection of the bioregion from zero to 1.3 per cent (covering a total of 175.28 km<sup>2</sup>). In addition, Fisheries Act tools were used to protect an additional 96 km<sup>2</sup> from bottom trawling, dredging and Danish seining.<sup>47</sup>

- The *Subantarctic Marine Protection Planning Forum* which was established in 2008, and provided a recommendation report in 2010, was also unable to reach consensus. It provided two options for each of the three islands being considered, the first was partial protection of the territorial sea around the islands and the second was full protection. The government decided to adopt a 'midway' approach which drew elements from both options. Three marine reserves were created through special legislation – the Subantarctic Islands Marine Reserves Act 2014 – which protected 100 per cent of the territorial sea around Antipodes Island, 58 per cent around the Bounty Islands and 39 per cent around Campbell Island. Prohibitions on bottom trawling, dredging and Danish seining covered the remaining territorial sea areas.<sup>48</sup>

The South-East Marine Protection Forum was the third, and most recent, forum established under the MPA policy. It consisted of 14 people (plus two alternates) including an independent chair. Three were rūnaka representatives (including the deputy chair), three were commercial fishers, two were recreational fishers, two were environmentalists, and there was one person each from the tourism, community and marine science sectors.<sup>49</sup>

The biogeographic marine area under consideration was large, extending along the coastline from Timaru in the north to Waipapa Point (in Southland), and out to the edge of the territorial sea. It is where cold sub-Antarctic waters meet with warmer oceanic flows, and where the continental shelf narrows, resulting in nutrient rich upwellings off the coast. Habitats and marine life are abundant and diverse. The area also has the largest river in the country (Clutha) discharging into it.<sup>50</sup>

The Forum's recommendations report<sup>51</sup> highlights the special character of the marine area, but does not identify any particular pressures on it, or issues that need to be managed. This is likely due to the narrow scope of its work which was strictly limited to 'marine protection'. The Forum was tasked with providing recommendations to "protect marine biodiversity by establishing a network of MPAs that is comprehensive and representative

of [Otago's] marine habitats and ecosystems".<sup>52</sup> The terms of reference expressly stated that "the Forum should not be diverted by Resource Management Act, aquaculture or fisheries management issues".<sup>53</sup>

The process was funded by DOC (with MPI providing additional support) and a joint governance board between DOC and MPI was established to support the Forum's independent chair. Two science workshops were held. A long list of 100 sites proposed by sectors were narrowed down to 20 that went out to public consultation. Some 2,803 public submissions were lodged (of which 1,964 were pro forma) highlighting a strong level of public interest in the proposals.<sup>54</sup>

"One difficulty the Forum faced was the lack of a common shared view of the need for Marine Reserves. Some Forum members did not accept that Marine Reserves would necessarily be beneficial to the protection of biodiversity and argued that biodiversity could be better protected through better management of threats than spatial closure."<sup>55</sup> (South-East Marine Protection Forum)

Seven mātaihai and one taiāpure (East Otago as discussed above) had already been established in the area. Ngāi Tahu was concerned that the creation of marine reserves might impede the exercise of its rights within its rohe. This was in part because the establishment of MPAs reduces the area in which fishers can harvest, and can thereby increase the likelihood that an application for a new mātaihai will fail the prevent test (as described in the spotlight above), and be declined.

In the end, consensus could not be reached, and the Forum's recommendations (released in February 2018) included two different options. Network 1 (which protected 14.2 per cent of the bioregion) was supported by the environment, tourism, community and science sectors, as well as one of the two recreational fishing representatives. Network 2 (which protected just 4.1 per cent of the area) was supported by the commercial fishing representatives and the second recreational fishing representative.

"As no-take areas, Kāi Tahu considers that Marine Reserves essentially isolate and alienate hapū from that part of their marine domain. Co-management would actively recognise the mana and engagement of Kāi Tahu in the management of any MPAs that are established, recognising intergenerational connections to the past, present and future."<sup>56</sup> (South-East Marine Protection Forum)

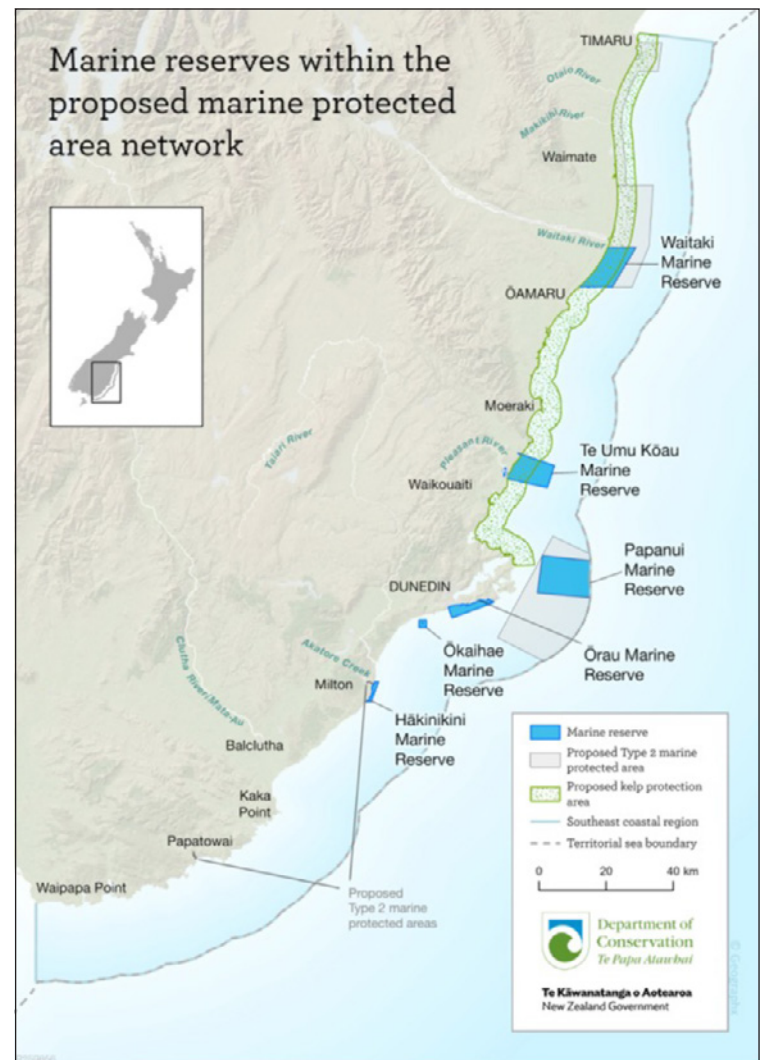
The Forum's recommendations included a 25-year generational review and co-management of the new marine reserves between the Crown and Ngāi Tahu. Provision was also to be made for Ngāi Tahu to access the areas for practices that enhance their mātauraka Māori (traditional knowledge) and to retrieve koiwi tākata (ancestral remains), artefacts and marine mammal remains.<sup>57</sup> In this way, Ngāi Tahu could keep traditional knowledge and skills alive, and connect their youth to their rohe moana (tribal marine areas).<sup>58</sup>

In 2019, the Ministers of Conservation and Fisheries decided to proceed with Network 1. They put this option out for further public consultation, in 2020, under the Marine Reserves Act provisions. This time 4,056 submissions were lodged indicative of the growing interest in the proposals. In October 2023, the Ministers jointly announced the creation of six new marine reserves (see



St Kilda Beach which will be protected by the proposed Ōrau Marine Reserve

Figure 5.5). Judicial review proceedings were filed against the decision, in June 2024, by the Otago Rock Lobster Industry Association.



**Figure 5.5: Proposed South-East Marine Reserves** (Source: Department of Conservation)

The South-East Marine Protection Forum was the third effort by DOC and MPI to establish a collaborative process to recommend networks of marine protected areas within biogeographic regions. Although facilitating an increase in marine protection, none of the groups have succeeded in reaching consensus. The South-East proposals are now subject to legal challenge.



## 5.5 Key insights

Marine protection under the RMA has been increasingly sought by environmental groups and hapū, due to concerns about environmental degradation, and the lack of effective response under other regimes (ie the Fisheries Act or Marine Reserves Act). The Court of Appeal has confirmed that regional councils can control fishing activities to protect biodiversity and related values, provided those controls are not for a Fisheries Act purpose. Policies and rules in regional coastal plans provide more flexibility, than permanent protection under the Marine Reserves Act, and so can better resonate with the aspirations of iwi and hapū.

Fishing has now been restricted in three regional coastal plans, but only in one case was the protection initiated by the council itself (in Marlborough). Marlborough District Council undertook a comprehensive review of available information to identify significant sites, with later adjustment through monitoring and ground-truthing. In the Bay of Plenty and Northland, marine areas were only protected through the appeals process and intervention by the Environment Court, with the regional councils not identifying and protecting the areas in the first place.

The strength of the RMA process is that parties can seek a decision from the independent and specialist Environment Court, which evaluates competing evidence in an impartial manner. No similar merits-based judicial process is available under the Fisheries Act or Marine Reserves Act where Ministers make the final decisions.<sup>59</sup>

However, a process where areas to be protected are identified through the appeals process and not through a comprehensive survey or information review and collaborative process, is not ideal. Protection can be ad hoc and focus on areas that appellants are familiar with and have technical information to support. Other significant areas, such as deep reefs that are

'out of sight and out of mind', can be omitted. More support and incentives are needed to ensure councils take the lead in robustly identifying significant ecological marine areas up front.

The RMA statutory framework enables regional councils to implement an ecosystem-based approach to MSP when preparing regional coastal plans, given their functions to "achieve integrated management" of the natural and physical resources of the region and to maintain indigenous biological diversity.<sup>60</sup> The identification and protection of significant ecological marine areas would be an integral part of such a RMA-based statutory MSP planning process.

Collaborative processes solely focused on identifying marine protection areas, can be fraught, as shown by the three marine protection forum established by DOC and MPI. Such a narrow conversation can be polarizing and none of the groups were able to reach consensus. However, in the absence of other more suitable processes, the forum have facilitated progress in achieving marine protection.

The impacts of displacement of fisheries effort also need to be considered when creating no-harvest areas. We will be considering issues around marine protected areas, and their interface with fisheries management, in much more depth in Working Paper 2.

The RMA provides an important mechanism whereby marine biodiversity can be protected which is integrated, flexible and locally-based. It can also be utilised in the absence of tools being deployed under other legislation. The establishment of marine protection fora, is another mechanism which has been used to progress marine protection, although these groups have not been able to reach consensus to date.

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- 8 First amended notice of appeal by the Trustees of Motiti Rohe Moana Trust in relation to the proposed Bay of Plenty Regional Coastal Environment Plan, 23 November 2015
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- 12 *Attorney-General v Trustees of the Motiti Rohe Moana Trust* [2019] NZCA 532, at [7]-[8]
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- 39 *Bay of Islands Maritime Park Incorporated and The Royal Forest and Bird Protection Society of New Zealand Inc. v Northland Regional Council* [2022] NZEnvC 228, Appendix 2
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- 60 Resource Management Act 1991, sections 32(1)(a) and (ga)

## 6 Active marine restoration



*Farmed green-lipped mussels*

In this chapter we review five initiatives seeking to actively promote marine restoration. The first two focus on the restoration of green-lipped mussel beds and the second two on kelp forest restoration. The final initiative is still in its early stages but seeks to bring together mātauranga Māori and science to explore the marine restoration potential of rāhui. In addition, we have reviewed mussel and kelp restoration projects in the Marlborough Sounds in the separate case study.

There are many other marine restoration projects around the country. Here we have sought to profile a few diverse approaches in order to explore what might be learnt to inform thinking about the development of a National MSP Framework.

### 6.1 Revive Our Gulf

The Mussel Reef Restoration Trust was formed in 2013 by a multidisciplinary group which was inspired by the vision of restoring the historical green-lipped mussel (kūtai) beds in the Hauraki Gulf / Tīkapa Moana / Te Moananui a-Toi. The once dense mussel beds in the inner Hauraki Gulf, which are thought to have covered around 500 km<sup>2</sup>,<sup>1</sup> had failed to recover after the mussel dredge fishery collapsed in the late 1960s. The precise location or extent of these beds remains unknown although a map of dense beds in the inner Gulf was reconstructed from reports by dredge fishers.<sup>2</sup>

The mussel beds supported high densities of fish and a wide range of other species. They served to filter seawater and recycle nutrients thereby

helping to clarify the water column. These abundant, healthy ecosystems held deep significance for Māori, forming part of the food network and a vital source for their pātaka kai (food basket).

Initial promising results of small scale mussel-deployment trials by University of Auckland scientists provided some hope that the beds could be brought back to life. The purpose of the trials was to better understand why the wild mussel beds had not naturally recovered. There were thought to be two likely potential causes. First, the mussels may not be able to survive due to increased sedimentation in the Firth of Thames. Secondly, there may be low natural larval supply and/or lack of appropriate habitat and environmental conditions for larval settlement and survival. The trials were designed to test the first question: whether adult mussels could survive on muddy sediments.<sup>3</sup>

Three experimental sites were selected in the Firth of Thames each with differing water clarity. In September 2008, five cages were pinned to the seafloor at each site and 25 mussels placed in each cage. The mussels were resampled three times over a 500 day period. This found high mussel survivorship (68%) at all sites, and no differences related to water quality, demonstrating that adult mussels could survive and grow on the muddy seafloor and in turbid water. However, mussels in the least turbid site were in better condition, indicating that sediment did impact mussel health.<sup>4</sup> It was these findings that prompted the Mussel Reef Restoration Trust to be established, and to undertake much larger deployments under the 'Revive Our Gulf' brand through partnership with iwi, hapū and the community.

The Trust's first deployment of live mussels was in November 2013, when seven tonnes of mussels were deposited from a barge into Cable Bay, off the northern tip of Rotoroa Island. The mussels used for the deployment had been grown on longlines in a Coromandel mussel farm. Due to low levels of natural spat in the Hauraki Gulf, the mussels had been grown from spat attached to seaweed which washed ashore at Ninety Mile Beach.<sup>5</sup>

Cable Bay was chosen due to the evidence of historic mussel beds there, the presence of a large expanse of soft sediment in shallow water, low tidal currents and reasonable water clarity. All in all, seven mussel beds were established, with each bed comprising a ton of mussels (or around 20,000 individuals).<sup>6</sup>

For the initiative, the Trust teamed up with the University of Auckland which provided a PhD student to monitor the condition of the deployed beds. Changes in population size and structure were tracked over a two year period. Due to logistical constraints, only four of the seven beds were regularly assessed.<sup>7</sup> The research found that the mussels that survived had increased in size, but overall survival rate was poor, at just 26.2 per cent after two years.<sup>8</sup>

There was also a notable lack of any recruitment on the beds. A total of three mussel recruits were observed over the entire study area where some 140,000 adults had been deposited. Possible reasons were thought to be low larval supply and/or lack of suitable substrate for settlement. Settlement of green-lipped mussels is enhanced by filamentous structures such as algae and hydroids and neither of these were observed at the deployment sites during the two years of monitoring.<sup>9</sup>

When 70 tonnes of mussels (around 2.4 million individuals) were rejected for supermarket supply and supplied free of charge to the Trust, it undertook a second deployment at Cable Bay (in September 2014) and this produced similar results. After 20 months, only 22 per cent of the mussels remained, growth was slow and there was no evidence of recruitment.<sup>10</sup> This site was later resurveyed, nine years after the deployment, and some scattered live mussels remained but no cohesive beds. Despite the paucity of live mussels, the dead mussel shells were supporting a range of encrusting species (including sponges), indicating a longer-term positive impact on marine biodiversity of the mussel deployment.<sup>11</sup>

These early efforts were undertaken without biosecurity consent. This situation changed, in 2015, when MPI became concerned that the movement of mussels sourced from marine farms in the Coromandel area, might spread invasive organisms further into the Hauraki Gulf, or increase their density at sites where they were already present. The Ministry notified the Trust that it needed a permit under the Biosecurity Act to undertake the restoration work.

Obtaining the permit proved to be an expensive and time-consuming process, particularly for a small not-for-profit organisation that relied on volunteer effort. A permit was eventually obtained but the conditions attached were onerous. They required the farmed mussels to be immersed in fresh water for 90 minutes, to kill any unwanted organisms, before being deployed into the marine area.<sup>12</sup>

This requirement prompted a move to the Mahurangi Harbour where there was an unused oyster farm that had tanks large enough to enable one tonne bags of mussels to be submerged in freshwater. This became the main focus area for subsequent deployments. The Harbour and neighbouring Kawau Bay have been significantly modified over the years by high sedimentation loads and fishing activity with the rich horse mussel and scallop beds which had been a dominant feature now largely gone.<sup>13</sup> The extent of historic green-lipped mussels beds in the area is unclear but it was not identified as part of the historic green-lipped mussel dredge fishery.<sup>14</sup>

In October 2016, the University of Auckland with support from The Nature Conservancy, deposited cleaned adult mussels at seven sites with different substrates. Four were within the Mahurangi Harbour and three further out in Kawau Bay near Martins Bay and Motuketekete Island.<sup>15</sup> In 2017, the Trust created five 10-tonne beds in the same area, and in 2018, a further 30 tons of mussels were deployed. Some of the mussels were donated by mussel farmers with the Ngāti Manuhiri Settlement Trust assisting with the effort.<sup>16</sup>

Although the mussels in these beds also had a low survival rate, increased diversity of other species associated with the deployments were recorded, with the abundance of fish up to 20 times higher than adjacent areas, and encrusting invertebrates and large epifaunal species increasing by over 100-fold in some cases.<sup>17</sup> Research has also indicated that mussel beds can increase denitrification<sup>18</sup> and increase carbon storage.<sup>19</sup>

“People interested in restoring marine spaces are trying to do something new, something where we don't necessarily have good background knowledge and no resources to rapidly move to scale. This doesn't mean the exercise is futile and there are lots of wins. But if people think it's going to be a simple fix then they're wrong.” (Simon Thrush)

It was at this point that the Trust started to gain real traction. Although mussel survivorship was still a problem, and the natural recruitment barrier had not been solved, the Trust was particularly successful at selling the dream of a restored Gulf. It started to attract serious support and funding.

“People want hope and good news. My sense is that images of kūtai going into the moana were perceived by some as a sign that the job was done, even though it's still experimental and in the discovery phase.” (Katina Conomos)

In 2018, The Nature Conservancy (one of the largest environmental NGOs in the world) established a New Zealand office and provided support for the restoration efforts. In 2019, \$400,000 was invested in mussel reef restoration by DOC, Fisheries New Zealand and The Nature Conservancy (through the China Global Conservation Fund).<sup>20</sup> A further \$400,000 was provided by Auckland Council through its healthy waters programme.<sup>21</sup> The same year, Foundation North and the Tindall Foundation funded the establishment of a Hauraki Gulf Shellfish Restoration Coordination Group.<sup>22</sup> The Nature Conservancy appointed a Shellfish Restoration Coordinator in February 2020.

After five years of requests, in September 2020, Biosecurity NZ released a new framework for mussel restoration activities. This now assessed the biosecurity risk based on conditions where the mussels were sourced from as well as where they were being deployed to. As most marine pests had now spread widely throughout the Gulf this significantly sped up the process of obtaining permits, removed the onerous conditions, and overall was considered “a complete game changer”.<sup>23</sup>

Depositing live mussels and shells on the seabed, to establish mussel reefs, is a non-complying activity under the Auckland Unitary Plan. Instead of applying for individual consent for each deployment the Shellfish Restoration Coordinator, with the Trust, sought a global consent. In January 2021, Auckland Council granted a general 35-year consent. It does

not identify any specific restoration sites leaving these to be set out in work plans submitted to the Council for approval.

Under the consent, an ecological survey (and in some cases a coastal process assessment) is required for each site prior to the deposition of mussels, along with a monitoring programme. Monitoring is to be undertaken for at least three years after each deployment with an annual monitoring report to be submitted to Council. This should provide greater transparency as to the results of the deployments.

Of particular note is the consent requirement that deposition of the mussels “will not impact any reef, biogenic habitat or regionally significant benthic species”. Specifically, mussels cannot be deposited on rocky reefs, seagrass beds, sponge gardens, rhodolith beds, horse mussel beds, or dense shellfish beds. However, these may be the very areas where the mussels have the greatest chance of breaking the recruitment barrier, due to the presence of other biogenic structures.

“We want to continue to push boundaries with innovative approaches that may differ from our current consent, and while it presents challenges, it's our role to navigate and work through them.” (Katina Conomos)



*Cable Bay (foreground), Rotoroa Island was the location of early mussel restoration efforts in the Hauraki Gulf*

With the consent issues largely resolved, the money kept flowing. In March 2021 a 'Challenge Fund' was established, spearheaded by The Nature Conservancy and with Foundation North providing matching donations dollar for dollar. This raised \$2 million for restoration efforts.<sup>24</sup> The Auckland Foundation set up a 'Hauraki Gulf Guardians programme' with a major recipient being Revive Our Gulf. The Trust appointed a paid coordinator for the first time in 2023. In December of that year the BNZ Foundation provided a 3-year Manaaki Taiao grant totalling \$450,000.

The Ngāti Manuhiri Settlement Trust has been leading kūtai restoration efforts. With Revive Our Gulf, it celebrated the first 2022 Matariki public holiday by launching the Te Au o Morunga – Whakatō Kūtai project. This aims to restore the mauri (life essence) of Te Moananui-ā-Toi through re-establishing kūtai beds in the iwi rohe moana.<sup>25</sup> The initiative was kicked off with a 150 tonne deployment near Moturekareka and Motuketekete Islands in Kawau Bay,<sup>26</sup> followed in 2024, with the placement of 100 tonnes (or 7 million individuals) at Motuora Island and Martins Bay.

'Te Au o Morunga' is the Ngāti Manuhiri Settlement Trust's overall marine strategy which focuses on restoration, protection and enhancement of Te Moananui a-Toi. The name of the strategy refers to the thin shimmer visible on the horizon on a calm day when out on the water, indicating progress towards a brighter future.<sup>27</sup>

The scale of these deployments is said to be "a world-first".<sup>28</sup> But it is still very much a "learning as we go"<sup>29</sup> approach. Iwi and scientists will monitor the survival rate of different densities of mussels and their impact on biodiversity.<sup>30</sup> It is thought that larger deployments could provide a sufficient mass of mussels to overcome predation pressure, produce larvae and provide larval settlement cues.<sup>31</sup> However, whether this is the case or not has yet to be proven.

Revive Our Gulf has also been working with Ngāti Whātua Ōrakei on mussel reef restoration in Ōkahu Bay which had its first small deployment in 2014. In November 2021, 60 tonnes of mussels were deployed, half on an elevated shell hash platform and half on the degraded muddy seafloor. Whilst Ngāti Whātua Ōrakei whānau have clear korero (historical narratives) of abundant shellfish in the Bay it is unclear if kūtai were historically present. The area is now heavily degraded, and covered in deep sediment, so it is hoped that kūtai can act as a pioneer species to help re-establish healthy reef systems.

Work has also been undertaken, in collaboration with Ngāi Tai Ki Tāmaki, to deploy mussels off Beachlands, Pōnui Island and Rotoroa Island where there is recorded evidence of historic dense beds. These have been small scale deployments to test site suitability and kūtai survival rates.<sup>32</sup>

Alongside mussel deployment has been work to investigate local seaweeds that could provide a suitable structure for the primary settlement of green-lipped mussels. Several have been found to have high settlement rates in tank experiments.<sup>33</sup> However, the challenge will be to also grow these in degraded marine environments.

The initiative has prompted a growing body of academic work based on mussel restoration efforts in the Hauraki Gulf as well as in the Marlborough Sounds. The 'Shellfish Restoration Research in New Zealand' website lists 25 published papers, five PhD and four Masters theses. They focus largely on improving methods to undertake green-lipped mussel restoration but also seek to quantify the environmental benefits of restored sites.<sup>34</sup>

There is a question of how success or otherwise should be measured for the mussel restoration effort, which has been undertaken in the Hauraki Gulf now for over a decade, and has yet to establish self-sustaining mussel beds. In the opinion of one scientist:

transporting farmed mussels to the seafloor where a proportion of them survive for a while, but where there is no new mussel settlement and recruitment and the mussels die out over time and eventually become locally extinct, with no replacement by juveniles, cannot be claimed to be a successfully restored system.<sup>35</sup>

That might be even more the case where the ecosystem sought to be 'restored' was not there historically. On the other hand, for tangata whenua, an important element of success is reconnection to place and cultural practices. Tangata whenua recognise that the environment is changing and are using mātauranga Māori to adapt.

A recent article by Roberts et al (2023) suggests that mussel restoration goals might include social and cultural goals (such as increasing environmental stewardship and re-establishing physical and spiritual connections) alongside ecological goals which might include accelerating natural recovery, shifting an ecosystem into a healthier state or repairing the structure and function of degraded ecosystems.<sup>36</sup> But perhaps it is better not to call such efforts 'restoration' (implying return to some historic state) but rather 'regeneration' (which implies moving to a healthier future state).

“We are working in a degraded environment where land-based inputs have significantly altered natural processes, and these impacts are likely to persist for the foreseeable future. In this context, our focus has shifted from restoration to rehabilitation, recognising that we can't simply return to what once was but must instead work to improve and adapt to the new realities we face.” (Shaun Lee)

Another key question is what kind of restoration activities, where, and for what species, should be undertaken in the Hauraki Gulf as a whole. This likely necessitates a broader and more strategic look at the active and passive restoration potential of the whole area, and for a wider range of species, noting that there are also efforts to restore kelp forests in the Gulf (see below). Such an exercise could draw on the proposed Hauraki Gulf Habitat Restoration Guidance Framework (see spotlight below) and might eventually be encapsulated in a ‘Hauraki Gulf Restoration Plan’ which could be a successor to the Sea Change Plan.

### Spotlight on Hauraki Gulf Habitat Restoration Guidance Framework

‘Revitalising the Gulf’, the Government’s strategy in response to the Sea Change Plan, includes a commitment to developing a Habitat Restoration Guidance Framework to provide user-friendly information and guidance on restoration priorities and tools.<sup>37</sup> The Framework is to include four key elements:

- Identification of areas of habitat loss and the ecosystem services they provided
- Identification of the potential for, and relative priority of, active restoration options
- Provision of guidance for current and future restoration activities in the Gulf
- Identification of partnership opportunities for mana whenua and communities.

The aim of the Framework is to drive a strategic and co-ordinated approach to habitat restoration that includes both passive and active restoration. It will also seek to reduce regulatory barriers to restoration.<sup>38</sup>

Revive Our Gulf has achieved much, particularly in popularising the vision of marine restoration, and demonstrating the biodiversity benefits of mussel beds. Importantly, it has also partnered with iwi and supported their goals and aspirations. But it has not been able to solve the ecological barriers of survivorship or natural recruitment, meaning the mussel beds it has created are time-limited and not self-sustaining.

Part of this may be due to the now degraded state of the Gulf, the use of farm-raised mussels rather than wild sources (as were used in the more successful Ōhwiā Harbour project described below), and constrained regulatory environment (which requires the mussels to be deployed in the areas where they are least likely to succeed).

Achieving success may necessitate broadening restoration efforts to include other species, using a greater variety of methods, increasing the use of mātauranga Māori and trialling a wider range of different substrates and marine environments. It will also likely necessitate tackling the broader drivers of marine degradation including sedimentation.



*Mahurangi Harbour (shown here) has been a focus for mussel restoration efforts in the Hauraki Gulf*

## 6.2 Awhi Mai Awhi Atu

“Kaumātua were very clear about retaining the whakapapa (genealogical connection) of mussels originating from the harbour. This placed the priority on restoring the mussel population that had nurtured our ancestors so as to nurture our mokopuna or grandchildren into the future.”<sup>39</sup> (Kura Paul-Burke et al)

Ōhiwa harbour, situated on the north-east coast just south of Whakatāne, is a small shallow lagoon covering some 26.4 km<sup>2</sup>. It is within the ancestral homelands of Ngāti Awa, Te Ūpokorehe, Te Whakatōhea and Tūhoe (Waimana Kaakū) and was treasured as an important mahinga kai (food gathering area).<sup>40</sup> The Awhi Mai Ahwi Atu project, which focused on restoring the traditional green-lipped mussel beds in the harbour, has had a long gestation.

Its inception stems back to concerns about the health of the traditional harbour mussel beds, during the late-1990s to early 2000s, which led to Te Ūpokorehe applying for a section 186A Fisheries Act temporary closure. A two-year closure on mussel harvesting over the entire harbour was confirmed in 2003 and again in 2006. When the closure was due to expire in 2008, it became clear that a survey was needed to establish the state of the mussel beds, in order to support an application for a further temporary closure.

This led to Ngāti Awa initiating and funding three annual surveys of the mussel bed on the western side of the harbour. The survey focused on areas identified by Ngāti Awa experts as traditional sites of significance. The mussel numbers were estimated at 112 million in 2007, but this almost halved to 60 million a year later, and then rapidly reduced to 16 million in 2009. The extent of the beds had shrunk to only half their original size.

The survey work in 2009 also included an estimate of the number of eleven-armed sea stars present in the beds, a species known to predate on mussels. This found 1.2 million animals, in an area spanning just 3.9 ha, with a total estimated biomass of 672 tonnes.<sup>41</sup> The cause of the sea star population explosion was not known but could have been related to over fishing of predators and/or elevated nutrients in the harbour due to land-based sources. Likely due to a combination of factors, the ecosystem had clearly been pushed out of balance.

“The sea stars were so prolific that they were five to six layers deep. Behind them was complete devastation of dead mussel shells and in front was lunch”.<sup>42</sup> (Newshub)

Four years later, in 2013, further survey work was undertaken. This was part of a study initiated by Ngāti Awa and supported by the Bay of Plenty Regional Council, which was designed to inform the development of a mussel management action plan for the harbour. It identified a further alarming reduction in mussels, with 88 per cent of the bed boundaries identified in 2007, no longer present. The number of individual mussels remaining was estimated at just 2 million (compared to 115 million six years earlier).<sup>43</sup> The fate of mussel beds on the eastern side of the harbour was still unknown and no government agency was providing resource to help address the critical gap in knowledge.

“There is a gap in government legislative responsibilities of customary taonga marine species and ecosystems. No government agency is accountable for the sustainable management of customary taonga species in Ōhiwa harbour. There is no funding support, commitment or responsibility held by any one governmental agency. There is an assumption that all affirmative efforts to protect and sustain customary marine taonga species must be actioned by Māori including the financial burden.”<sup>44</sup> (Kura Paul-Burke)

In 2016, the traditional beds on the eastern side of the harbour were mapped and surveyed for the first time. The exercise, which was guided by traditional knowledge, found that two of the three traditional beds were no longer present and 99 per cent of the mussel bed on the western side of the harbour had disappeared. There were now only an estimated 78,000 mussels remaining on the seafloor in the last live bed on the eastern side of the harbour.<sup>45</sup>

This finding led to the Awhi Mai Ahwi Atu restoration project which received just over \$1 million from Sustainable Seas. The Māori-led science team co-developed and co-led the project with iwi partners. It was designed around four stages: stage one focused on finding out whether mussels were still recruiting in the harbour; stage two sought to grow harbour spat on mussel lines; stage three relocated mussels from the spat lines to the last remaining traditional mussel bed; and stage four sampled changes in biodiversity within the bed.



“This project was concerned with the collective endeavour. Whereby the research questions, aims, fieldwork design and implementation, were consistently co-developed and reviewed by iwi or tribal partners at all levels and all stages of the project.”<sup>46</sup> (Kura Paul-Burke et al)

For stage one, visual surveys of human-made structures in the harbour (such as floats, pilings, moorings and vessels) found that mussels were recruiting onto them, indicating that wild mussel spat was present in the harbour. This was promising. Stage two deployed two different types of commercial spat lines, as well as those woven from traditional Māori materials (taura kuku), at four mussel restoration stations. The deployments took place between 2018 and 2021. The location of the stations, and deployment timing of the spat lines, were both based on mātauranga Māori. All lines achieved successful mussel recruitment, but being woven out of plant-based materials, the taura kuku naturally degraded and fell to the seafloor after three to five months.<sup>47</sup>

In stage three of the project, an estimated 45,000 mussels were relocated from the restoration stations to the traditional mussel bed. This had very positive results, with the increase in the size of the bed being much greater than the additions made from relocated mussels. There were an estimated 78,000 mussels in the bed, in 2019, and this had increased to 379,000 by 2021. In addition, three newly formed mussel beds were discovered, in 2020, in close proximity to the restoration stations. Overall, the number of self-recruiting mussels on the seafloor had increased from 78,000 in 2019 to 745,000 in 2021.<sup>48</sup> This was almost a ten times increase, an outstanding success on any terms, and far more promising than efforts in the Hauraki Gulf. In 2023, a further 16 million mussels were identified on the seafloor in the once depleted traditional mussel bed area of Ngāti Awa.<sup>49</sup>

Biodiversity sampling in stage four of the project found that one metre of mussel spat line generated 2,000 mussels on average and supported some 188,000 other macrofaunal individuals. This was 57 times more than those found naturally on the seafloor, so demonstrated a significant biodiversity benefit, along with the healthier mussel beds.<sup>50</sup>

The use of traditionally woven taura kuku was seen as particularly important. From a Māori perspective, mussels grow as whānau (a family grouping) when they form clumps, and “when the taura kuku biodegrade and are ready to drop to the seafloor, the mussels are already securely attached and able to fall together as a whānau, re-attach and establish new mussels beds, as a whānau on the seafloor.”<sup>51</sup>

“Māori knowledge and ecological understandings can provide access to a whole range of new tools and techniques to help improve marine biodiversity and management.”<sup>52</sup> (Kura Paul-Burke et al)

Now that Sustainable Seas funding has come to an end the ongoing restoration effort is being led by Ngāti Awa and co-financed with the Bay of Plenty Regional Council in partnership with the Ōhiwa Harbour Implementation Forum. A related Sustainable Seas project investigated the feasibility of removing sea stars from the harbour and turning them into a commercially usable product (collagen cream) and this could potentially provide a sustainable funding source for restoration efforts.<sup>53</sup> Ngāti Awa has recently sought a further s186A temporary closure to protect the restored beds from harvesting impacts.

The use of Māori traditional knowledge to frame and inform the mussel restoration project at Ōhiwa harbour has proved highly successful. It has drawn on a deep understanding of the historical mussel beds, focused on using local spat, adapted traditional practices (using woven taura kuku) and shown careful respect for the welfare of the mussels. It can valuably inform restoration efforts elsewhere.

### 6.3 Hauraki Gulf kelp restoration

“[Kelp forests] form some of the most productive ecosystems on the planet.”<sup>54</sup> (K H Mann)

Kelp forests provide the ecological foundations of shallow rocky reef systems in Aotearoa New Zealand. They support biodiversity, primary production and carbon storage.<sup>55</sup> They are a “vital provider of biogenic habitat for reef fish” and also play an important role in “supporting coastal food webs”.<sup>56</sup> In healthy coastal ecosystems, kelp can provide up to half the organic matter that supports fisheries production. Healthier kelp forests can increase fish growth rates as well as the resilience of stocks to fluctuations in phytoplankton production (which is becoming more acute with a changing climate).<sup>57</sup>

Some kelp species are particularly important to Māori with rumurapa (bull kelp) being identified in statute as a taonga species for Ngāi Tahu.<sup>58</sup> But in many places kelp is disappearing. In northern regions this is mainly due to a proliferation of kina (sea urchins) which graze on the kelp forests, eventually removing them, and forming denuded reefs termed ‘urchin barrens’.

Along the north-eastern coast of the North Island, urchin barrens now cover around 30 per cent of shallow rocky reefs that are open to fishing (and in some places up to 49 per cent).<sup>59</sup> This can be compared to less than two per cent within no-take marine reserves. In total, kina barrens extend over some 30.5 km<sup>2</sup> of the north-east coast. This is thought due to key sea urchin predator species, such as rock lobster and snapper, being heavily harvested “meaning they are not large or abundant enough to play an ecologically important role in controlling urchin populations”.<sup>60</sup>

Recently there has been interest in removing excess kina to enable kelp beds to recover. Such approaches have long been used in other countries including Australia, the USA, Italy, Canada and Japan.<sup>61</sup> In Aotearoa New Zealand, kina removal is a culturally sensitive issue, as kina is a taonga species for Māori and a valued and important food source. It is also an important part of the marine ecosystem.<sup>62</sup> This means such exercises need to be undertaken sensitively.

In 2020, Auckland University scientists partnered with Ngāti Manuhiri and Ngāi Tai ki Tāmaki to undertake several kina removal trials in the Hauraki Gulf. These were carefully designed to investigate the ecological impacts of kina removal as well as the efficiency and effectiveness of different kina removal methods as a kelp restoration method. The project was co-funded by the University of Auckland, Foundation North, Sustainable Seas and the Live Ocean Foundation. It was granted permission by iwi and also obtained a special permit from Fisheries NZ under section 97 of the Fisheries Act.

The trials involved divers removing kina from four heavily fished sites dominated by kina barrens: Ōtata Island (in the Noises Group located in the inner Gulf), Nordic Bay and V-Bay near Leigh (on the outer north-west coast of the Gulf) and on the north coast of Hauturu-o-Toi (Little Barrier Island). The sites comprised large discrete areas covering 1.6 to 2 ha each and included a range of water clarity and wave exposure conditions.<sup>63</sup>

The removal was undertaken during late 2020 and early 2021 using various culling methods. A small proportion were collected and given to iwi. Crushing with a metal pipe or large hammer was the most common method used, as most of the kina were small and had low roe quality, making them poor eating and therefore not worth collecting.<sup>64</sup> It took 381 hours of in-water time by SCUBA and freedivers, and over 28 boat days, to clear a total of 7.1 ha over the four sites (an average of 51 to 63 hours dive time per hectare).<sup>65</sup> A total of some 400,000 kina were removed.<sup>66</sup>

Recovery of the kelp forest was monitored six, 12, 24 and 36 months after the kina removal operation. This found macroalgal recovery to be rapid.

After just two years, the kelp canopy increased from zero to an average of 43 per cent at all the sites. The recovery was irrespective of water quality (with Ōtata having sediment-laden water), wave exposure or temperature. A large marine heatwave had hit the area in 2022 but had not affected kelp recovery.<sup>67</sup>

The results confirmed that proliferation of kina was the main cause of the extensive loss of *Ecklonia radiata* kelp forests in the Hauraki Gulf. It also demonstrated that the forests could regenerate naturally once the kelp-grazing kina were reduced (and in this case did not require replanting). Deeper kelp forest was present in close vicinity to all four sites which provided a spore supply for recovery.<sup>68</sup>

Sea urchin reinvasion was minimal over the two year monitoring period. However, after three years, kina densities started to increase, and will necessitate repeated removals to prevent the areas turning back into barrens. This would be costly, and logistically difficult, if restoration was undertaken at any scale. The re-establishment of predators (large snapper and crayfish) is needed, to keep the kelp ecosystem in balance over the longer-term, necessitating some control over their harvest. Otherwise the barrens will inevitably return over time and initial gains will be lost.<sup>69</sup>



*Kina removal trials have been undertaken off the Noises Islands (shown here)*

“While active removal can therefore provide a useful tool in kelp forest restoration, it does not address the underlying cause of sea urchin overpopulation and thus on its own provides only a temporary recovery.”<sup>70</sup> (Kelsey Miller et al)

For kelp restoration to be successful, the factors which originally caused kelp loss need to be rectified.”<sup>71</sup> (Fisheries New Zealand)

The kina removal trials in the Hauraki Gulf are promising and demonstrate that it is possible to quickly recover kelp forests on shallow reefs. However, controls on harvesting kina predators are required for the recovery to be sustainable over the longer term.

This makes the approach particularly suitable for marine areas which have some form of protection. Natural recovery can take decades, after fishing controls are put in place, due to the need for predator numbers to build back up before kina are brought under control. Active restoration can help speed up this natural process.

Given that the Hauraki Gulf is soon to receive a considerable increase in marine protection (from 0.3 to 6 per cent) through the Hauraki Gulf/ Tīkapa Moana Marine Protection Bill, these might be suitable areas to focus a scale up of these promising kelp recovery trials.

## 6.4 Te Whanga Hauoro o Tūtūkākā

“[Tūtūkākā harbour] is a highly degraded ecosystem, dominated by kina barrens where there was once flourishing kelp forests, and a pronounced decrease in biodiversity of both fish and invertebrate life.”<sup>72</sup> (Te Wairua o te Moananui)

This mana whenua and community-led project is focused on restoring the kelp forests of Tūtūkākā harbour in Northland. The outer portions of the harbour have numerous rocky reefs, interspersed with sandy bays, and it is these areas which have developed kina barrens.

The lead organisation for the project is Te Wairua o te Moananui (Ocean Spirit Charitable Trust) and it is supported by a group of scientists from the University of Auckland (several of whom were until recently located at Massey University). The idea behind the initiative is to develop kelp

propagation and replanting methods that community members can replicate and use alongside kina removal.

The project had its inception in 2018 when Te Wairua o te Moananui started undertaking community-based ecological surveys on the Tūtūkākā coast. This involved communities assessing the overall ecological health of the survey sites as well as specific indicator species. The surveys have shown a consistent trend of ecological decline particularly for rock lobster (kōura). Surveys of kōura nurseries within the harbour, in 2022, found no adult animals and there was an assumed breeding success of zero.

This finding prompted Ngāti Takapari, Te Waiariki and Ngāti Korora to apply for a temporary s186A closure on harvesting kōura alongside a range of other species including pāua and shellfish (but excluding kina and scallops). This commenced in February 2024. Depending on how long the closure stays in place, this should help kōura to re-establish on the reefs, in turn slowly bringing kina back under control, and enabling the kelp to re-establish.

Te Whanga Hauoro o Tūtūkākā was publicly launched in November 2022. It received strong community support, and raised \$25,000 in community donations, enabling the establishment of a simple laboratory in a modified refrigerated shipping container placed on hapū land in Church Bay.<sup>73</sup> It is situated on the western side of the harbour and directly opposite Philip Island which is one of the trial sites (the other being Shag (Becks) Bay). It is here that kelp are grown on ‘green gravel’, a technique developed in Norway.

The process involves harvesting reproductive tissue from wild kelp, drying the tissue, and then placing it into plastic basins containing seawater and pebbles collected from the harbour. This process prompts the tissue to release spores. Eventually small sporophytes attach to the pebbles and start growing into juvenile kelp plants. Lights are set up above the tanks to enable the growing kelp to photosynthesize. Care is needed to avoid contamination with other algal species that can outcompete the kelp. If these are detected they are selectively removed from the pebbles with tweezers.

Once the plants have reached a suitable size the pebbles, with kelp attached, are placed back onto the reef. In some cases the pebbles are glued to the rocks to stop them being washed away in storms. An experiment with green gravel on the Ti Point reef in the Hauraki Gulf found that 80 per cent of non-glued green gravel was no longer present after 14 months.<sup>74</sup>

“Due to the relative ease of implementation Green Gravel offers promise as a tool for community-led active marine restoration and ameliorating some of the challenges our declining kelp forests face.”<sup>75</sup> (Ella Lis)

There is an international network of green gravel projects which are being undertaken in Australia, Norway, Portugal, USA, Canada, Latin America, Sweden, Denmark, Mexico and Croatia. The other initiative trialling the technique in Aotearoa New Zealand is the ‘Love Rimurimu’ project in Wellington.<sup>76</sup>

It is a moot point whether replanting of kelp is required on the Tūtūkākā reefs, given that wild kelp plants are still present, and are the source of the productive tissue used for the green gravel project itself. It seems likely the wild kelp would reseed areas naturally, with the removal of kina, as has occurred in the Hauraki Gulf. However, kina removal is not guaranteed to result in the re-establishment of kelp forest if the ecosystem undergoes a shift towards turf seaweed dominance.<sup>77</sup> Planting kelp alongside removing kina may, in some cases, provide useful further encouragement for the ecosystem to tip towards the preferred kelp dominated state. In addition, the active growing of kelp can engage community members in positive measures to aid restoration, and increase their knowledge of and connection with the marine environment.

Te Whanga Hauoro o Tūtūkākā is an inspirational community project, using green gravel techniques, which is empowering mana whenua and community members to undertake restoration efforts in their marine places. Although not the full solution to the loss of kelp forests, and an approach which may be difficult to scale up, it provides a way for communities to become engaged in responding to ongoing marine degradation.

Green gravel approaches will need to be accompanied by kina removal and protection measures so that the natural predators of kina can re-establish and bring the ecosystem back into balance. Currently this is being achieved in Tūtūkākā through a Fisheries Act temporary closure, but this needs to be reapplied for every two years, a somewhat onerous and seemingly unnecessary requirement imposed on local hapū.

## 6.5 Pou Rāhui, Pou Tikanga, Pou Oranga

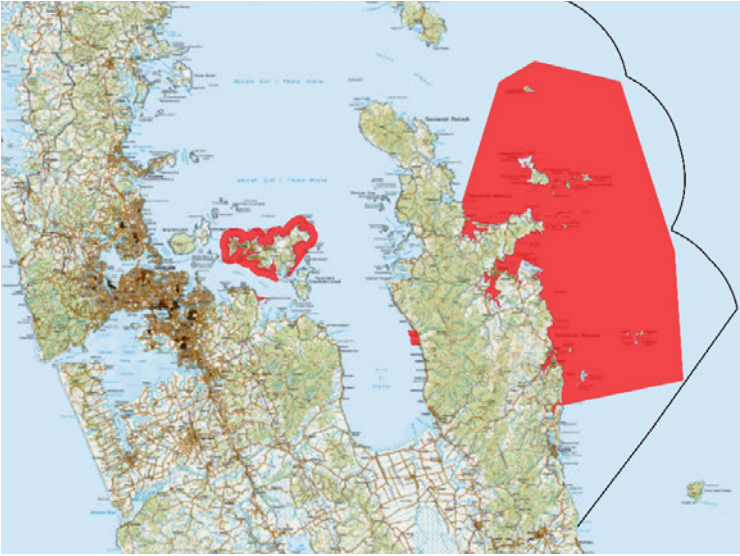
“This intergenerational project is a co-production across iwi experiencing similar catastrophic impacts in the moana to embark on innovative, replicable, pragmatic, in-water, mātauranga Māori/science solutions and actions to assist the regeneration and restoration of rohe moana.”<sup>78</sup> (Herearoha Skipper)

Pou Rāhui, Pou Tikanga, Pou Oranga: Reigniting the mauri of Tikapa Moana and Te Moananui-ā-Toi (Pou Rāhui) is a collaborative project where a team of Māori scientists and researchers are working alongside five iwi in the Hauraki Gulf to investigate the use of rāhui as an iwi environmental management tool. The project is investigating and developing ways of monitoring and evaluating change and providing an evidence base to strengthen the tool's use.

The project connects with the successful Māori-led restoration methods in Ōhiwa Harbour and was designed by iwi members, with advice and guidance provided by a korowai (sheltering cloak) of Māori scientists and academics, who are actively supporting the project. It is the recipient of just under \$14 million from the Endeavour Fund (2022 Round).<sup>79</sup>

The goal of the project is to co-develop pragmatic restoration actions for identified marine taonga species and in doing so to empower iwi to “undertake their environmental interventions with confidence and understanding”.<sup>80</sup> The collective requested a temporary closure of the areas shown in red in Figure 6.1 (which all had existing temporary closures) for a further six years:

- Umupuia Beach: tuangi (cockles)
- Te Mātā and Waipatukahu: tio (rock oyster), kūtai (mussels), pipi and tuangi
- Waiheke Island: tipa (scallops), kūtai, kōura (crayfish) and pāua
- Eastern Coromandel Peninsula (out to Repanga Cuvier Island to the north and Ahuahu Great Mercury Island to the east and along the eastern Coromandel coastline from Whangapoua to Onemana): tipa



**Figure 6.1: Requested s186A temporary closures as part of the Pou Rāhui project** (Source: Fisheries New Zealand)

The bulk of these requests have been recently granted by the Minister, with the closures continuing until August 2026, but with the exception of scallops for which the closures were not continued.<sup>81</sup> The reason for this was not given by the Minister, but presumably reflects the existing (and not time limited) closure of the scallop fisheries in the Hauraki Gulf under a Fisheries Act section 11 sustainability measure, which has been in place since December 2022.<sup>82</sup>

It is still early days for the Pou Rāhui project but it represents an exciting innovation in a Māori conceived and led project focused on the better use of customary management tools for restoration.

## 6.6 Key insights

There is increasing enthusiasm, amongst iwi and local communities alike, for marine restoration efforts around the coast. Such efforts represent a positive response to the evident and ongoing marine degradation of coastal ecosystems. As well as supporting improved health of the marine environment, such initiatives can build closer connections with sea, and deepen local knowledge of change and drivers of decline.

Actively intervening to restore natural coastal ecosystems can be complex. It can also be expensive, have uncertain results, and be difficult to scale

up. It requires an in-depth knowledge of the lifecycle stages of target species as well as of broader coastal dynamics. This is why a combination of mātauranga Māori and science can be particularly powerful in guiding restoration efforts.

Successful restoration likely requires a sound historical understanding of the marine area concerned, and the application of a holistic approach, which focuses on restoring healthy ecosystems rather than single species. Sustainability of restoration efforts, over the longer term, will almost certainly depend on addressing the issues that caused the decline in the first place.

“The larger the area of degradation, the greater the distances that species will have to travel to colonise it, and the more fragmented the patches of non-degraded environment are, the less likely there will be sufficient recruits available.”<sup>83</sup> (Judi Hewitt et al)

An open question is what the goals of active marine restoration should be. Is it aimed at restoring the marine environment to a historic and more natural state? Is it aimed at increasing ecosystem functioning and biodiversity, even if this involves the introduction of species that were not historically present there? Or is it primarily aimed at supporting rangatiratanga and the role of kaitiakitanga in caring for the moana and maintaining abundant kaimoana? Or is it all of those?

There is also the issue of funding. Some iwi and community-led initiatives have attracted substantive funding but others have struggled. It is a sober lesson that Ngāti Awa was left to monitor the decline of the mussel beds in Ōhiwa harbour for years without any financial assistance from local or central government.

There is a need for a holistic restoration approach, so that all the elements needed to bring a marine ecosystem and its myriad of species back to health are considered and addressed together, along with funding and institutional support. MSP could provide a strategic and integrated framework for restoration efforts, as well as clarify what is intended to be achieved. Without such a framework, restoration efforts will likely remain disconnected and continue to achieve mixed results.



*Kelp propagation in a community-based laboratory at Tūtūkākā*

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## 7 What MSP could deliver for Aotearoa New Zealand



*Commercial fishing boats moored at Whitianga, Coromandel Peninsula*

Reflecting on the analysis in preceding chapters we now turn to investigating what benefits MSP could deliver for the management of oceans in Aotearoa New Zealand. We traverse the potential of MSP to enable better integration of oceans management, provide more effective support for healthy marine ecosystems and biodiversity (including addressing climate change), help build a sustainable blue economy, and enable greater empowerment of Māori and local communities to manage their local marine areas.

### 7.1 Integrate oceans management at place

“[T]he fact that different groups coming from a wide range of interests – tourism interests, commercial fishing interests, and recreational fishermen, as well as environmentalists and people from a number of industries – have come together and said: “We think we can work it out better ourselves”... very much illustrates what is wrong with the whole legislative framework for the way in which we deal with the foreshore and ocean environment.”<sup>1</sup> (Hon Dr Nick Smith)

It is well known and accepted that governance of the country's marine environment is highly fragmented across multiple pieces of legislation and numerous institutions and there is no effective mechanism to co-ordinate and align the work.<sup>2</sup> The various statutory regimes are not well integrated, agency roles and responsibilities can be unclear at the boundaries, and purposes and priorities can clash.

There are also overlaps and gaps in coverage and little impetus for agencies to deploy the tools at their disposal. This is particularly acute at place where the cumulative impacts of multiple activities are most evident. We have already traversed the situation in Northland, where there had been an alarming spread of kina barrens and loss of kelp forests, but no response from the Northland Regional Council, Fisheries NZ or DOC, all who had tools at their disposal to respond.

“The range of statutory, non-statutory, and tikanga-led approaches to governance has led to overlaps of jurisdiction, inconsistency of approaches, and conflicts and tensions between the governance and decision-making of governors operating under different frameworks or models”.<sup>3</sup> (Linda Faulkner et al)

Habitats and ecosystems at the land-sea interface, such as estuaries, are a particular pinch point. They are highly dynamic and subject to significant and multiple pressures coming off the land. A 2020 report by the Parliamentary Commissioner for the Environment highlighted the complexity of managing this interface due to having “sliced and diced”, for all manner of bureaucratic reasons, the management of this “single interconnected ecosystem”.<sup>4</sup> The Commissioner underscores that “unless we manage such areas in a genuinely integrated way we will always have things falling through the cracks”.<sup>5</sup>

The need for a more integrated system to manage the complex interface between the fisheries, resource management and conservation systems, as well as that between land and sea, has long been acknowledged.<sup>6</sup> In our previous report, *The Breaking Wave*, EDS posited a range of options to better support an integrated approach, including MSP, as well as development of an overarching oceans policy and an Oceans Act.<sup>7</sup> We will be exploring the potential of these last two tools in our synthesis report.

A place-based and holistic approach, such as provided by MSP, can serve to integrate the various marine management jurisdictions and efforts at place.

## 7.2 Support healthy biodiversity and ecosystems

“The ... Framework aims to catalyze, enable and galvanize urgent and transformative action by Governments, and subnational and local authorities, with the involvement of all of society, to halt and reverse biodiversity loss...”<sup>8</sup> (Kunming-Montreal Global Biodiversity Framework)

Under international law, Aotearoa New Zealand has several important commitments to protect marine biodiversity. This includes as a signatory to the International Convention on Biological Diversity, and to the Kunming-Montreal Global Biodiversity Framework, which was put in place in 2022. The Framework sets the “30 by 30” global commitment which refers to 30 per cent marine protection by 2030. However, what is often overlooked is the accompanying commitments to bring further biodiversity loss “close to zero” by 2030 and achieve 30 percent “effective restoration” of degraded coastal and marine ecosystems over the same time period (see spotlight below).



Underwater life, Cavalli Islands, Northland (Tanya Peart)

### Spotlight on targets under the Kunming-Montreal Global Biodiversity Framework

This Framework sets a number of global targets for signatory nations in order to ensure marine biodiversity loss is addressed:

- Target 1: “Ensure that all areas are under participatory, integrated and biodiversity inclusive *spatial planning* and/or effective management processes addressing land- and sea-use change, to bring the *loss of areas of high biodiversity importance*, including ecosystems of high ecological integrity, *close to zero by 2030*, while respecting the rights of indigenous peoples and local communities.”
- Target 2: “Ensure that by 2030 at least 30 per cent of degraded ... *marine and coastal ecosystems* are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.”
- Target 3: “Ensure and enable that by 2030 at least 30 per cent ... of marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures ....”

Just six years from the 2030 target date, the country is a long way from making its contribution to the global targets. A 2019 gap analysis of marine protected areas highlighted that the country only has 0.4 % of the mainland territorial sea protected as marine reserves (Type 1 MPAs), and this is not a national or well-connected network that is representative – or under effective management. Additional marine areas were identified as protected areas with a lesser level of protection (Type 2 MPAs), which primarily provided benthic protection, and comprised 2.6 per cent of the territorial sea.<sup>9</sup>

The gap analysis also warned that designation as a protected area is often insufficient to achieve biodiversity protection as poor design (due to size, shape, connectivity, boundary placement, or the proportion of habitat included) can undermine its effectiveness and viability.<sup>10</sup> Neither does the current marine reserve model fulfil the commitment to “equitably governed”, “participatory” protection and management that respects “the rights of indigenous peoples and local communities.”<sup>11</sup>

It is now a decade since the last marine reserves were established (on the west coast of the South Island in 2014). The evident failure of the Government to make progress towards the country's international commitments not only threatens the country's international reputation but also the precious marine species in our care. It has long been recognised that "the current legislative processes for establishing protected areas are complex, can be divisive and do not allow for planned and integrated decision-making".<sup>12</sup> The National Party has committed to reform in this area.<sup>13</sup> We will be further investigating the framework for MPAs in our next working paper.

### Spotlight on supporting Great Barrier Reef Marine Park resilience

Acknowledging the severe risk climate change poses to the health of the Great Barrier Reef, a 2050 Long-Term Sustainability Plan was developed in 2015. Priority areas for action include limiting the impacts of climate change; reducing the impacts from land-based and water-based activities; and protecting, rehabilitating and restoring. The Plan recognises that "some areas of the Reef will need to be remediated, rehabilitated and restored, and some species will need to be supported to adapt."<sup>14</sup>

The Plan is flexible and reviewed five yearly. A number of other documents support it including a water quality improvement plan, wetlands strategy, policy for managing cumulative impacts, 'net benefit' policy, and addendum dedicated specifically to climate change. It has more recently driven the development of the 2024 Great Barrier Blueprint for Climate Resilience and Adaptation which seeks to apply resilience-based management to the Reef.<sup>15</sup>

Aotearoa New Zealand is still a long way from reducing the loss of "areas of high biodiversity importance" to zero, let alone restoring 30 per cent of what has already been lost. It is instructive that Target 1 of the Kunming-Montreal Global Biodiversity Framework identifies, as a top priority, spatial planning and management of "all areas" to reduce biodiversity loss. This is where MSP, focused on a providing a strategic framework for passive and active marine restoration at regional and local scales, could significantly help.

A framework for integrated and inclusive spatial planning and management is needed to support Aotearoa New Zealand in meeting targets and commitments under the Kunming-Montreal Global Biodiversity Framework. Such targets could underpin a national MSP Framework.

## 7.3 Build a sustainable blue economy

Internationally, the World Bank has identified the importance of MSP in supporting the transition towards a sustainable blue economy.<sup>16</sup> In this country, MFE officials recently advised that ongoing development, competing pressures and increasing interactions between sector interests in the marine environment indicate a need to look at spatial planning.<sup>17</sup>

This view is supported by local government. Submitting on recent resource management reforms, a collective of 16 regional and unitary councils expressed their support for MSP as a component that would "enhance and protect marine resources and support economic development" including, "ports, aquaculture, future offshore windfarms, [and] blue carbon offsetting."<sup>18</sup>

Aotearoa New Zealand's marine environment supports a wide range of economic sectors including tourism, fishing, aquaculture, shipping, communications and energy production. It is estimated that marine (or 'blue') economic sectors provide 70,000 jobs and contribute \$7.4 billion to the national economy each year.<sup>19</sup> By far the largest sector is coastal tourism, comprising 41 per cent of the total, followed by infrastructure and transport (21%) and seafood (15%) (see Figure 7.1).<sup>20</sup>

With one of the larger exclusive economic zones in the world, there are likely significant untapped opportunities to grow the country's blue economy further. Emerging sectors include blue biotechnology and renewable energy.

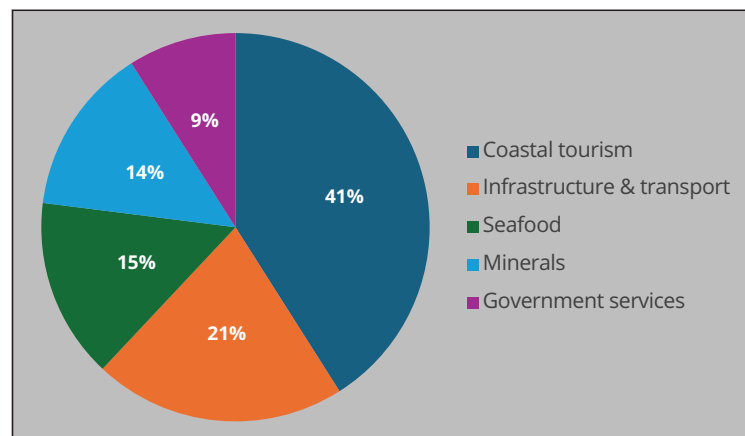


Figure 7.1: Sectoral contributions to Aotearoa New Zealand's blue economy (2017)<sup>21</sup>

Sustainable Seas has investigated opportunities for the country to transition to a blue economy through “encouraging activities that are sustainable, resilient to climate change, minimize waste, and have positive impacts on society and culture”.<sup>22</sup> It has identified six principles to guide the transition (see spotlight below).

### Spotlight on a blue economy

The term ‘blue economy’ envisions a sustainable marine economy, capable of generating economic value while also positively contributing to social, cultural and ecological well-being. Sustainable Seas has identified six foundational principles underpinning a blue economy:<sup>23</sup>

- *Accountability*: that decision-making and reporting frameworks consider natural, social and cultural effects of all proposed and actual uses of ocean resources.
- *Te Mana o te Moana*: the health and wellbeing of the moana is prioritised and informed by a Tiriti o Waitangi-led approach where the rights and responsibilities of tangata whenua are provided for.
- *Regenerative*: practices that actively support and restore marine ecosystem health are adopted.
- *Inclusive*: there is engagement with communities to achieve multiple benefits for people and the environment.
- *Intergenerational*: holistic governance and management is empowered to ensure the moana will provide long term social, cultural, environmental and economic well-being.
- *Prosperous*: this encompasses not only economic success, but an active transition to resource use that is productive, resilient and enhances ocean-dependent livelihoods and coastal communities.

This framework resonates with emerging thinking about ‘restorative’ blue economies which focus on fostering new business opportunities that, rather than contributing to environmental degradation, help reverse it.<sup>24</sup> Urchinomics, which is currently being established in Aotearoa New Zealand, is an example of such an approach (see spotlight).

Bradley et al (2021) emphasise the importance of MSP and whole of ecosystem research to support identification of appropriate sites and the

scale at which restorative activities should occur.<sup>25</sup> Other commentators have noted that MSP could help identify areas where shellfish and seaweed aquaculture would provide ecosystem services and other environmental (as well as social and economic) benefits.<sup>26</sup>

### A spotlight on ‘urchinomics’

‘Urchinomics’ is a business model where malnourished sea urchins are harvested from urchin barrens and fed with a high-protein, kelp-based diet designed specifically for roe enhancement. The urchins are fattened for 8 to 12 weeks in land-based facilities before the roe is harvested and sold. The approach is designed to generate an economic return while helping to restore kelp forests (ie a restorative economic activity).

In 2022, the company Urchinomics secured a voluntary blue carbon credit in Japan for its urchin ranching and kelp restoration efforts.<sup>27</sup> There it was found that the removal of 1,411 kg of sea urchins was required to restore 1ha of kelp forest. This in turn could generate around 1.5 tonnes of verifiable blue carbon credits.<sup>28</sup>

The model has been trialled in Aotearoa New Zealand by Envirostrat, in partnership with Ngāti Porou Seafoods and the international company Urchinomics, and with funding support from the MPI Sustainable Food and Fibre Futures Fund and other investors.<sup>29</sup> The method is now in the process of being scaled up. However, it is yet unclear whether the approach will be financially viable, or can make a significant contribution to kelp forest restoration, particularly given the extensive kina barrens along the country’s coast.

As indicated above, marine tourism is the largest sector of the blue economy but its importance can often be overlooked. It includes cruises, recreational fishing, surfing, wildlife viewing, marine mammal swimming, kayaking, sailing, snorkeling, scuba and cage diving, amongst many other things.<sup>30</sup>

Marine tourism could be an important part of a restorative blue economy. If well managed, it can enable people to access and gain a deeper experience of the marine environment in a low impact manner. Operators often have in-depth knowledge of the local marine environment, which they can share with their customers, thereby raising awareness about marine conservation. Many also have linkages with local schools, enabling children to directly experience the marine environment, and they often contribute to citizen science.<sup>31</sup> For Māori operators, marine tourism can enable the expression of manaakitanga, kaitiakitanga and tino rangatiratanga.<sup>32</sup>

“We deliver a unique perspective, cultural knowledge and experience as mana whenua of our rohe – that cannot be duplicated by other operators”.<sup>33</sup> (Māori marine tourism operator)

The health of the marine environment is intrinsically linked with the prosperity of the marine tourism sector but the interests of the sector are often overlooked in favour of extractive uses. MSP can help support marine tourism, through providing a strategic and spatial framing for marine restoration efforts, keeping potential tourism benefits in mind.

“Two-thirds of marine ecotourism businesses surveyed utilize marine reserves ... Strengthening marine protection is vital to the sustainable development of the sector.”<sup>34</sup> (Simon Milne et al)

MSP is also important for other sectors. The government’s Aquaculture Strategy sets a target for marine farming to generate \$3 billion by 2035, a significant increase from the current \$760 million.<sup>35</sup> Part of this growth is likely to be from new activities, such as offshore salmon farming and seaweed farming. The Strategy calls for a shift in approach, away from sector-based management, towards more “integrated strategic planning and ecosystem-based management”.<sup>36</sup>

There have also been calls for a more integrated approach in the commercial fisheries sector. A 2021 report by the Prime Minister’s Chief Science Advisor, the ‘Future of Commercial Fishing in Aotearoa New Zealand’ recommended a more holistic approach for fisheries management that adopts a stronger ecosystem approach.<sup>37</sup> This has recently been progressed through the development of a regional fisheries plan for the Hauraki Gulf (an integrated ‘place-based’ fisheries plan which addresses all stocks and habitats of importance to fisheries in the Gulf).<sup>38</sup>

Such regionally-based integrated plans support an ecosystems-based approach to fisheries management at place, but do not address the impacts of other sectors on fisheries health, which a broader MSP process can achieve. For example, sediment from forestry, farming and urban development can have direct impacts on coastal fisheries, but are challenging to address because of the lack of connectivity between fisheries and land-based management.<sup>39</sup> Plastic pollution and invasive species also pose threats to the sector but addressing them requires greater levels of coordination and collaboration across jurisdictional boundaries.

Overseas, MSP has been a critical support for the development and scaling up of marine renewable energy. This is particularly the case in Europe where MSP has helped create a stable regulatory framework for the sector.<sup>40</sup> In Aotearoa New Zealand, there has been increasing interest in offshore wind to support growing energy needs.<sup>41</sup> In developing a regulatory regime for this new activity, the Ministry of Business, Innovation and Employment has recognised the advantages MSP could provide.<sup>42</sup> One of the strengths of MSP is providing a platform to identify synergies between economic activities (such as offshore wind farms) and restoration of marine ecosystems.

“As we buildout offshore wind energy, there is great potential to enhance and create new fish habitat. With intentional design and material selection, these new structures could support entire communities of marine life.”<sup>43</sup> (Carl LoBue, The Nature Conservancy)

Payment for ecosystem services, carbon credits and biodiversity credits could also form part of the blue economy. We explored the potential for blue carbon above. MFE has been investigating the establishment of a biodiversity credit system to support landowners efforts to protect significant natural areas<sup>44</sup> and a similar approach could be tailored for the marine area.

MSP can assist with identifying and supporting blue economy opportunities at place, particularly those which support healthy marine ecosystems, and provide greater investment certainty for a range of activities.

## 7.4 Empower Māori

For Māori, connections to the moana run very deep. As noted above, these are embedded in whakapapa and manifest through tikanga and an active ethic of kaitiakitanga. Ecological degradation has both practical and profoundly spiritual impacts for Māori. The well-being of the natural world is seen as mutually interdependent with the well-being of people. To sustain mana, kaitiaki are bound to manage, actively protect and restore the mauri (life force) of the natural environment.

A thriving natural world is inimical to the practice of manaakitanga (hospitality, support). The loss of resources, such as mahinga kai, represent loss of the ability to undertake cultural practices and protocols, and to apply and pass down mātauranga Māori to future generations (see

spotlight below). This has enduring impacts that run to the core of Māori cultural identity.<sup>45</sup>

### Spotlight on mātauranga Māori

Mātauranga Māori is the cultural knowledge system grounded within, and fundamentally linked with, Māori values, beliefs and practices. It interweaves the multigenerational accumulated knowledge, values, beliefs and practices developed at place. It encompasses not only the expertise and knowledge base that currently exists, but the systems used for its creation and transmission, and the rules and responsibilities associated with its utilisation. Because mātauranga is so closely tied to people and place, each iwi or hapū has their own unique expression and application of mātauranga, which links those core values and principles to that particular environment.<sup>46</sup>

The Waitangi Tribunal has recognised mātauranga Māori as a taonga to which Treaty obligations attach.<sup>47</sup> This means that mātauranga needs to be recognised, and its application provided for where relevant, in all marine planning and management approaches. Similarly, Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy) underscores the importance not only of utilising the culturally specific place-based knowledge held by mana whenua, but of increasing support for “the regeneration and continuation of mātauranga Māori”.<sup>48</sup>

Previous EDS reports have highlighted the significant gaps that exist for Māori under existing environmental management frameworks,<sup>49</sup> including a systemic lack of support for agencies to work in partnership with iwi and hapū, legislative and policy settings that fail to provide for customary use (including under the Marine Reserves Act), a lack of incorporation and prioritisation of te ao Māori based values, and variable or conflicting statutory directions in relation to Te Tiriti principles.<sup>50</sup> Rout et al (2023) have highlighted that fragmentation is a constraint on the Māori marine economy and solutions need to support “multi-generational integrative economic planning for the establishment of a restorative and indigenised marine economy”.<sup>51</sup>

A 2024 MFE review of 96 iwi and hapū management plans, spanning the past three decades, found that over 75 per cent make specific reference or provision for mahinga kai. This is in a manner that connects seafood harvesting to the broader environment, tikanga, and customary practices and responsibilities.<sup>52</sup>

Restoration of mahinga kai, and associated degraded areas and resources, is a central priority in many plans. For example, policies in the ‘Tai Whenua, Tai Tangata, Tai Ao — Te Kotahitanga o Te Atiawa Taranaki Environmental Management Plan 2019’ seek to identify opportunities for Te Ātiawa to use rāhui in accordance with tikanga. This is in order to protect and enhance inshore fish stocks, restore mahinga kai areas, and preserve the tikanga associated with them.<sup>53</sup>

Most plans adopt an integrated catchment based approach incorporating “ki uta ki tai, mai te maunga ki te moana” (from the mountains to the sea) principles.<sup>54</sup> Importantly, the review found a clear “growing emphasis on spatial-based planning”.<sup>55</sup> This is increasingly being identified as a mechanism to support greater collaboration, stronger integration and innovation, and a more holistic approach. As one management plan noted, it is “an ideal vehicle to embed mātauranga Māori and enable a true partnership approach to planning, in line with the principles of Te Tiriti o Waitangi”.<sup>56</sup>

“Tipuna Māori managed the environment as a totality. Activities designed for one area were coordinated with those of another area. In terms of planning, the coastal domain was not separated from the land ward ... The overriding principle of traditional plans and management was the sense of seeing the natural world in its entirety.”<sup>57</sup> (Melanie Hayden et al)

The rationale underpinning the call for a spatial planning approach is clear – mana whenua are seeking a more integrated and collaborative approach.



*Taurapa (stern post) of Ngātokimatawhaorua waka taua, Waitangi*

For example, the Tūhoromatanui – Ngā Pōtiki Environmental Plan 2019–2029’ calls for the Council and Crown agencies to collaborate with tangata whenua to develop a spatial plan that focuses “on collaborative initiatives that result in noticeable improvements” to matters such as indigenous fish and shellfish resources, the erosion of the estuarine foreshore, and water quality and discharges. Other iwi have called directly for MSP (for example see spotlight below).

### Spotlight on Tauranga Moana Iwi Management Plan

The ‘Tauranga Moana Iwi Management Plan 2016 – 2026’ notes the need to work together with government agencies to address “conflicting uses and values within the Tauranga Moana” including surrounding lands and waters. This to be achieved through the development of a MSP to:<sup>58</sup>

- Protect sites, areas and landscapes of significance, including to kaimoana
- Identify areas where coastal use and developments, such as marinas, should not occur
- Identify MPAs
- Ensure engagement of relevant central government agencies, such as DOC and MPI
- Directly involve Tauranga Moana iwi and hapū in management decisions in these arena.

“Spatial planning ... provides an opportunity to work with Central Government agencies and the community to find ways to share, and care for, the coastal parts of Tauranga Moana.”<sup>59</sup> (Tauranga Moana Iwi Management Plan)

The ocean realm holds huge significance for mana whenua. It intersects with Māori rights and interests and a raft of Treaty Settlement legislation. Appropriately designed MSP processes provide an opportunity for implementing Te Tiriti, operationalising the partnership approach it proscribes, and enabling Crown-Māori co-governance and co-design of policy and plans in the marine space.

## 7.5 Empower local communities

The oceans provide many social benefits including the ability to engage in recreational activities such as surfing, swimming and fishing; spiritual renewal through being able to experience peace, tranquility and the raw power of nature; and the communal benefits of being able to come together and share marine-related activities.<sup>60</sup>

Around two-thirds of New Zealanders live within five kilometres of the coast and over half visit the beach at least three to four times a month. Swimming is the most popular activity followed by food gathering, boating and fishing.<sup>61</sup> It is estimated that 600,000 people fish recreationally, or around 13 per cent of the population.<sup>62</sup> Unsurprisingly, close relationship, connection and dependence on the coastal environment is mirrored by high levels of concern for its health. Ninety-five percent of New Zealanders say that the health of the oceans is important to them, and more than half consider it a part of their identity as a kiwi.<sup>63</sup>

### Spotlight on public attitudes to the marine environment

A 2023 Horizon survey of New Zealanders found that:<sup>64</sup>

- 77 per cent are concerned about the loss of ocean biodiversity
- 77 per cent say marine protection should be expanded, including 67 per cent of recreational fishers
- 66 per cent say policy to protect the ocean space should be a bigger priority.

In relation to fisheries management, a 2023 poll revealed that 59 per cent of New Zealanders think the commercial fishing sector has too much sway over government policy, and 79 per cent want to see practices like bottom trawling and dredging phased out of inshore fisheries. The vast majority (some 78 per cent) would like to see a fundamental shift in priorities; including fisheries management being more regionally based, using smaller boats and more selective fishing techniques, and focusing on feeding the domestic market.<sup>65</sup>

A degraded marine environment has significant impacts on local communities with local depletion of inshore fisheries disproportionately affecting recreational and customary fishers. In addition, pollution prevents an array of public uses, including swimming and food gathering, as well as risking public health. All this diminishes the ability to experience

and appreciate the ocean environment and to share and hand down to the next generation traditional practices and values. Many communities across Aotearoa New Zealand are witnessing, first-hand, the rapid decline of the marine environment and their beloved species.

"I am deeply saddened by the paucity of marine life... it's hard to find any marine organisms in the rock pools and few fish in the sea compared to 50-60 years ago... I'm sad so many of the creeks are now underground and I can't walk them exploring, as I did in my school days."<sup>66</sup> (Horizon Research)

Planning approaches that bring local communities along on the journey, are likely to be more enduring. They increase public understanding and buy-in, and build local capacity at place. This was highlighted in Sea Change where, a decade later, participants continue to value the learning experience provided by the process. It is also highlighted in the spotlight below from South Africa. Community engagement can increase data

and knowledge inputs, improve compliance and monitoring, leverage additional resources, and improve community wellbeing overall.

### Spotlight on the Algoa Bay Project, South Africa

The Algoa Bay Project was a pilot MSP which attempted to craft a community and local stakeholder-based approach in order to inform national planning under the South African Marine Spatial Planning Act 2018. Participatory community mapping, where stakeholders mark information on gridded maps, helped identify how people valued and understood the marine area including identification of culturally significant areas. A photography exhibition was used to communicate stories and connections to the coast. Multi-stakeholder workshops were also convened to bring together traditional and indigenous leaders, coastal authorities and NGOs in order to collaboratively integrate indigenous and local knowledge into MSP for the Bay. The objective was not only to understand values and aspirations but to strengthen on-the-ground connections, community cohesion and mutual understanding.<sup>67</sup>

MSP can be used as a mechanism to strengthen public participation, empower local communities and drive responses that reflect and deliver for their needs, aspirations and values. Crucially, MSP can be used as a tool to harness the energy, capacity and knowledge that exists at place to drive increased and more connected up marine protection and restoration efforts.



*Cockle harvesting at Kawakawa Bay, Auckland*



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## 8 Designing a MSP Framework



*Plimmerton Boating Club, Wellington*

In Chapter 2 we identified key elements that characterise MSP. This indicated that such planning processes should be *ecosystems-based* and include a focus on rebuilding and maintaining healthy ecosystem structure and functioning. They need to recognise *Te Tiriti partnership*, tikanga, and the kaitiaki responsibilities of iwi and hapū. They also need to be *collaborative* so that iwi, hapū, whānau, stakeholders and communities are collectively involved in decision-making. As well as being founded on in-depth knowledge of the past, MSP needs to be *strategic and forward looking*, identifying measures that build towards a positive future.

MSP is *place-based*, focused on mobilising local and/or regional efforts to better manage a particular ‘seascape’ for the benefit of the marine environment and the communities reliant on it.

It is evident from our earlier analysis that Aotearoa New Zealand has a solid and very promising foundation on which to further progress MSP. Sea Change remains world-leading and continues to provide valuable insights. There has also been a myriad of other innovative projects around the country that can be built on, some of which we reviewed in Chapters 4, 5 and 6. One thing is very clear from this review, there is currently much energy and enthusiasm to better care for the marine environment, particularly at the local level. To be effective, any MSP framework will need to build on and support these efforts.

In the following sections we explore a range of MSP design considerations to inform the content of a ‘National MSP Framework’ or ‘Mahere Moana Framework’. We then identify several options for the creation of the Framework itself, in order to support the broader application of MSP around the country, as well as strengthen and/or scale up existing initiatives.

### 8.1 Scope and scale

The scale of MSP will need to be flexible depending on the area of interest. As indicated by Sustainable Seas it should be applied at a local or regional scale depending on context. To be effective, the scope of MSP will need to be wide enough to encompass the key marine issues and management challenges in the area of focus. For coastal areas, this will almost certainly include catchment drivers of marine ecosystem decline, as well as a range of marine activities (including the harvest of marine life and seabed-impacting activities).

A more limited scope seems unlikely to be effective. For example (and as illustrated in the South-East Marine Protection case study), just focusing on marine protection tools can lead to division, as the conversation is too narrow to encompass the values and interests of all parties. This is particularly the case when significant issues that the sectors have more alignment on, such as land-based impacts, are explicitly off the table. Similarly, as illustrated by the green-lipped mussel restoration case studies, a sole focus on restoring a single species can lead to disappointing

results, if the health of the ecosystem supporting that species and source of negative impacts on it, are not in frame.

Where a marine area has experienced significant degradation, in comparison to its historical state, active and passive marine restoration actions will need to be considered. The scope of MSP should also include blue economy opportunities, particularly regenerative activities that support and restore marine ecosystem health (as we discuss in Chapter 6). The integrated approach that MSP brings enables consideration of complementary activities, such as marine protected areas surrounding offshore wind farms to help build back ecosystem resilience, and seaweed and multi-trophic aquaculture to assist in removing sediment and nutrients from seawater.

Climate change considerations also need to be front of mind in any MSP planning process. As climate change impacts on marine systems become more acute, it will be critical that MSP considers measures to increase marine ecosystem resilience (see *Macrocystis* spotlight). Blue carbon considerations will also be important, particularly where marine restoration efforts can contribute to greater carbon sequestration in the marine area.

### Spotlight on climate change impacts on *Macrocystis*

*Macrocystis*, which forms extensive kelp forests along the Otago coast, is a keystone species that provides essential habitat and food for other species. *Macrocystis* is both sensitive to sedimentation (which reduces light availability) and warming seawater. Recent heatwaves along the Otago coast reduced *Macrocystis* coverage by close to 70 per cent in some areas. Sediment and seawater warming both individually affect *Macrocystis* health, but when combined, they have a much greater cumulative impact.<sup>1</sup> This makes it even more critical that the sediment plumes discharging into the Otago coast are addressed given that further seawater warming is already built into the climate system.

MSP will need to have a broad scope, including consideration of key drivers of ecosystem decline, passive and active marine restoration measures, opportunities to build a restorative blue economy, and climate change mitigation and adaptation measures.

## 8.2 Initiation and governance

Local and regional MSP could be initiated by a council (or more than one council jointly), iwi, hapū, community group, or coalition of stakeholders. It is instructive that, of the place-based marine management initiatives reviewed in Chapter 4, two were initiated by hapū (East Otago Taiāpure and Kaikōura Marine Area) and one by fisheries stakeholders (Fiordland Marine Area).

In fact, there were only two council-initiated marine projects out of the eight reviewed in Chapters 3 to 6. Those were the Sea Change project which was jointly established by a unitary authority (Auckland Council) and regional council (Waikato Regional Council), and the Ecologically Significant Marine Sites programme which was initiated by the Marlborough District Council with support from DOC. The five other projects were variously initiated by a combination of iwi, hapū, community groups, NGOs and scientists.

Given the place-based nature of MSP, it is less likely that central government would be the appropriate body to initiate the planning process, unless it applied to an area remote from councils and local communities, such as in the exclusive economic zone.

It is notable that only one of the eight projects we reviewed was initiated by a central government agency, the South-East Marine Protection Forum set up by DOC and MPI, which had a narrow focus on the creation of a network of marine protected areas. However, central government agencies will be important supports for regional and local MSP processes, potentially providing expertise, information and funding.

It will be particularly important that non-government parties have the ability to initiate a MSP process where management agencies do not take action. The frequent failure of agencies to step in to protect the health of the marine environment was highlighted in the Motiti and Te Hā ō Tangarao case studies. Although there was ample evidence of fisheries depletion and loss of kelp forests, in both those cases, no agency had taken action to address the issues. Protection only occurred due to the ability of hapū and community groups to take the regional council to the Environment Court.

“The overall conclusion is that integrated coastal management in the New Zealand context can be community initiated and led ... the social mandate that is created in successful cases is far more powerful than in top down driven processes.”<sup>2</sup> (Peter Lawless)

Where the initiative is not council or central government agency led, it will be important that external support is available for the planning process, including providing a suitable independent facilitator, access to science (along with mātauranga Māori where this is made available) and administrative support. We discuss these supports further below.

However a MSP process is initiated, co-development of the planning process with iwi and hapū will be important. A steering group will need to be established to design and oversee the planning process. Such a group should also, where possible, oversee implementation to provide continuity. The composition of the group will need to be tailored to the local context and nature of the plan. It could be iwi or hapū led (such as with the East Otago Taiāpure and Kaikōura Guardians), comprise a co-governance arrangement between iwi and governmental agencies (as established for the Sea Change project), or be made up of a coalition of local interests (noting that the Fiordland Guardians have one member nominated by Ngāi Tahu and five members who reside in the relevant region). The Marine



*People enjoying the marine area at Cape Rodney-Okakari Point Marine Reserve*

Plan Partnerships in British Columbia provide an international example of indigenous-led planning (see spotlight).

### Spotlight on First Nations-led MSP in British Columbia

Marine Plan Partnerships, established in British Columbia, are designed to deliver indigenous-led planning that centres on the needs, values and aspirations of First Nations and recognises their authority and rights. It conceives MSP as a “First Nation out” (concentric) exercise where First Nations develop their plans ahead of broader collaborative MSP processes.<sup>3</sup>

On the Central North Coast of British Columbia, the four First Nations of Hailzaqv, Kitasoo Xai'xais, Nuxalk and Wuikinuxv have each developed their own marine use plan, applying an ecosystem approach underpinned by traditional knowledge and supported by scientific and technical advice. The process included mapping interviews with community knowledge holders to identify sites of cultural significance and high ecological value. This drew on knowledge of species migration routes, nesting and spawning sites, food gathering and traditional fishing spots.<sup>4</sup>

Members of the four First Nations consider MSP as “inherent to [their] cultures through the Hereditary Chief governance system, in which specific people within a lineage inherit the rights and responsibilities for stewarding specific areas”.<sup>5</sup> The First Nation plans were subsequently integrated into a Central Coast First Nations Marine Use Plan. A series of implementation agreements with the British Columbia government, and a Regional Action Framework, have been established to support delivery of common objectives as well as ongoing coordination and collaboration.<sup>6</sup>

A National MSP Framework should enable iwi, hapū, stakeholders and/or community groups to be the initiator of MSP (in addition to local government). It should also provide for a steering group (with membership tailored to the local context) to design and oversee the planning process as well as implementation of the plan.

## 8.3 Plan-making process

The benefits of adopting a collaborative process were highlighted in the Sea Change review as well as the Fiordland and Kaikōura case studies. Such processes can build partnerships between iwi, hapū and

local communities and strengthen connections to place. They can also help develop relationships between different sectors that support other related initiatives. However, it will be important that any power imbalances amongst group members are addressed, including by providing greater resource and support for community members and small business participants.

Collaborative MSP processes can generate the greatest co-benefits from the plan-making process.

It will also be important to recognise that collaboration takes time, as does active Māori engagement. For example, providing 18 months to develop a collaborative plan for the complex marine environment of the Hauraki Gulf proved to be unrealistic, and the pressures the tight time frame created almost derailed the process. In the end, the plan took three years to develop.

The Fiordland collaborative process took 10 years from its earliest inception, but five years after dedicated funding support and an independent facilitator was appointed. The Kaikōura process took nine years. The South-East Marine Protection Forum took just under four years to deliver its report (on which agreement could not be reached).

Although collaborative processes do take time, the benefits can be enduring. In addition, there is no reason why agreed actions cannot start before the plan-making process is completed particularly where 'low hanging fruit' are identified.

A timeframe of between three and five years for the development of a collaborative MSP plan is realistic if the initiative is properly supported. Agreed actions can be implemented during the plan-making process.

The planning process itself is likely to include three broad components:

1. Establish an ecological baseline
2. Document the current state of the marine system
3. Identify a future vision and pathway to get there

## ***Establish ecological baseline***

"Frameworks should avoid embedding 'shifting environmental baselines': this is using an ecosystem's current state as a reference point, which fails to account for historic degradation that led to current conditions."<sup>7</sup> (Rose Foster et al)

Recording what the marine environment was like historically, helps establish an ecological baseline for what a healthy marine system looks like. This is critical to inform the development of future restoration goals. Such an exercise can draw on intergenerational knowledge through mātauranga mapping,<sup>8</sup> incorporate local ecological knowledge, and use documented historical information. For example, investigations of archaeological sites can provide valuable information on the historical abundance of marine species. There have been various efforts around the country, to draw historical information together, which can be built on (see spotlight for an example).

### **Spotlight on establishing historical ecological baseline in Tōtaranui**

In 2016, the Marlborough District Council commissioned a review of available information to throw light on historical changes to the seabed in Tōtaranui (Queen Charlotte Sound). This was due to concerns about 'shifting baselines' where it becomes unclear the extent to which the current state is different from the past. The lack of a historical baseline was making it difficult to "identify realistic restoration goals" for significant marine sites.<sup>9</sup>

The review drew on early historical records, maps, published accounts (including those from the first visit of Captain James Cook and his crew in 1770), newspaper reports, scientific studies and interviews with iwi and long-term residents and fishers.<sup>10</sup> This revealed that the ecosystem had "undergone dramatic declines in: kelp beds, migratory biomass of pilchard 'feed-fish', whale stocks, rock lobster (reef keystone species to control grazers), predatory blue cod, kahawai, groper, snapper and likely reductions in large sharks."<sup>11</sup> Such an understanding of the historical context provided a solid basis for setting management goals for the future.

The Awhi Mai Awhi Atū mussel restoration project in the Ōhiwa Harbour demonstrated how a mātauranga-led approach could lead to success. There, a focus was placed on utilising local spat, to restore local ancestral

mussel beds, drawing on traditional knowledge to inform surveys and the timing and placement of restoration stations (see spotlight). That this has been the most successful mussel restoration project in the country so far is testament to the importance of this knowledge to marine management efforts.

### Spotlight on utilising mātauranga Māori in the restoration of Ōhiwa Harbour

In the initial stages of the Ōhiwa harbour mussel-restoration initiative, iwi members were taken out on a boat-based field trip to physically identify traditional mussel distribution boundaries using inter-generational harvesting landmarks and environmental cues. To do this “they drew on their experiential harvesting observations and knowledge accumulated over fifty or more years, which they substantiated by recounting conversations, observations and practices of their people having harvested from the same harbour for consecutive generations”.<sup>12</sup>

The intention was “to position localised, inter-generational, Māori knowledge as the baseline and premise by which all scientific dive survey locations for mussels ... were identified and determined”. In this way, Māori knowledge provided the framework within which other knowledge systems could be applied.

### Document current state

The next step is to record what the marine system is like now. This can draw on scientific surveys and mātauranga (where made available). Web-based tools such as Sea Sketch can bring the various data layers together



Photographing the marine environment, Ōrere Point, Auckland

to provide a visual and spatial picture of what is known about the marine area. Where there are significant gaps in information, new surveys of habitat and taonga and keystone species, may need to be considered. There are various computer-based mapping tools that can be used to bring spatial information together in a form that can be more easily utilised in the planning process (see spotlight).

### Spotlight on spatial mapping tools

A range of spatial tools are now available which can be used to bring together spatial data layers, and enable different spatial scenarios to be developed and compared, with notable examples being SeaSketch, Marxan and Zonation.

*SeaSketch* was developed by researchers and software developers at the University of California Santa Barbara. DOC co-funded work to adapt the spatial mapping, engagement and survey tool for marine conservation planning in Aotearoa New Zealand more broadly.<sup>13</sup> Auckland Council and Waikato Regional Council contributed funding to enable the web-based tool to be customised to support Sea Change, with multiple datasets from the various agencies uploaded onto the platform.<sup>14</sup> *SeaSketch* was also utilised to support the work of the South-East Marine Protection Forum.<sup>15</sup>

*Marxan* is one of the most widely utilised prioritisation programmes in conservation planning. It can include data on ecological processes, threats and conditions, and identify areas that would best meet biodiversity targets. It can also generate multiple options and, for each of them, identify tradeoffs between conservation and socio-economic objectives.<sup>16</sup> In addition, the tool can be used to analyse the effectiveness of existing plans and networks, as a form of ‘post hoc’ review, comparing them with optimized solutions.<sup>17</sup> *Marxan* was utilised for planning in the Great Barrier Reef Marine Park.<sup>18</sup>

*Zonation* is a similar spatial decision-support tool that was used to explore potential trawl corridors in the Hauraki Gulf, due to its ability to handle extensive complementary datasets rapidly, facilitating scenario testing. It has also been used for identifying spatial conservation priorities for vulnerable marine ecosystems in the high seas, for identifying optimal areas for biodiversity conservation in Aotearoa New Zealand’s exclusive economic zone and to assess the biodiversity protection provided by the proposed Sea Change marine protection areas.<sup>19</sup>

However such sophisticated tools will not be applicable in all cases. They also risk framing problems and solutions in purely spatial terms, diverting the focus away from effective management of threats. As highlighted by Sustainable Seas in its guidance on MSP, a lack of quantitative data should not be seen as a barrier to undertaking a MSP process which can be based on local knowledge and simple mapping approaches.<sup>20</sup>

“Local-scale MSP processes often rely on local, expert knowledge, and can use simple visualisation tools to illustrate overlaps between uses and values.”<sup>21</sup> (Carolyn Lundquist et al)

This step also provides an opportunity to re-engage and re-connect communities with their marine environments and share knowledge. The Te Whanga Hauoro o Tūtūkākā case study highlighted how community-based ecological surveys can involve community members in assessing marine ecosystem health. Similar surveys have been carried out at Aotea Great Barrier Island. Such surveys can provide local-scale information, that is often not available from larger data sets, as well as strengthen the connection of local communities with their marine area.

### **Identify goals and ways to achieve them**

Identifying a common vision that all participants can buy into is where collaborative processes can be the most powerful. The spotlight below sets out the visions from four of the marine initiatives described in earlier chapters. They all have common threads in emphasising the importance of the health and productivity of the marine environment in order to support current and future community needs. They are inspirational statements and a touchpoint to bring people together, throughout the MSP planning process, particularly during tough conversations.



*Ōhiwa Harbour temporary mussel closure*

### **Spotlight on visions for the future of the marine area**

“Tikapa Moana / Te Moananui-ā-Toi – the Hauraki Gulf Marine Park vibrant with life, its mauri strong, productive, and supporting healthy and prosperous communities.”<sup>22</sup>

“A sustainable, healthy, abundant and accessible fishery inside the [East Otago] Taiāpure that provides for the community’s customary, recreational and commercial needs.”<sup>23</sup>

“Our vision is that the quality of Fiordland’s marine environment and fisheries, including the wider fishery experience, be maintained or improved for future generations to use and enjoy.”<sup>24</sup>

“By perpetuating the mauri and Wairoa of Te Tai ō Marokura the community act as kaitiaki of tangaroa’s taonga to achieve a flourishing, rich and healthy environment where opportunities abound to sustain the needs of present and future generations.”<sup>25</sup>

### **Establish marine restoration goals**

A key element of most MSP planning processes, particularly in coastal areas which are subject to cumulative impacts, will be bringing the marine environment back to health through restorative measures.

“The most commonly adopted definition of ecological restoration is ‘the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed’.”<sup>26</sup> (Rose Foster et al)

Marine restoration efforts can be roughly divided into ‘passive’ and ‘active’. ‘Passive’ restoration involves reducing or removing stressors on the marine environment in the hope that marine ecosystems can then recover on their own (such as through creating marine protected areas). ‘Active’ restoration involves intervening in the recovery process, to kick start it or speed natural processes up, such as through seeding or translocating species, or introducing new substrate or structures.

Passive restoration efforts will not work if the marine system has passed a ‘tipping point’, shifting into a new, more depauperate and stable state. In such cases, the marine ecosystem will not shift back to a healthy state on its own, even when the stressors that pushed it over the line in the first place are reduced. There may also be keystone species missing that are required to bring the system back into balance (eg large predators on



rocky reefs) or insufficient wild source stocks (such as remanent mussel or scallop beds) to repopulate new areas. Passive restoration may also be exceedingly slow. For example, it has taken decades for the kelp forest to recover in the marine reserve at Leigh after fishing was excluded.<sup>27</sup> However, on the positive side, passive restoration can be undertaken at scale (ie through setting aside large marine protected areas).

More hands on active restoration can be expensive and have uncertain results. It can also be difficult to scale up.<sup>28</sup> It is often the case that we simply do not know enough to effectively restore marine ecosystems through physical interventions. And such interventions can have unintended consequences. This was highlighted with the enhancement of the Challenger scallop fishery which overcame recruitment failure to prolong the dredge fishery in Tasman and Golden Bays. In combination with increased sediment loading, the continued dredging led to impacts so profound, that the substrate can now no longer sustain scallop communities.<sup>29</sup> This highlights the need for any active intervention to be undertaken with care, and to incorporate regular monitoring and recording of outcomes, before scaling up.

“Scaling up active restoration to 10s and 100s square kilometres ... is a huge undertaking ... A more realistic objective is to restore small areas within the targeted overall restoration extents, and then work to allow natural processes to slowly expand these patches out into their wider historical range, while ensuring the stressors that drove their loss are no longer present (and no new stressors have appeared since).”<sup>30</sup>  
(Mark Morrison)

Often it will be a matter of turning a negative mutually reinforcing spiral of environmental drivers into a positive reinforcing one. It has become increasingly clear, as different restoration techniques are trialled, that recovery will likely not be achieved by focusing on single species restoration efforts (such as restoring just green-lipped mussels or just scallops). More probably, for the successful recovery of any one species, a group of mutually supporting species may be required.



*Collecting kelp spores at Tūtūkākā for a community kelp propagation and reseedling project*

Active and passive restoration efforts will need to be designed to support each other. Active restoration efforts are unlikely to be successful in the long term, if the pressures that resulted in the loss of species and ecosystems in the first place, continue unabated. That is why it is critically important to understand what stressors contributed to the loss in the first place. There is no point restoring scallop beds, if dredging further degrades the habitat they require to survive, or removing kina to restore kelp forests, if over-harvesting of large predators that keep the forests in balance is still permitted.

There is also no point restoring filter feeders, if high levels of sediment entering the marine environment continue unabated, so they are unable to successfully recruit. This is why land-based restoration will be critically important, alongside marine restoration efforts, to reduce stressors on the marine environment. This where MSP approaches, which consider all significant stressors on the marine environment, including those within catchments, can be the most powerful.

In many cases, active restoration will be reliant on remnant *wild* populations of a species to provide a source of wild spat and juveniles. It will therefore be critical that passive restoration measures protect these wild communities from further loss in order to provide opportunities for, and to support, active restoration efforts. For example, we saw in the Ōhiwa Harbour case study how a temporary closure on the harvest of wild mussels was put in place while the restoration efforts were being undertaken.

It is also important that the location of active restoration efforts is carefully considered, so that the restoration of one species is not at the cost of another (which may be equally or more ecologically important).

This all highlights the need for an integrated restoration approach, which MSP can support, so that all the elements needed to bring a marine ecosystem and its myriad of species back to health are considered and addressed together and eventually scaled up.

“... landscape-scale restoration is now widely supported and necessitates progressing beyond isolated projects toward a larger scale ambition in both place and time.”<sup>31</sup> (Rose Foster et al)

The National MSP Framework should provide for a planning process that establishes an historical ecological baseline, documents the current state of the marine system, and identifies a future vision and pathway to get there. In many cases, this will likely need to include the development of an integrated restoration strategy.

## 8.4 Implementation

In the Sea Change case study, we highlighted how piecemeal implementation of plans can undermine the benefits of collaborative and integrated MSP processes. We also identified the importance of clearly identifying roles and responsibilities for implementation actions.

### **Governance body**

Effective implementation will likely require a permanent governance entity, enshrined in statute, which could be tasked with co-ordinating implementation, providing oversight and accountability, tracking and reporting on progress, and undertaking future plan revisions.

The Fiordland Guardians is a good example of such a body which brings together “local knowledge holders” to assist with management. Not only has the Guardians overseen the implementation of the Fiordland Marine Conservation Strategy, but the group has tackled more recent management challenges including invasion by *Undaria* and increased recreational fishing pressure.

The Guardians has also served to integrate agency efforts at place through acting as a conduit between multiple agencies and the community. This has been achieved on a very modest budget through harnessing much voluntary community effort. This model could be built on, to develop a generic framework, that provides iwi and communities with endorsement and support. We further discuss support needed for MSP below.

A National MSP Framework should support the establishment of joint iwi and community MSP governance entities to oversee development and implementation of plans, as well as their future revision. Ideally, such governance bodies should be provided with some form of statutory status.

### **Management tools**

There are many tools in the marine management toolbox to support the implementation of MSP. They are housed under different pieces of legislation and are overseen by different agencies.<sup>32</sup> Some tools overlap. There are also gaps in some areas that need to be filled (such as for creating marine reserves outside the territorial sea).

What specific tool is deployed, is often not the main issue when considering the health of the marine environment, but whether any effective tool is deployed at all. This was highlighted in the Bay of Islands litigation where the main matter at issue before the courts, was not whether the marine areas merited protection, but whether in the absence of any protection being provided under the Fisheries Act or Marine Reserves Act (and in the context of ongoing marine degradation) tools under the RMA could be deployed.

Some tools are more cognisant of Māori interests and approaches than others and this needs to be carefully taken into account. For example, the Marine Reserves Act was perceived as lacking sufficient flexibility to enable customary non-commercial fishing to occur as intended for protection proposals in the Hauraki Gulf, hence bespoke legislation was needed. However, the South-East Marine Protection case study illustrates that some tools are more flexible than may be immediately apparent. There, co-management and customary practices have been built into the detailed design of the marine reserves to be established under the Marine Reserves Act itself. Interestingly, the Pou Rāhui project is focusing on re-invigorating the application of rāhui (supported by s186A temporary closures under the Fisheries Act) as a customary management tool for marine restoration.

Successful marine restoration and management will often necessitate the deployment of a basket of marine management tools. A mix of customary and other approaches can be particularly effective. The Kaikōura case study illustrates how a marine reserve and two marine mammal sanctuaries were utilised to complement customary tools (taiāpure and mātaītai). This combination of tools was also part of the Sea Change Plan where Ahu Moana were envisaged as working alongside marine protected areas, fisheries management and habitat restoration efforts in a complementary manner.

“Ahu Moana will act as a korowai (traditional cloak) to enclose some of the MPAs proposed through this Marine Spatial Plan, and existing marine reserves.”<sup>33</sup> (Hauraki Gulf Marine Spatial Plan)

The Sea Change case study also serves to highlight the benefits of not necessarily confining MSP projects to consideration of existing tools, given that much marine legislation is out of date, and many tools are not fit for purpose. MSP can identify where statutory gaps lie and begin the process of developing new and more fit for purpose approaches. In addition, as highlighted by Paul-Bourke et al (2022), Māori knowledge

can provide access to a “whole range of new tools and techniques” to improve marine management.<sup>34</sup>

There is a danger in waiting for perfect information or for the design of the perfect tool. Often it is important to ‘just to start’, to begin implementation where there are opportunities to do so, and build momentum for change. This approach is encapsulated in the Māori concept of ‘ringa raupā’ or ‘calloused hard-working hands’.

There are many tools in the marine management toolbox that can be used to support the implementation of MSP although not all are fit for purpose. A mix of customary and other tools can be particularly effective. MSP can also help design new tools.

## 8.5 Support

In order to succeed, it is important that strong support is given to MSP in Aotearoa New Zealand. This includes adequate resourcing, access to knowledge and science, and a facilitative regulatory environment.

### **Resourcing**

Both plan development and implementation requires resourcing. A major issue with the implementation of the Sea Change Plan was that project funding had run out by the time the draft plan was completed. This meant there was no resource for public engagement (to build support for the plan) or for the plan’s implementation. Inadequate funding was also highlighted by the Kaikōura case study, where the lack of any dedicated budget has significantly hampered the Guardians in their work.

With relatively modest funding, MSP can harness the energy, capacity and knowledge that exists at place to care for and restore the marine environment. To date, funding and other support for such processes has been ad hoc and many of the sources of funds accessed in the past have been dis-established.

In the East Otago Taiāpure and Kaikōura processes, which were led by rūnanga, support was provided by Te Rūnanga o Ngāi Tahu which has a dedicated customary fisheries team.<sup>35</sup> Other settled and financially well-established iwi may be able to provide similar support but less well-resourced tribes may not have the capacity to do so. The Fiordland process was funded by MFE’s Sustainable Management Fund (which is no longer dispensing funds) and the Kaikōura process also received support directly from DOC (which has recently had a significant budget cut).

Some initiatives have accessed science funding (including from Sustainable Seas which has now ended) and others have received philanthropic contributions. The Motiti and Northland legal proceedings were both supported by the Environmental Legal Assistance Fund but this has recently also been dis-established. Some initiatives have proceeded through the sheer dint of volunteer effort (including much of the restoration work in Ōhiwa harbour).

MSP can bring agencies together to share resourcing enabling a 'better bang for the buck'. The benefits of such joint efforts were highlighted in the Ecologically Significant Marine Sites case study in the Marlborough Sounds. DOC provided technical support and some funding to the Marlborough District Council to undertake the programme, and Fisheries NZ was able to draw on that work to exclude kina dredging from Kura Te Au.

In some cases, restoration efforts might be linked to commercial opportunities, such as highlighted by the Urchinomics and the sea star collagen cream examples cited above. However, these have yet to be proven, and seem likely to only be a small player in the overall marine management funding picture.

There is need for a dedicated and secure funding source to support the development and implementation of MSP along with local and regional funding sources.

### ***Knowledge and science***

Any MSP process will need to be underpinned by good information and knowledge including that provided by mātauranga Māori and science. Several of the marine initiatives described above have benefitted from an association with university-based marine scientists. For example, the East-Otago Taiāpure has a strong association with academic staff and students from the University of Otago with an academic staff member being on the management committee.

The Fiordland Marine Guardians also has a strong association with the University of Otago with the chair being an academic staff member there. The Kaikōura Marine Guardians has an association with the University of Canterbury with a member being a marine ecologist at the university. Revive our Gulf has a strong association with marine scientists and students at the University of Auckland as does the Te Whanga Hauoro kelp restoration initiative at Tūtūkākā (with some of the relevant scientists formerly located at Massey University).

Such relationships could usefully be built on and widened. MSP can serve as a mechanism to further strengthen and broaden the connection between universities (and Crown Research Institutes such as NIWA) and iwi, hapū and communities. Both sides can benefit from better connecting marine science to management issues on the ground. In particular, student project and thesis work can be directed to solving real world problems.

Now that Sustainable Seas has come to an end it may be time to establish a successor which could be termed a 'Marine Restoration Science Challenge'. This could have the aim of solving the science barriers to large scale marine restoration.

Where MSP is sponsored by council(s) or central government agencies, the establishment of an independent scientific and technical group can help create a clearer separation between the technical evidence base and values based decision-making. It will also be important to link up the various initiatives around the country so that experiences and knowledge can be shared and collective wisdom strengthened and built upon. This could be achieved through convening an annual gathering of all those involved in MSP initiatives.

MSP initiatives can benefit from a strong association with science institutions and mechanisms to regularly share knowledge and experiences.

### ***Facilitative regulatory environment***

The current statutory framing was not developed with MSP or marine restoration in mind and so it is an awkward fit. For a start, as highlighted in the Sea Change case study, MSP needs statutory status so plans have a clear implementation pathway. Agencies are more likely to progress and fund implementation if they have a legal obligation to do so.

MSP needs teeth – it needs to be the 'shark' in the complex pool of marine management.

We also saw in the Revive Our Gulf case study how restoration efforts can be significantly impeded by poorly configured regulation. Restoration efforts also lack a robust best practice framework. Some common issues with regulatory frameworks world-wide are highlighted in the spotlight below.

## Spotlight on legal barriers and enablers to restoration

A recent international review of legal barriers and enablers to upscaling ecological restoration concluded:<sup>36</sup>

- Existing laws are based on a passive conservation paradigm of protection which may not support intervention-based restoration
- Insufficient legislation and institutions can create challenges in achieving effective ecological restoration
- Legal instruments can be a driver of restoration such as through establishing restoration targets
- Legislation is a critical mechanism to ensure best practice is followed in implementing ecological restoration
- Greater precision in legislative language can help direct outcomes by clearly defining restoration, providing details about when and how to undertake it, and articulating high-level biophysical principles
- Legislation can be usefully supplemented by more specific guidance.

Marine restoration efforts can require consents under the RMA, Fisheries Act and Biosecurity Act. Under section 12 of the RMA, it is illegal to place structures on the seabed, deposit any substance on the seabed or disturb it in a manner that is likely to have an adverse effect, or introduce any plant (amongst other things) unless expressly allowed in a national environmental standard, a rule in a regional coastal plan or a resource consent. There is currently no applicable national environmental standard.

Given that marine restoration was generally not contemplated when regional coastal plans were developed, placing material on the seabed (such as live mussels) will normally require a resource consent. In the Auckland region, mussel restoration is a 'non-complying activity' meaning a high bar has to be met in order to obtain consent. Different councils have different rule frameworks resulting in potential inconsistencies nationwide.

A permit may also be required under section 52(d) of the Biosecurity Act if a restoration activity risks spreading any pest or unwanted organism. Such permits are often required for the deployment of farmed mussels, as they

can have unwanted organisms attached to them, that can be spread to areas being rehabilitated.

Thirdly, some restoration efforts (such as kina culling) will need a permit under section 97 of the Fisheries Act to authorise the taking of any aquatic life or seaweed. This is the case if the taking is not under the authorisation of a customary fishing permit, within recreational fishing rules, or part of a commercial harvest annual catch entitlement.

To facilitate kina harvesting for kelp forest restoration purposes, a new permit has been created under section 97 of Fisheries Act "to allow persons and organisations to take and dispose, cull, or translocate sea urchins for the purpose of habitat restoration and/or prevention of urchin barrens."<sup>37</sup> This will allow large scale removal of kina. It will only allow removal within identified urchin barren areas of concern, or areas at risk of becoming urchin barrens if intervention didn't occur. Applications will need to adhere to an agreed sea urchin removal plan. This is all helpful but will need to be supported by measures (such as harvest closures) to enable natural predators of kina to recover if kina barrens are to be addressed in the longer term.

Some regulatory change would be helpful to support marine restoration efforts more broadly. For a start, a reviewed New Zealand Coastal Policy Statement under the RMA could include a stronger policy framing for marine restoration. This could build on, and flesh out in much more detail, elements of Policy 14 (Restoration of natural character).

This could be supported by a *National Environmental Standard for Marine Restoration* to set out when such restoration would be permitted (subject to standards), a restricted discretionary activity (with discretions proscribed), discretionary or non-complying. This could be similar to how a nationally consistent set of standards under the RMA has been provided for commercial forestry and marine aquaculture consenting. One of the requirements could be for a marine restoration plan to be provided along with any application as well as regular monitoring and reporting on outcomes.

Whatever tools are used to implement MSP, it is important that the MSP plan itself has some regulatory status, so that it cannot be simply ignored and collaborative efforts wasted. To support marine restoration efforts, as part of MSP, a *National Environmental Standard for Marine Restoration* could be promulgated under the RMA.

## 8.6 Options for design

A National MSP Framework could take a number of forms. These could be seen as a progression from lighter to stronger regulatory support. We have identified three options in Figure 8.1 along with their pros and cons.<sup>38</sup>

Option	Pros	Cons
National MSP Guidance	Flexible and can be applied in different ways to different situations. Plans could be implemented through bespoke legislation	May provide little impetus for stakeholders to engage in developing plans. Multiple bespoke statutes could lead to a complex legislative environment. If bespoke legislation is not applied, plans would have no statutory status leading to poor implementation. Guidance can be ignored leading to varying quality around the country
Broad statutory MSP Framework	Still allows flexibility while ensuring minimum statutory requirements are met (eg for process and content). Plans could be given some statutory status (eg “take into account”)	May provide little impetus for stakeholders to engage in developing plans. Plans could still be overridden by other considerations potentially leading to poor implementation
Detailed statutory MSP Framework	Ensures consistency and quality. Could help drive faster and more effective outcomes. Enables the plans to have strong statutory clout (eg “give effect to”)	Could make the planning process more complex and costly. Would need careful design to still enable some flexibility at the local level as one size will not likely fit all

Figure 8.1: Options for an MSP framework

For a start, National MSP Guidance or Mahere Moana Guidance could be commissioned by government, to bring together existing knowledge and

experience both from within the country and overseas, and set out best practice. This could be similar to the MFE guidance on coastal hazards and climate change, which has been recently updated, and the forthcoming guidance on Dynamic Adaptive Pathways Planning for climate adaptation planning.<sup>39</sup> MSP planning initiatives that have followed the guidance, could seek local bespoke legislation to implement their MSP plans, in the absence of suitable national legislation.

At the same time, a national and/or regional Marine Planning and Restoration Fund(s) could be established to help support MSP processes and plan implementation. As noted above, most funding sources which have supported such processes in the past have been discontinued so there is likely a need to establish a new funding source to supplement existing national and local resources.

### Spotlight on government funding for marine restoration

In Aotearoa New Zealand there is currently no specific government funding directed at marine restoration. This is in stark contrast to several other developed countries. For example, the Australian Federal Government currently provides ‘Blue Carbon Ecosystem Restoration Grants’ for projects that restore coastal blue carbon ecosystems. Projects have included restoration of former farmlands to coastal wetlands and seagrass and tidal marsh restoration. They typically receive A\$2 million each.<sup>40</sup> The Australian Federal Government has also committed A\$15 million over four years for oceans partnerships which are aimed at supporting collaborative efforts to conserve and restore marine biodiversity in remote and wild island and ocean places.<sup>41</sup>

In the USA, the federal government has established a US\$240 million fund available for transformational habitat restoration and coastal resilience projects, with each successful project able to access between US\$1 million and US\$25 million.<sup>42</sup> This is currently providing US\$18 million over three years for the Pacific Coast Ocean Restoration Initiative which is a state-wide collaborative effort aimed at restoring and recovering degraded marine ecosystems across California.<sup>43</sup>

Such a Fund could draw on contributions from existing marine users who should fairly contribute to the cost of restoring the marine areas they are benefitting from. Many also stand to gain from healthier marine systems (including recreational and commercial fishers, recreational marine

users and marine tourism operators). Potential ways of sourcing such contributions are set out in Figure 8.2.

Marine users	Potential Funding source
Occupiers of marine space (eg marine farmers, recreational boat owners, ports etc)	Coastal occupation charges under the RMA
Recreational boat users	Public boat ramp charges  Boat licensing (similar to car licensing)
Commercial fishers	Charge for fishing permits under the Fisheries Act
Fisheries quota owners	Cost recovery levies under the Fisheries Act
Commercial shipping	Port tariffs
Marine tourism	Charges on DOC concessions under the Conservation Act 1987 and marine mammal permits under the Marine Mammals Protection Regulations 1992
Catchment users and coastal communities	Targeted rates under the Local Government (Rating) Act 2002

## 8.2: Potential sources of marine planning and restoration funding

The next step could be to provide a broad statutory framework for MSP. This could be similar to that provided for local board plans under the Local Government Act 2002. Under that Act, section 48N sets out the purposes of local board plans and some matters that it must include (such as a statement of default levels of service and an indicative board budget). The process for developing the plans is left open with the local board able to “follow whatever processes it considers appropriate” to give effect to the purposes of the plan and meet the consultative requirements under the Local Government Act.<sup>44</sup> A similar legislative approach could be provided for MSP planning.

## Spotlight on potential legislative homes for MSP

There are several possible legislative homes for statutory provisions providing for MSP. They could be:

1. Added to the *Local Government Act* as an additional form of planning led by regional councils alongside long term planning and development of financial and infrastructure strategies.
2. Added to *the Environment Act 1986* which currently provides for the establishment of MFE and the Parliamentary Commissioner for the Environment.
3. Included in the proposed *replacement legislation for the RMA* which is slated to incorporate spatial planning (although this may be in separate legislation to that providing environmental protection).<sup>45</sup>
4. Included in prospective *new marine protected areas legislation* (if it were given a wider scope, although this might imply that MSP is focused on marine protection)
5. Included in a *new Oceans Act*.



Oyster farming in Mahurangi Harbour

Where-ever they are housed, statutory provisions could include a purpose for MSP, process and information requirements, and minimum content for plans (including setting clear objectives and targets). They could include a statutory tag to regularly updated National MSP Guidelines (in a similar way that Policy 26 of the New Zealand Coastal Policy Statement requires “taking into account national guidance and the best available information on the likely effects of climate change on the region or district”).

This would leave councils, iwi, hapū and local communities with considerable autonomy to determine the appropriate composition of a governance entity, and the design of the planning process, depending on the needs of their communities and pressures on their marine areas. This could also enable the process to be better tailored to meet the needs of different iwi/hapū and whānau. Those initiatives that met minimum requirements could access funds from the Marine Restoration Fund.

At the outset, or as experience with MSP builds up, a more detailed planning framework could be provided for in the same legislation. This could put in place legislative guardrails, to help drive a faster and more effective outcomes, noting that reliance on the goodwill of those involved

has its limits. Elements could include utilising the best information, mechanisms to identify different values, and measures to evaluate and reconcile conflicting values.

If the statutory framework for MSP is more robust, its legal impact could also be strengthened. Whereas, earlier MSP plans could be something to “take into account” in decision-making under other legislation (such as the RMA, Fisheries Act, Conservation Act etc), plans prepared under more robust provisions could have requirements to “give effect” to them.

A National MSP Framework could start as guidance, then progress to a broad statutory framework, and finally be fleshed out into more detailed statutory provisions. At the same time, a Marine Restoration Fund could be established to support MSP initiatives. Alternatively, a detailed MSP statutory framework could be provided in the first instance.

We are seeking feedback on these MSP Framework options before developing firmer recommendations for our final Synthesis Report.



Port Chalmers, Otago Harbour





*Hot Water Beach, Coromandel Peninsula*

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## 9 Conclusions



*People enjoying the marine environment at Aramoana, Otago*

Aotearoa New Zealand's oceans are vast, highly biodiverse and under threat. In this working paper we have focused on the extent to which MSP could assist in restoring and better managing vital coastal ecosystems. It is clear from our review that MSP could help deliver much of value, by integrating oceans management at place, supporting healthy and biodiverse ecosystems, building a sustainable blue economy, and empowering Māori and local communities to manage their marine places.

We have drawn on international best practice and a wealth of local marine initiatives to identify relevant insights and common threads that could inform the development of a *National MSP (or Moana Mahere) Framework*.

Such a framework could be enshrined in statute and supplemented with *Guidelines* that are regularly updated as MSP experience increases. This will need to be supported by the establishment of a *Marine Restoration Fund* and efforts to strengthen the connections between the marine science community, on one hand, and iwi, hapū and local communities on the other.

If a robust National MSP Framework is put in place the benefits for the marine environment, the people and species reliant on them, and the country as a whole could be substantial.

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