

# Bringing elements of ecosystem-based management into regional council policy and action plans



This document recommends bringing elements of ecosystem-based management (EBM) into council processes, and it sets out guidance on shifting current practice towards an EBM-type approach.

We use a generic policy cycle as a place to start and set out key advice and links to Sustainable Seas National Science Challenge resources at different stages of the cycle.

The information in this document builds on a regional council EBM case study — [Waikato Regional Council coastal plan review](#) — and references Challenge projects completed since then.

You can find key lessons and recommendations from the whole Challenge here — [Bringing it all together for a healthy ocean and prosperous blue economy](#).

## Recommendations – bring elements of ecosystem-based management into current council processes

In the 2010s, the notion of a ‘blue economy’ attracted increasing interest globally in marine resources as a basis for stimulating an economic transformation to meet humanity’s great challenges: food, energy, livelihoods, climate change, and planetary survival. The challenge was to ensure that a new wave of investment in marine frontiers did not become a further round of ecological, environmental, and social damage. To help meet this challenge, we recommend that councils take the following actions.

- Embed EBM principles into regulatory and non-regulatory plans to promote a more holistic approach to managing the marine environment. This approach should address the effects of stressors, including cumulative effects.
- Use an EBM approach to complement and build on current place-based approaches to marine planning and management. Applying an ecosystem perspective draws attention to the relationships between people and marine environments and the accompanying values and knowledge that influence how marine environments are used.
- Ensure the process to develop plans works across silos and clarify management scales (both spatial and temporal). At an organisational level, this may require preparatory work and team ‘check-ins’ to identify gaps in capability and capacity such as whether databases and skillsets exist to collect and evaluate knowledge about place (for example, mātauranga Māori, data from consents monitoring, and narrative forms of knowledge).
- Share approaches across council about how risks are assessed and how uncertainty about climate change is factored in. Decide what to keep, start, and stop doing to help manage cumulative effects, for example in science or monitoring strategies.

## What is ecosystem-based management (EBM) in a council setting?

EBM is a holistic and inclusive way to manage marine environments, which draws attention to the multiple interactions and connections between land and sea. The need for a more holistic approach to managing activities and their effects across domains is becoming increasingly evident in actions taken by councils. This is particularly so for those councils that are developing freshwater regional plan provisions with coastal receiving environments in mind.

Challenge research provides an evidence base to support the inclusion of EBM principles into planning and policy, which is summarised in [Enabling ecosystem-based management in Aotearoa New Zealand's marine law and policy](#) and the summary document, [Legal enablers for ecosystem-based management](#).

The [EBM principles developed by Sustainable Seas](#) provide a framework to support regional councils in developing, reviewing, and revising plans and policies to manage competing uses for, and demands on, marine environments. These principles, and guidance for enhancing EBM, are supported by an evidence base developed through extensive research done between 2014–2024.

Some EBM principles align with what regional councils are already doing by:

- emphasising the importance of participatory and collaborative processes (including engagement with tangata whenua)
- capturing multiple uses and values for the marine environment in their plans
- recognising the importance of the Treaty partnership in performing their functions.

These actions are consistent with what is required under the Resource Management Act (RMA) and are reflected in regulatory planning processes and councils' operating practice. Opportunities exist to align council plans with other EBM principles particularly as they relate to tailoring place-based responses that recognise ecological complexities and connectedness, and which address cumulative stressors in a flexible, adaptive management approach.

There are also considerable opportunities to embed EBM principles into non-regulatory cross-agency action plans, which complement and support regional plans under Section 30 of the RMA. For instance, given the challenges associated with managing cumulative effects and decision-making in the context of insufficient data, risk and uncertainty, the EBM principles provide a useful road map to guide action.

## Current norms and EBM approaches

Management of New Zealand's marine environment is characterised by fragmentation, with the existence of multiple laws and policies that are not always well aligned. This can lead to councils and other agencies working in silos as they pursue their respective strategic and operational imperatives in accordance with related processes and timeframes. For instance, a business-as-usual regional coastal plan is often discrete, and not well connected to actions taken elsewhere within councils, or by other agencies operating in the marine environment that could support achieving policy objectives.

An EBM approach to coastal and marine policy and planning emphasises the importance of recognising interactions across land and sea to reduce the adverse effects on marine environments, the need for policy coordination to ensure sustainable use of marine resources, and the significance of different values associated with coasts and oceans.

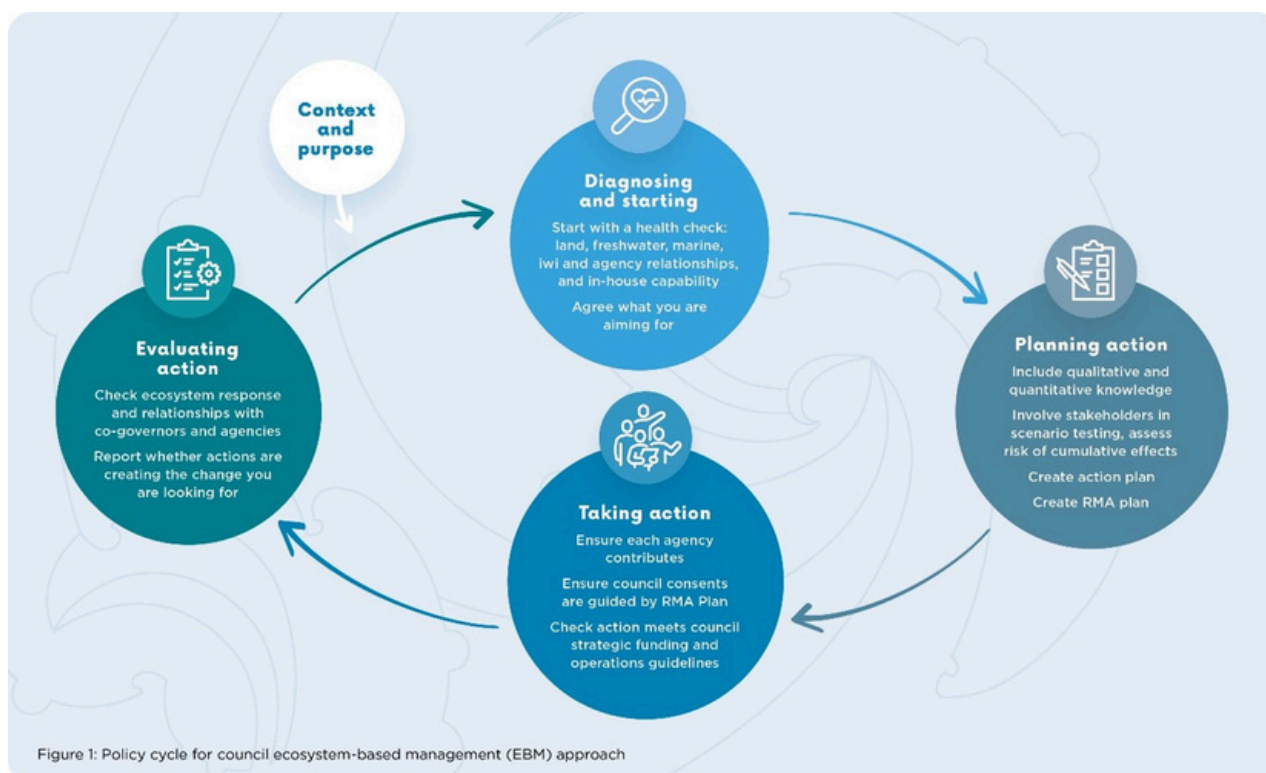
Embedding EBM into planning and policy differs to business-as-usual practice since it requires working across systems, scales and jurisdictions. Having someone to champion EBM and to explain the benefits of an interconnected approach at different levels within a council could help to get an EBM-type strategy or plan over the line, particularly when backed-up by the national and international [legal enablers for EBM](#). The potential benefits of EBM include providing opportunities to restore and protect what people value while ensuring national law and policy and international obligations are met.

## How to bring EBM into a policy cycle

EBM principles can be brought in at any stage of the policy process with political and management support. Challenge guidance has specific recommendations about helpful skillsets (capability) for EBM-type processes. Council staff also need capacity to work through the approaches and methods available. Making use of cross-council staff groups to share experience has potential, as does looking to court findings and processes that have successfully implemented aspects of EBM.

Figure 1 shows key stages of an EBM approach within a standard policy cycle process. This process can be applied to regulatory and non-regulatory planning and policy processes (for example, as part of a regional plan review or in collaborating with other agencies to develop a non-regulatory action plan).

Below, we step through each stage of the policy cycle and show how an EBM-approach can be brought in. Appendix 1 sets these stages out in a detailed table with links to Challenge guidance documents at each stage.



### Diagnosing and starting

In the early stages of the policy cycle, councils should assess the information they hold and the effectiveness of current approaches. Councils can use consents and state-of-the-environment monitoring, and what mana whenua locals have already told them about their places and values. At this 'diagnosing and starting' stage of a policy cycle, councils have the advantage of:

- factoring in lead-in time to identify who and what they need for an EBM approach
- managing expectations for finishing dates.

## Things to consider

### Involve other agencies early

Many agencies influence or directly manage impacts on the marine environment. If agencies are involved from the outset, they are more likely to factor in changes to processes, regulations, or funding in their operations that are critical to success. This approach could be formalised with governance and reporting processes and could lead to the development of an Action Plan or Marine Spatial Plan.

Once elements of how an EBM approach could be embedded are agreed, legal and process advice is valuable so that reasons for choices are carefully documented. Doing this will provide a solid foundation for any challenges later.

#### *Getting an EBM approach over the line*



Look for champions who are eager to take an interconnected approach at staff, management, and governance levels within and outside your council, starting with tangata whenua.

Research what's important to these individuals and groups and assess where those priorities broadly align with EBM principles. Groups and individuals will have different motivations; they may be moving away from the old ways that aren't working or toward a long-term vision.

Support your case with legal and ecological rationale and case studies where elements of EBM have been successful, using Challenge resources.

### Agree on who is at the decision-making table and what you're aiming for

The co-governance principle of EBM aligns with council responsibilities in respect of Te Tiriti o Waitangi.

Sustainable Seas research on governance emphasises that no blueprint exists for who needs to be around the decision-making table to enable inclusive governance. Instead, those people who have direct authority to make decisions must be capable of realising diverse goals or accommodating diverse values held about the moana - see [Marine governance - sustaining ocean outcomes for future generations](#). A tension will exist between the cohesion of a large group, and one that can represent diverse needs of stakeholders and iwi groups at local and regional scales. Challenge research and guidance can help councils to get the basics right. [Te Kete Kaitiakitanga](#) starts with an initial inquiry tool to help identify who has rights and interests, and to assist council staff to think through mana moana involvement in marine governance.

At this early stage of the policy cycle, it is crucial to gain councillor and across-council support for taking an EBM approach, which includes providing for enduring relationships with tangata whenua.

## Planning action

An emerging practice is for council science strategy to include mātauranga Māori and employ staff to bring this knowledge to the attention of council teams and grow council capability. These types of initiatives could help build connections with tangata whenua that have real and pragmatic life beyond the planning cycle. Connections are seen as important to ensuring an efficient process and in collecting and applying knowledge.

## Things to consider

### Ask what outcomes you want at regional and local levels

Taking an EBM approach means working across boundaries, which can be jurisdictional and biophysical, or across different worldviews. This means it is important to clarify and agree on what outcomes are sought, what the boundaries are, and how these can be navigated.



## Ask what skills and strengths are needed for an EBM approach

Building capability as a team means recognising that strengths can be shared; skills, attributes, and a willingness to learn are important. Both leadership and expertise are important, as is gathering people with expertise in working across and within different knowledge systems. For in-house teams, this may require bringing someone in to help with conversations about how to deal with risk and uncertainty, and how to empower te ao Māori: [Quick guide four: Tools to help navigate perceptions of risk and uncertainty](#) and [Empowering Māori knowledge in marine decision-making](#).

### *Reasons to build cross-council capability*



Paying attention to individual and team capability is important because change is hard. It cannot happen without the necessary knowledge, experience, skills, connections, and support. Foundations built now will stand you in good stead when there are multiple competing views.

## Ask what you already know

Council staff involved in developing guidance to bring in a broad range of knowledge (see [Enabling a broad knowledge base for marine management decisions](#)) agreed that abundant knowledge is out there but under-used. They concluded that, while decisions about resource consents, action plans, and government policy should be based on all available knowledge types, people are sometimes unaware of what lies behind the choices they make.

Organisational culture or disciplinary background leads people to choose knowledge types they're familiar with, and not seek out, or give equal weight to, other types of knowledge. Sometimes, simpler operational reasons exist for not including information (for instance reports, required under RMA sections 32 and 35, or in the case of consent monitoring, records across a region are not in formats easily collated and accessed).

At this early stage of the RMA and action plan process, it is helpful to obtain legal advice and advice about process, to ensure rigour. This advice ensures that councils can trace what was relied on to make RMA and funding decisions.

## Adopt participatory processes

Many councils have experience in participatory processes and are good sounding boards about what works. EBM principles around human activities and collaborative decision-making presume that, because people are part of the marine ecosystem, their values and knowledge are part of decisions, see [Ingredients to catalyse participation in marine decision-making](#).

In adopting a participatory approach, facilitation skills are vital to allow everybody to contribute to the planning process and to enable opportunities to articulate mātauranga Māori and local knowledge. Methods that allow people to share what they know and to build group understanding include participatory conceptual maps and Bayesian network modelling, see [Roadmap 9](#) and Le Heron et al 2021 [What does success look like? An indicative rubric to assess and guide the performance of marine participatory processes](#).

## Think about place-specific objectives and long-term vision

EBM seeks to secure sustainability for present and future generations. RMA plans and regional policy statements contain long-term objectives, as can non-statutory plans. Developing plans that transcend generations can be challenging but can also provide compelling evidence to support action. One example of how intergenerational principles inform aspirations and shape actions is [Te Wahapū o Waihi](#). This kind of approach could support more formal planning processes.

In developing objectives and identifying a long-term vision for specific places, taking an approach that tailors objectives to specific places and considers temporal scales provides a way to encapsulate what people want for their place in a more direct way than a generic region-wide objective.

### **Bring in tools to assess risk and uncertainty around decisions**

Early stages of the policy cycle are the best time to bring in a framework to assess scenarios and risks and to help deal with the uncertainty. The more there is at stake, the more important it is to bring in stakeholders and use all knowledge types. Identifying parts of the coastal marine area where additional caution is needed is helpful for plan users. For example, these might be areas with multiple stressors, but which are still in good health. Guidance about choosing tools to address risk and uncertainty in decision-making are available to support council staff – see [Addressing risk and uncertainty in decision-making](#).

## **Taking action**

### **Elements that might be seen in EBM-type plans**

An EBM approach is proactive about ecological responses to cumulative effects. At present, RMA regional plans manage the effects of activities and identify sensitive receiving environments, such as estuaries. Single stressor policy approaches are the norm and applied as region-wide limits on attributes and activities; however, stressors can overlap in space and time, accumulating from human activities and natural events.

In adopting an EBM approach, the resulting regional plans will continue to contain activity-based rules for coastal marine activities, but they might also have local restoration goals that focus attention and effort (for example, by connecting to a non-regulatory action plan). Active management also includes identifying where tipping points may occur for areas that are in good health but where multiple stressors already exist. Identification of these sites could be included in RMA plans as objectives with mapped overlays. EBM-informed regional plans could go a step further and contain rule provisions for specified areas based on mana whenua and other local people's goals and ecosystem health and recovery.

#### *Marine spatial plans, action plans, and regional plans*



The terms marine spatial plan or action plan are sometimes used interchangeably. Both are non-statutory.

Marine spatial planning (MSP) is a broad term to describe a way to inform the use of marine spaces and resources and how those uses interact. MSP uses maps to help understand where there are complementary or conflicting uses and values. The Challenge has produced research, guidance, and case studies of MSP.

Regional and unitary plans are produced under the Resource Management Act and national guidance. While objectives written in a regional plan cannot be changed during the life of the plan, action plans can be more flexible. Council long-term plans are reviewed every three years, after consulting on changes to strategic aims and funding.

### **Decide what it will take to achieve outcomes**

The process of deciding what's needed to achieve outcomes requires collaboration across different parts of council, tangata whenua, and the community. This process can be supported by generating 'what if' scenarios as part of the process of assessing risk as well as processes associated with developing spatial or action plans because they allow people to visualise potential futures, see [Addressing risk and uncertainty in decision-making](#) and [Enabling effective marine spatial planning for ecological and economic wellbeing](#).

## Consider management scale – local versus region-wide

EBM is a holistic approach that considers the interactions and connections between people and ecosystems. This kind of approach may require councils to revisit which management scale(s) will give the best chance of success in achieving their objectives and vision, see [Roadmap 7](#). This approach contrasts to a business-as-usual approach where management is often based on jurisdictional boundaries that can cut across boundaries for natural processes, species, and rohe. Aspects to consider are the resilience of an area to additional stressors – see [Restoring marine ecosystems through better management and financing](#), and [Enabling effective marine spatial planning for ecological and economic wellbeing](#).

An EBM approach would emphasise connections between activities, stressor interactions, and response, which could change how these sorts of areas are defined and managed. The appropriate scale of management might be smaller than region wide or go across regional boundaries. Regional Coastal Plan tools such as mapped zones with specific plan provisions could be used differently. Rather than identifying isolated values or activities (migratory bird roosts or ports), the zones would also encompass ecological or cultural connections. For example, the connection between resting areas for birds, the species they rely on, and migratory pathways would influence zoned areas. Where current values are high, or where areas are modified or have operational suitability for specific activities, regional plan objectives, policies, and rules can give potential applicants and consents planners more certainty about what they need to consider when locating new activities.

### *Scale is important when thinking about effective marine management*

Choose methods that can be used at local and larger scales. Allow transparency in uncertainties that are attached to the level of risk and whether the actions assessed will successfully support desired outcomes.



## Address cumulative effects

Effectively dealing with cumulative effects in the marine environment is in the interest of all individuals, agencies, and potential applicants for consents. While councils have an important role in cumulative effects management, guided by the New Zealand Coastal Policy Statement, to date, few practical tools are available.

Sustainable Seas provides evidence-based guidance to support those tasked with managing cumulative effects – see [Addressing cumulative effects in marine management decisions](#). The guidance provides a four-step action plan to assess and manage the potential cumulative effects of activities using ecological principles to identify both stressor and ecosystem responses or states.

## Widen knowledge base

Methods are available to access and evaluate the full range of knowledge that decisions will be based on – see Appendix 1 of [Enabling a broad knowledge base for marine management decisions](#). For instance, when eliciting expert opinion about scenarios, it is important to use robust processes to deal with uncertainty and differences in knowledge. Quantitative and qualitative information can be used as the basis for decision-making and communicating to different audiences.

Once options are decided, councils can direct within-council operational and science activities and make links with other regional plans and funding strategies.

## Decide management approaches

An EBM approach is likely to result in some areas of a region being identified for active intervention via action plans. In some instances, there may be areas where reducing stressors to let the ecosystem recover is sufficient.

### *Questions to ask when deciding management approaches*



Which stressors are preventing recovery and can they be removed?  
Which stressors are highest priority?  
How long would natural recovery take, or would actions to speed recovery be necessary?

### Use appropriate modelling

Bayesian network (Bayes Net) modelling can combine data with expert knowledge (ecological, physical, or mātauranga Māori). This method is not commonly used by councils and is often cited as too expensive. Two case studies tested whether Bayes Net modelling would be useful and acceptable to those commissioning experts to help in-house staff, see [KMTT Alliance Summary](#) and [Management for estuary values and aspirations](#).

Generating options and choosing between them requires ensuring equity around the decision-making table - see [Ingredients to catalyse participation in marine decision-making](#).

### Evaluating action

The policy cycle relies on evaluating the actions that have been agreed and taken. Evaluation should be set up at the outset of planning processes. In an RMA plan review, this includes thinking ahead to council implementation, including consent and monitoring processes and extension activities. New processes and databases may be needed, and internal council capability and agreement for any change supported at all levels of council. Reviews or evaluations of other EBM-style processes are a good place for policy staff to start. For example, insights from SeaChange multi agency project are to bring implementers in early, see Peart et al, [View of Vol. 13 No. 2 \(2017\): Policy Quarterly](#).

Adaptive management is an EBM principle, and one outcome of an EBM-type approach is that councils respond to early warning signs of significant changes in marine ecosystems, often because of cumulative adverse effects. See examples in [Addressing cumulative effects in marine management decisions](#), [Cumulative effects erode resilience in coastal ecosystems](#), and in this [presentation on tipping points](#).

The design of monitoring and policy implementation programmes is critical. Some councils review what they monitor, after a careful evaluation of whether they're making best use of scarce resources.

When deciding on monitoring, tension exists between cost-effectiveness and data integrity. Consistently monitored, long-term data sets are seen as ideal but expensive. At the same time, if regular reviews of the monitoring programme aren't done, scarce resources can be used on monitoring sites or species for the sake of monitoring. Monitoring that shows direction of travel from the efforts and actions of stakeholders on the health of the moana, is compelling for potential funders, see [Monitoring estuaries in a changing world: Lessons for designing long-term monitoring programmes](#) and [Monitoring for tipping points in the marine environment - Sustainable Seas National Science Challenge](#).

### *Set up your evaluation early so you can rely on robust reasons later*



Document who you engage with, the knowledge they offered, and how you assessed qualitative and quantitative information in developing options.

Choose a method to evaluate options or future scenarios. Consider an approach that will allow you to include a range of information and stakeholders when assessing the risk of decisions.



Appendix 1: Embedding EBM in a spatial or action plan and an RMA review: key points and links to Challenge resources at different stages of a policy cycle

Table 1: Key stages and questions and outputs for action plans alongside an RMA regional plan review. Potential activities and outputs of an EBM-type approach shown in blue text, and business-as-usual approach shown in black text.

Key stages and questions for councils	Council initiates and funds	Council output
<p><b>Diagnosing and starting</b></p> <p><b>Who is at the decision-making table?</b></p> <p><a href="#">Marine governance – sustaining ocean outcomes for future generations</a></p> <p><a href="#">How can I engage with Māori in development of marine management plans?</a></p>	<p>Traditional RMA process in black text, EBM differences in blue</p> <p>Co-governance</p> <p>RMA plan review funded</p> <p>An action plan/marine spatial plan where each agency implements relevant parts with coordination where needed</p>	<p>Traditional RMA process in black text, EBM differences in blue</p> <p>Council and committee(s) terms of reference</p> <p>Council decision to proceed</p>
<p><b>What skills and strengths are needed to run an EBM-type approach?</b></p> <p><a href="#">Empowering Māori knowledge in marine decision-making</a></p> <p><a href="#">Enabling a broad knowledge base for marine management decisions</a></p>	<p>Cross-council capability</p>	<p>List of agreed internal council values, principles</p>
<p><b>Planning action</b></p> <p><b>What do we already know?</b></p> <p><b>How do we assess the present ecological integrity of an area?</b></p> <p><a href="#">Roadmap 10</a></p>	<p>Collation of council monitoring state of environment</p> <p>Information from consent monitoring</p>	<p>Project plan</p> <p>Plan effectiveness report</p> <p>RMA s35</p> <p>Outline RMA s32 evaluation report</p> <p>Outline process evaluation report</p> <p>Spatial layers document</p>
<p><b>What sub-regional and cross boundary management area(s) will be best for mobile and complex marine ecology, mountains to the sea, and community and iwi input?</b></p> <p><a href="#">Roadmap 7</a></p> <p><a href="#">Roadmap 8</a></p> <p><a href="#">Marine governance – sustaining ocean outcomes for future generations</a></p> <p><a href="#">Enabling effective marine spatial planning for ecological and economic wellbeing</a></p> <p><a href="#">Te ao Māori perspectives of marine scales</a></p> <p><a href="#">Enabling ecosystem-based management in Aotearoa New Zealand’s marine law and policy</a></p>	<p>For remainder of the process: Technical input from mātauranga and ecology experts if not sufficient in-house experts</p> <p>Cross-agency relationships</p>	<p>Outline of regional plan with nested sub-regional areas</p> <p>Action plan outline (council-other agencies non-statutory plan)</p>

<p><b>What outcomes do we want at regional and local level?</b></p> <p><a href="#">Roadmap 3</a></p> <p><a href="#">Empowering Māori knowledge in marine decision-making</a></p> <p><a href="#">Addressing cumulative effects in marine management decisions</a></p> <p><a href="#">Restoring marine ecosystems through better management and financing</a></p> <p><a href="#">Enabling a broad knowledge base for marine management decisions</a></p> <p><a href="#">What does success look like? An indicative rubric to assess and guide the performance of marine participatory processes</a></p> <p><a href="#">Ingredients to catalyse participation in marine decision-making</a></p> <p><a href="#">Te Kete Kaitiakitanga</a></p>	<p>Participatory processes with tangata whenua, locals, other stakeholders</p> <p>Methods to track and evaluate numeric and non-numeric knowledge</p>	<p>Stakeholder Plan</p> <p>First draft of objectives</p> <ul style="list-style-type: none"> <li>Some objectives are written as recovery goals, specific to local areas</li> <li>Some objectives are regional versions of NZCPS objectives</li> </ul>
<p><b>Taking action</b></p> <p><b>What will it take to achieve these outcomes?</b></p> <p><b>We have recovery highlighted in our plans - how do we go about it?</b></p> <p>Which stressors are preventing recovery?</p> <p>How long will natural recovery take or is intervention needed?</p> <p>How will climate change impact outcomes?</p> <p>What is the uncertainty in these decisions, how to communicate?</p> <p><a href="#">Roadmap 6</a></p> <p><a href="#">Roadmap 9</a></p>	<p>Risk assessment method that deals with cumulative effects and involves mātauranga and ecology specialists, and people who must live with the decision</p>	<p>Draft Spatial Plan or map layers indicating suitable areas for different activities, biodiversity hot spots</p> <p>First draft of policies</p> <ul style="list-style-type: none"> <li>Some policies are written as management approaches specific to local areas</li> <li>Some policies are regional versions of NZCPS policies</li> </ul> <p>Section 32 Evaluation of approaches</p> <p>Revised objectives</p>
<p><b>How can our consenting process manage risks of cumulative effects?</b></p> <p><a href="#">Roadmap 12</a></p>		<p>First draft of rules</p> <ul style="list-style-type: none"> <li>Some rules framed to include cumulative effects monitoring and potential review of consent conditions</li> <li>Some rules cover a single activity</li> </ul>
<p><b>Evaluating action</b></p> <p><b>What do we need for successful implementation?</b></p> <p>How will we adapt if we are approaching or past a tipping point in our marine ecosystem?</p> <p>How will other agencies who have a mandate to achieve outcomes stay involved?</p>	<p>Action plan includes monitoring strategy</p> <p>RMA process submissions, hearings, appeals</p> <p>Local Government Act long-term plan strategy</p>	<p>Finalised Proposed Plan or Regional Policy statement (no rules) and s32 document</p> <p>Action plan: Publicly available, not part of RMA plan process, includes actions by other agencies as well as council</p>