

Appendix A – Detailed recommendations to implement an EBM approach in Regional Coastal Plans and supporting systems. Note steps have been colour coded to identify action which directly relate to Regional Coastal Plans (blue) or supporting systems for coastal plan implementation (green).

Step	Detail	Who might be involved?	EBM Principle supported	Guidance note
<p>Step 1</p> <p>Bring everyone on the journey right from the beginning</p>	<p>EBM is a highly collaborative process. To implement the approach well, it is important to initiate early conversations about how EBM could be utilised to improve marine and coastal management.</p>	<p>Project manager, researchers (e.g. NIWA, Sustainable Seas), Council policy and consents planners, Councillors, executive management, stakeholders and public.</p>	<p>EBM 5</p>	
<p>Step 2</p> <p>Establish governance framework to oversee transition to and implementation of EBM within the Regional Coastal Plan</p>	<p>Implementation of EBM requires multiple disciplines and sectors to work together towards a common outcome. It is also likely that taking an EBM approach will cross jurisdictional boundaries.</p> <p>It is therefore recommended that a governance framework is established to provide oversight and coordination of the multiple work streams required to feed into the development of EBM, and to ensure appropriate membership to inform decision-making on where and how to implement EBM. Roles, responsibilities, and accountability, including who has final decision-making authority also needs to be clearly defined and communicated.</p> <p>Partnership with Iwi is an important component of this governance framework. Inviting Iwi to be meaningfully involved in the decision-making process as well as identification and selection of stakeholders to participate in informing EBM, will help Councils give effect to their statutory duties under sections 6(e), 7(a) and 8 of the RMA. This approach is also supported by Policy 2 of the New Zealand Coastal Policy Statement 2010. Consideration should also be given as to how this partnership could be formally acknowledged under the RMA e.g. through Mana Whakahono a Rohe. It is recommended that the Tangata Whenua workstream lead assists with providing guidance to Council staff in navigating these conversations with Iwi.</p> <p>As the transition to, and implementation of EBM is worked through, participants are likely to come from different viewpoints depending on their expertise and interests. It is therefore recommended that a neutral facilitator assists in decision-making to ensure information and options presented are weighed in a fair manner (Agardy et al, 2011). Utilising traditional Māori hui protocols may assist in this process to ensure robust discussion and to pull people out of</p>	<p>Project manager, Council policy and consents planners, iwi liaison officer, Council science and monitoring staff, Council communications staff, systems, and data management staff</p>	<p>EBM 1 EBM 5</p>	<p>See Guidance note 1 for a possible governance framework structure specific to development of EBM within Regional Coastal Plans</p>

	vested positions to arrive at evidence-based positions reflective of ecological, economic, and social good (Reid et al, 2020), which can then be translated into plan provisions.			
<p>Step 3</p> <p>Decide on scope of Coastal Plan</p>	<p>Regional Coastal Plans under the RMA can include the Coastal Marine Area only, or they can take a wider approach and include the Coastal Environment. Including the Coastal Environment in the geographic coverage of the Coastal Plan supports an integrated ki uta ki tai approach, upon which EBM relies on. Although including the Coastal Environment in a Coastal Plan does not capture the full spread of catchment influences, it does assist in providing for holistic integration across domains and is therefore recommended.</p> <p>If including the Coastal Environment in a Coastal Plan, there are two ways better integrated management could be achieved:</p> <ul style="list-style-type: none"> A. Develop an objectives and policies framework which covers the coastal environment to promote integrated management, and objectives, policies and rules which apply only to the Coastal Marine Area as per statutory requirements under the RMA 1991. This leaves local authorities to develop objectives, policies, and rules to control land-based development in district and regional plans, within the guidance provided by the Coastal Plan (Brake and Peart, 2013), as regional and district plans cannot be inconsistent with Regional Coastal Plans; or B. Integrate the Regional Coastal Plan with other regional planning documents. <p>Inclusion of the coastal environment in the Coastal Plan is supported by sections 30(1)(a) and 80 of the RMA which set out the integrated management function of regional councils and provide for combined resource management documents. In addition, this approach is supported by the NZCPS which refers to the coastal environment.</p> <p>If choosing to only include the Coastal Marine Area in the Regional Coastal Plan, it will be important to ensure strong integration with Regional and District Plans where possible, and to establish and maintain relationships with local authorities to ensure holistic management of the whole coastal environment and long-term sustainability.</p>	Project manager, Council policy planners, Councillors, and Council executive management	EBM 4 EBM 5 EBM 6	
<p>Step 4</p> <p>Conduct internal review of scientific gaps in coastal management to inform work packages to be completed prior to plan drafting, and review environmental monitoring trends</p>	<p>Less is known about our coasts and oceans than any other environmental domain (Ministry for the Environment and Statistics New Zealand, 2019). This has typically meant that monitoring data for the Coastal Marine Area is not widely available. Therefore, the ability to report on the impacts of changes in the marine environment on species and habitats is often limited by a lack of baseline data, understanding of ecosystem tipping points, and connections between domains (Ministry for the Environment & Stats NZ, 2019).</p> <p>Understanding where critical habitats and ecosystems are situated, the pressures on coastal and marine environments and how these affect ecosystem interactions and responses is imperative to the implementation of EBM principles 2, 4, 6 and 7. It is important to move beyond considering single stressors, and to focus on ecosystem responses. This approach should be place-based, as</p>	Council policy planners, Council science staff	EBM 2 EBM 4 EBM 5 EBM 6 EBM 7	

different areas of the CMA are affected by and respond differently to combined stressors (Sustainable Seas National Science Challenge, 2021). E.g. an estuary that has good water clarity will be sensitive to high turbidity but will be more resilient to temporary increases in nutrients, and therefore less vulnerable to eutrophication and intertidal loss. Conversely, an estuary with poor water clarity is unlikely to be affected by a small increase in turbidity, however these ecosystems will be highly sensitive to increased nutrients as the capacity of the ecosystem to process nutrients is diminished. Therefore, even a small increase in nutrients or a reduction in the intertidal zone could drive the ecosystem to a tipping point (Sustainable Seas National Science Challenge, 2021).

This knowledge can be used to inform:

- the strength of provisions in Coastal Plans in respect to identified places,
- potential zoning approaches to protect key ecosystems,
- information requirements for consent applications, subsequent decision-making and adaptive management approaches implemented through consents.

Areas to be considered may include (but are not limited to):

- Areas of high biodiversity within a region's coastal environment and islands including marine reserves and parks (if applicable).
- Biogenic habitats - biogenic habitats are fundamentally important to ecosystems as they create and sustain biodiversity at different scales. Protection of such habitats is coming to the fore more and more. Particularly with the recent Court of Appeal Mōtītī decision, creation of Customary Marine Titles, the directive through the NZCPS for protection of biodiversity, and increased use of rāhui. Ensuring strong policy and corresponding rules to enable the protection of biogenic habitats should be a key consideration of coastal plan reviews.
- Other areas and interconnections of importance to the ecological productivity of the Coastal Marine Area and Coastal. This could include such elements as coastal wetlands, estuaries, fish nursery areas, shellfish beds, dune systems, important benthic habitats, and migratory routes.
- Coastal marine areas and coastal water bodies susceptible to degradation from sedimentation and contaminants, and the impact of activities occurring in their associated catchments.

Having a strong knowledge base can also be used to support any changes to provisions in proposed Coastal Plans through an evidence-based section 32 analysis of plans under the RMA.

<p>Step 5</p> <p>Undertake a gap analysis of relevant district plans and the operative Regional Coastal Plan to assess the strength of provisions in relation to managing effects of activities which influence the coastal environment and the Coastal Marine Area.</p> <p>In this analysis, also consider the Regional Policy Statement and whether it provides appropriate direction in regard to EBM.</p>	<p>Where local authorities within the region have coastline within their jurisdiction, undertake a gap analysis of their district plans to assess the strength of their provisions in relation to managing effects of activities which influence the coastal environment and Coastal Marine Area. Where there is an identified weakness in district plan provisions, investigate whether stronger provisions in the draft Coastal Plan could be included to compensate for this weakness, and ensure an integrated cross-boundary approach. For example, if provisions around earthworks and associated sediment runoff are reasonably permissive in district plans, setting a strong bottom line in the Regional Coastal Plan (with the CMA being a receiving environment for sediment runoff) could assist in protecting ecosystem health and function, particularly in estuarine areas. As an example, a bottom line could refer to improvement in sedimentation levels compared to a particular point in time, or if for the purposes of protecting a shellfish bed could be set at a level to maintain ecosystem health and function.</p> <p>However, ideally strong direction on EBM and protection of ecosystem health and function should come from the Regional Policy Statement (RPS). Given that regional and district plans must “give effect to” (implement) Regional Policy Statements (RPS), ensuring that the RPS is set at the right level will drive changes in plans lower down the hierarchy. Reviewing the RPS is worthwhile exploring particularly if it is nearing the end of its 10-year cycle, or if it is required to be amended to give effect to any new National Policy Statements.</p>	<p>Council policy and consents planners</p>	<p>EBM 4 EBM 6</p>	<p>See Guidance Note 2 for methodology and template to assist in gap analysis</p>	
<p>Step 6</p> <p>Incorporate EBM into Regional Coastal Plan provisions</p> <p>This step is best managed through the appropriate workstream leads as identified in Guidance Note 1, each focusing on their area(s) of expertise to collate specific information to inform drafting of provisions.</p>				<p>See Guidance Note 1 for a potential governance structure and workstream lead responsibilities</p>	
<p>Tangata Whenua workstream lead</p>	<p>Work with planning staff to help with deeper understanding of Te Ao Māori to assist with plan drafting and informing strength of provisions in reference to Te Ao Māori concepts</p>	<p>When drafting the Tangata Whenua chapter and any provisions relating to Te Ao Māori, ensuring that those holding the pen have a deep understanding of the Māori worldview is important. This is also key to implementation of these provisions – those working with the plan in a decision-making capacity need to be well versed in tikanga Māori. Misinterpretation of te reo terms and Māori principles can set judicial precedent and can reduce language to an interpretation that is so far removed from its cultural meaning that it is unrecognisable – e.g. Kaitiakitanga has been reduced to environmental stewardship (Love, 2018).</p> <p>To ensure that the risk of this occurring is minimised, involving experts in tikanga and te reo in plan drafting and implementation is recommended.</p>		<p>EBM 1</p>	

	Guide discussions with policy staff on whether it is appropriate to include definitions for Māori concepts in Te Reo.	<p>Despite several Māori concepts being defined in English in the RMA and NZCPS, Love (2018) notes that statutory incorporation of these terms and judicial precedent has the impact of creating stasis, and tikanga is not static but a system that is both dynamic and adaptive to changing circumstances. Including definitions in te reo in a Coastal Plan and not providing an English interpretation would require interpretation by an expert in tikanga and te reo which would reduce misinterpretation by those operating in the westernised environmental management framework and provide a stronger link between the concepts and tikanga. However, it is important to understand the benefits and shortcomings of such a statutory approach prior to drafting to ensure that if it does not result in substantive change, that it does not cause more harm in the long run, and this would need to be well tested with Iwi.</p> <p>If considering this change in approach, consideration of the following implications is also imperative:</p> <ul style="list-style-type: none"> • providing certainty in the Regional Coastal Plan for consent applicants and those processing consent applications; and • additional expenses associated with interpretation of Māori concepts, or whether there are appropriate resources in-house to provide interpretation. 		EBM 1	
	Assist in gathering and navigating iwi and hapū feedback to inform draft Plan provisions.	Work with Communications and Engagement workstream lead to identify iwi and hapū groups for engagement in implementing an EBM approach, and act as liaison between these groups to feedback into the Plan drafting process.		EBM 1	
Policy workstream lead	Incorporate a participatory and cross-boundary approach to Coastal Plan drafting (and implementation once operative) to allow better management of cumulative effects.	<p>This should involve regular hui with local authorities, Iwi, and stakeholders to discuss management approaches to identify where respective plans can be strengthened and also consent decisions once the Coastal Plan is operative.</p> <p>Davies et al., (2019, p. 8) note that “many key stressors (e.g. sediments, nutrients) in the marine environment are transported from land-based sources, thus their inclusion is critical for management of cumulative effects. This approach also switches focus from reactive management of responses to stressors to proactive management of stressor sources. By allowing identification and understanding of pathways from stressor sources to sinks, it enables interagency collaboration on cumulative effects that stretches from ki uta ki tai. This approach aligns with EBM protocols, which emphasise that effective cumulative effects management is an essential component that requires coordination across scales and sectors to allow for the maintenance of ecosystems and human well-being.”</p>		EBM 2 EBM 3 EBM 4 EBM 5 EBM 6 EBM 7	

	<p>Elevate the importance of biodiversity, ecosystem structure and function within draft Coastal Plan provisions, and ensure consideration of management of cumulative effects on key ecosystems.</p>	<p>Protection of biodiversity, ecosystem structure and function need to become a key focus throughout the plan and there is a strong baseline for this approach through the NZCPS. A review of objectives, policies and rules in the draft Coastal Plan is recommended to be undertaken through a biodiversity/ecosystem protection lens to determine where provisions can be strengthened in line with key literature. Provisions should extend beyond the protection of significant biodiversity, and there needs to be a clear flow from policy through to rules.</p> <p>Cumulative effects on ecosystems resulting from activities should also be included as a matter of consideration in relation to rules included in a Coastal Plan. Monitoring data can help to inform these provisions. The requirement to explicitly consider and assess cumulative effects is well provided for in the RMA, through the incorporation of the term “effect” in section 3 of the RMA, and also through the NZCPS which requires “councils in regional policy statements and plans to identify coastal processes, resources or values that are under threat or at significant risk from adverse cumulative effects and to include provisions to manage such effects” (as cited in Peart et al, 2019 pp. 45). Cumulative effects management can also be informed and addressed through the implementation of robust monitoring and supporting systems and procedures as identified in other steps.</p> <p>It is noted to effectively manage cumulative effects, further work is needed to understand allocation limits to inform how to regulate activities having cumulative effects, and where trigger points might exist.</p>		<p>EBM 3 EBM 4 EBM 6</p>	
	<p>Include ecological definitions for ‘maintain’ and ‘enhance’ in the draft Coastal Plan in reference to biodiversity and review the appropriateness of the bottom line being established in provisions through the use of these terms in line with key scientific literature on biodiversity protection.</p>	<p>Where these terms are not defined within a Coastal Plan it is standard practice is to revert to the dictionary for undefined terms. When dealing with scientific concepts, these dictionary definitions are often not appropriate and can result in some very different outcomes than what is intended. For example, the New Shorter Oxford Dictionary 1993 definition of ‘Maintain’ is “<i>to preserve or retain, cause to continue in being (a state of affairs, a condition, an activity, etc.); keep vigorous, effective, or unimpaired; to guard from loss or deterioration</i>” or in other words this is often translated in practice to keeping the status quo. The ecological definition of ‘Maintain’ is to “<i>Take action to preserve or retain natural species diversity (including foundational species) from loss and keep the functioning of ecological complexes effective and unimpaired from deterioration.</i>” (Urlich et al, 2018).</p> <p>Given that ‘maintain’ is not usually defined in RMA plans and relies on case law for guidance, a possible way to include the above ecological definition of ‘maintain’ could be to rephrase the term and title it ‘Maintenance of ecological function’. Furthermore, taking action to restore ecological function could also be achieved by taking a critical look at the appropriateness of activities which disturb these habitats, and what can be done to enable recovery of species diversity in these habitats.</p>		<p>EBM 4</p>	

	Review recent case law when drafting provisions and determine whether they need to be expanded.	Review recent case law when drafting provisions to ascertain the scope of what can be provided for in a Coastal Plan and determine whether provisions need to be expanded. For example, the Environment Court recently directed Bay of Plenty Regional Council to draft provisions for inclusion in their Coastal Plan to prohibit damage, destruction, removal of flora and fauna (including fishing activity) in three marine areas (Decision No. [2020] NZEnvC 050).		EBM 3 EBM 4 EBM 6	
	Undertake a comparative review of provisions in other Coastal Plans relating to biodiversity and ecosystems, participation, and co-governance.	Review other recently operative coastal plans to look at the strength of their provisions in relation to biodiversity and ecosystems, participation, and co-governance. This may assist in bringing a level of consistency across plans. However, in undertaking this step it is important to acknowledge the age of the Coastal Plans reviewed and any changes in the legislative environment since these plans have been made operative.		All EBM Principles	
Step 7 Gap analysis of draft coastal plan provisions against EBM Principles		Once draft provisions have been finalised, prior to notifying the proposed Coastal Plan, undertake a fine-grained gap analysis of the provisions against the EBM Principles using a matrix approach to identify areas of further refinement. It is recommended that this is undertaken with guidance from Sustainable Seas researchers.	Policy workstream lead, Council policy and consents planners, Sustainable Seas researchers	All EBM Principles	See Guidance Note 2 for methodology and template to assist in gap analysis
Step 8 Test draft coastal plan provisions with ecological experts and develop robust scientific monitoring plan, and look for potential collaboration opportunities with other councils		<p>One of the challenges that may be contributing to continued degradation of the marine and coastal environment is that often there is a disconnect between translating scientific concepts as presented in literature into policy (Arkema et al, 2006) (such as the New Zealand Coastal Policy Statement 2010 'NZCPS' and Regional Policy Statements 'RPS'), which then flows through into Coastal Plans. Therefore as part of Coastal Plan review, the proposed objective, policy and rules framework of the draft Coastal Plan should be tested with ecological experts (e.g. Sustainable Seas and/or NIWA) to ensure that appropriate monitoring can be implemented (e.g. for early warning signs and ecosystem tipping points) and also to provide an additional check on what the proposed provisions are meant to achieve from a scientific perspective, as it is important that new provisions in the draft Coastal Plan are supported by an evidence base.</p> <p>Involving ecological experts in the design of monitoring programmes at the same time provisions are being drafted will also help ensure that the right factors are being considered for a robust monitoring programme, that policy provisions align, and that there is an understanding of networks of ecological responses and relationships, and not just a focus on ecological stressors. Hewitt et al., (2019) note that shifting the focus from stressors to ecological responses...<i>"and using expert ecological knowledge in the design and analysis of time-series monitoring programmes for tipping points is essential where only short-term or infrequent datasets are available. This can increase the certainty that a tipping point has occurred and is particularly relevant in New Zealand where within-year sampling in marine monitoring programmes is limited."</i></p>	Policy workstream lead, Council policy and consents planners, Sustainable Seas researchers/NIWA (or other ecological experts), Tangata whenua workstream lead, science and monitoring workstream lead	EBM 2 EBM 4 EBM 5 EBM 6 EBM 7	

	<p>It is also recommended that the Tangata Whenua workstream and science and monitoring workstream leads collaborate in the development of the monitoring plan to incorporate mātauranga Māori. Furthermore, consideration of how monitoring data will be collected and reported to inform section 35 reporting and State of the Environment reporting is also important.</p> <p>Identifying opportunities for collaboration in coastal monitoring across regions, such as what has been done with national initiatives such as the National Environmental Monitoring Standards (NEMS)¹ and Land Air Water Aotearoa (LAWA)², as part of this process may increase efficiency, consistency in approaches across regions and assist with cost sharing.</p>			
<p>Step 9</p> <p>Assess supporting systems for Coastal Plan implementation and the ability of these systems to support an EBM approach</p> <p>This step is best managed through the appropriate workstream leads as identified in Guidance Note 1, each focusing on their area(s) of expertise to collate specific information to inform implementation of EBM through supporting systems.</p>				<p>See Guidance Note 1 for a potential governance structure and workstream lead responsibilities</p>

¹ <https://www.nems.org.nz/about-nems/>

² <https://www.lawa.org.nz/>

<p>Consents workstream lead</p>	<p>Review processes for assessing coastal permit/consent applications to ensure consistency amongst staff, and management of cumulative effects</p>	<p>Incorporating EBM into the draft of the proposed Coastal Plan is important, however equally important is how the provisions written into the plan are implemented, enforced, and reviewed as necessary. Key areas to be explored with those charged with implementation (both planners and scientists) as the Plan is developed include:</p> <ul style="list-style-type: none"> • Whether planners and scientists feel equipped/suitably trained to make informed decisions on resource consent/coastal permit applications in respect of considering the ecosystem as a whole and the linkages within. If more robust information is needed to support consent applications, the question needs to be asked around who should bear the financial burden of sourcing, providing, and assessing this information. • Whether there is a consistent assessment approach to issues such as the management of cumulative effects, and if planners and scientists have a clear understanding of tools available to address cumulative effects, particularly when each resource consent/coastal permit application is considered on its individual merits. Staff may wish to explore the Aotearoa Cumulative Effects 'ACE' framework outlined in Foley et al., 2019 to determine if the process outlined in this paper could assist in addressing the uncertainty when it comes to decision-making and cumulative effects assessments. This framework provides steps for evaluating uncertainty and approaches and tools that can help assess its importance in cumulative effects management. • Whether upskilling is needed in relation to the assessment of technical information provided by applicants, or received from other areas of Council, to inform drafting of consent conditions and overall decision-making. Consent/coastal permit conditions regarding preservation of ecological integrity should be informed by science and mātauranga Māori. Planners and scientists need to work closely to ensure the intent of conditions is not lost when drafting consent/coastal permit decisions. Discussion on determining when it may be appropriate to include monitoring and reporting conditions on consents to manage cumulative effects should also be explored to ensure consistent processing of consents, as well as how this information will be captured, utilised, and shared among staff. • Whether planners and scientists are regularly upskilled and are keeping abreast of any advances in research regarding cumulative effects assessment, and how these are being shared and incorporated into internal processes. • Whether internal processes for assessment of consent/permit applications and monitoring of consent/permit conditions (including data capture and data sharing) are fit for purpose. Consider the development of a standardised 'mountains to sea' diagram to accompany consent application forms that prompts applicants to think about all the ways their activity may affect different areas of the environment. This could be developed with input from Sustainable Seas researchers to help capture potential ecosystem interactions and would be beneficial in informing section 92 further information requests, cumulative effects assessments, and identifying if additional consents are required under other plans. 	<p>Policy workstream lead, Council policy and consents planners</p>	<p>EBM 2 EBM 4 EBM 6 EBM 7</p>	
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Policy workstream lead	Amend council reporting templates to reflect EBM.	An example is the section 32 analysis template which needs to be completed to support the draft Coastal Plan. Incorporating the EBM principles into this template will ensure that this approach is embedded into the Coastal Plan.		All EBM Principles	
Data management workstream lead	Create a central database/repository for data collection (monitoring and consents data), as well as internal process checks to ensure cumulative effects are being appropriately assessed and addressed when monitoring is undertaken, or consent applications are received.	<p>In designing the database, the following should be considered:</p> <ul style="list-style-type: none"> • Efficiencies and synergies for wider processes in data capture especially around monitoring and reporting e.g. s35 and SOE reporting, consent monitoring, plan monitoring. It would be advantageous if these processes can be streamlined by data that is easy access and interpret. • Accessibility by all Council staff to allow the utilisation of information for collective understanding of ecosystem health and function. • Format of data entry. Data needs to be able to be used to produce trend graphs etc. PDFs of consent decisions for example will likely not fit the bill. 		EBM 4 EBM 6 EBM 7	