

Issues for EclA in the marine environment in New Zealand

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Assessments of ecological effects on the marine environment in New Zealand can be challenging due to a number of factors:

- an overlapping and convoluted legislative framework,
- the complex nature of marine habitats,
- a lack of data,
- the spatial scales and interconnectedness of marine areas; and
- a lack of guidelines for impact assessment.

In this article, I will outline the ways in which some of these factors affect the reliability of descriptions and impact assessments, and consider how these might influence the quality of resource management in the marine area.

Legislative framework

The marine environment in New Zealand is divided into complex and overlapping zones, including inland waters (marine waters landward of low water), the territorial sea (extending from low water to 12 nautical miles (NM)), the contiguous zone (12 NM-24NM), the Exclusive Economic Zone (EEZ) (12 NM to 200NM), and the continental shelf (12-350NM). In addition, the Resource Management Act (1991) (RMA) uses different definitions for marine areas, with the Coastal Marine Area (CMA) extending from mean high water springs (MHWS) to the boundary of the territorial sea boundary (12 nautical miles (NM)) including the foreshore, seabed, coastal water and the air space above the water.

Marine management and assessment of effects for marine ecology in New Zealand therefore sits within a framework of overlapping legislation and management structures. This complexity can result in piece-meal, fragmented or siloed assessment of effects, and makes assessment of cumulative effects difficult.

Resource management of the marine environment in New Zealand is governed primarily by the two acts: Resource Management Act (RMA) 1991, and the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act (EEZ Act) 2012. The RMA applies to the CMA, and the EEZ Act applies to the EEZ and the extended continental shelf. Within Auckland, the Hauraki Gulf Marine Park Act (HGMPA) 2000 also applies to the CMA within the Hauraki Gulf; and in Fiordland, the Fiordland (Te Moana o Atawhenua) Marine Management Act 2005 applies. Both these regional statutes overlap with the RMA.

In addition to the direct provisions of the RMA, the New Zealand Coastal Policy Statement 2010 provides policy directives on the management and protection of a wide range of sometimes-conflicting activities in the marine environment. Other pieces of legislation also regulate the marine environment in regard to fisheries, cultural interests, mining, marine pollution, biosecurity, protection of marine mammals and marine organisms, marine reserves, heritage and coastal reserves. There are many overlaps between the various legislation. For example, a recent Environment Court decision [\[1\]](#) upheld that regional councils can impose planning controls over fishing in order to maintain biodiversity thus constituting an overlap between the RMA and the Fisheries Act 1996.

There are similarities between the RMA and the EEZ Act although the EEZ Act has a much narrower focus. One of the key distinctions is the definition of 'environment'. The EEZ Act includes only the natural environment and resources; whereas the RMA definition includes physical resources, social, economic, cultural, communities and aesthetic and amenity values as part of the wider 'environment'. Further, the EEZ Act does not include the concept of sustainable management but does have a strong directive relating to exercising caution to protect the marine environment. Marine ecologists working across both Acts need to be aware of the significant differences between these two pieces of legislation, especially with respect to the EEZ Act decision-making criteria.

Ecosystem-based marine spatial planning can inform the assessment of proposals through defining marine spaces and the appropriate management for each space. New Zealand's first marine spatial plan was completed in December 2016 and covers the Hauraki Gulf. The plan (Sea Change Tai Timu Tai Pari) empowers consideration of all issues that impact on the marine environment, holistically, through a collaborative process. The approach taken in the Hauraki Gulf could be applied to other marine areas in New Zealand to facilitate better management of marine resources and more thorough and comprehensive EclAs.

Ecological Impact Assessment in the marine environment

New Zealand's marine environment contains a high diversity of habitats. We have high levels of endemism and highly migratory species which make marine management and EclAs more complex. Environmental and ecological information in the marine environment is a long way behind our understanding of the terrestrial environment. Thousands of marine species remain undescribed in New Zealand and worldwide, and thousands more are yet undiscovered (especially invertebrates and deep-sea organisms). This lack of information limits our understanding of what marine species are *Threatened* or *At Risk*. The threat classification assessment for marine invertebrates undertaken in 2013 covers only 5% of the marine invertebrates present in New Zealand (Freeman et al., 2014) [\[2\]](#). Additionally, there is still much to learn about processes and relationships between marine organisms, and between organisms and their habitats. The limited knowledge and understanding of marine ecosystems limits the certainty with which effects can be predicted and the outcomes of proposed impact management.

Due to a lack of basic ecological information in many marine areas, identification of significant ecological areas within marine environments is often based on those features/species that are readily visible or provide habitat for other organisms (for example, saline vegetation and the presence of birds) rather than on the marine organisms and marine habitats themselves. In addition, marine ecological data is often not compiled and connected, rather being held in diffuse sources, which reduces the likelihood of significant improvement in understanding uses of marine resources and assessment of predicted activity outcomes versus actual outcomes.

Projects that involve assessments of effects on marine ecological values under the RMA and EEZ are highly varied in nature and in scale, and include activities such as reclamation, permanent occupation, discharges, disturbance, vegetation removal, deposition, dredging, and dumping.

Activities on land can also indirectly affect marine ecological values. For example, earthworks for residential developments and infrastructure are typical activities that can have an indirect effect on marine ecological values through the discharge of sediment-laden water into waterways and ultimately the sea. Earthworks occur at a catchment-level scale, which makes it difficult to isolate specific project effects from catchment effects in EclAs. The ecologist working in a project team usually relies on the outputs from sediment run-off models prepared by other team members (for example, hydrologists or engineers). Sediment run-off from open earthworks can be problematic to assess as there is no certainty as to whether these effects will occur. They are primarily dependent on the size of rainfall events, and these events cannot accurately be predicted during the assessment of effects stage of a project. This uncertainty makes it difficult to assess effects and to strike a sensible balance between being overly precautionary or overly permissive.

With any project that potentially impacts on land or marine environments, it is important to involve ecologists early in the design stage of a project, in order to understand the risks as well as opportunities to minimise and mitigate or offset potential adverse effects. In the marine environment, this is particularly important if reclamation is likely to be part of the project. The NZCPS states that reclamation should be avoided unless there is no other option, and this can impose a significant risk to the consentability of a project.

As marine environments are large and interconnected, there can be a tendency for some practitioners to minimise (not necessarily intentionally) the level of effects of a project by considering it at a broad scale. For example, an area of reclamation in an embayment within a harbour could be considered at the harbour scale (very small proportion of the harbour affected, negligible level of effect), at the sub-harbour scale (small proportion of sub-harbour affected, low level of effect), at the embayment scale (moderate/high proportion of the embayment affected, moderate/high level of effect). To avoid this potential down-playing of the effects, it is important that ecologists assess the project at several spatial and temporal scales.

A further complication for marine impact assessments in New Zealand is that there is no published guidance on how to assess ecological value, nor how to carry out impact assessments in marine environments. This leads to variation in the way ecological values are assigned, and the seriousness of impacts assessed by different ecologists in different places. Two ecologists may arrive at different conclusions about a project because they have used a different methodology. This can make it very difficult for a decision-maker to make a balanced judgement between the two.

In 2015, the Ecological Impact Assessment Guidelines for New Zealand were published by the Environment Institute of Australia and New Zealand, and subsequently revised in 2018 [\[3\]](#). These guidelines provide a robust, transparent framework for EclAs, but cover only terrestrial and freshwater ecosystems; although for practical purposes, the ecological principles and assessment framework used there are equally applicable to the marine environment. The key difference lies in the requirements of relevant legislation. Other ecological guidance documents are also silent on the marine environment e.g. draft Local Government Biodiversity Offsetting Guidelines.

Conclusions

Consistent, high quality resource management in the marine environment around New Zealand is primarily restricted by the lack of data and knowledge about the marine ecosystem, and inconsistent approaches to assessment. Although scientific investigation continues to fill knowledge gaps, dispersed and disconnected information and sets of data make it difficult to make gains in marine resource management.

Revision of the EIANZ Guidelines to include marine ecology will assist with consistency in the structure of impact assessments, especially around determination of ecological effects. This greater consistency will bring the guidelines into closer alignment with those produced for the UK and Ireland [4]. I have volunteered to be part of a group of marine ecologists who will (pro bono) expand the EIANZ Ecological Impact Assessment Guidelines to include marine ecology and have already started on this work.

Please contact me at sharon.deluca@boffamiskell.co.nz if you are interested in being involved in reviewing the guidelines.

REFERENCES

[1] Trustees of the Motiti Rohe Moana Trust V Bay of Plenty Regional Council [2018] NZENV 67

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[3] Ecological impact Assessment (EclA). EIANZ Guidelines for use in New Zealand terrestrial and freshwater ecosystems. 2nd Ed EIANZ. May 2018

[4] Guidelines for Ecological Impact Assessment in the UK and Ireland. September 2018. CIEEM.