



# The future of Ecological Impact Assessment in New Zealand

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In this introductory article I will consider how Ecological Impact Assessment (EclA) has developed in New Zealand and is practiced today. I consider some of the ecological science issues that cause tensions in the RMA decision-making framework and look at ways these might be addressed in the future. Some of these issues are discussed further by later contributors.

## **EclA in New Zealand**

Twenty years ago, Jo Treweek defined Ecological Impact Assessment [1] as “*The process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components*”. She explained that the basis of EclA lies in ecological science, and that it requires rigorous techniques of evaluation so that the implications of predicted outcomes can be assessed. These techniques should inform environmental decision-making and sound environmental management.

Following the publication of Treweek’s book, the UK’s institute of Ecology and Environmental Management (IEEM) developed guidance for professional ecologists carrying out EclA under UK legislation [2]. At about the same time the IAIA produced a Special Publication setting out principles to promote “Biodiversity-inclusive impact assessment” [3]. These two publications made the link between the work of an ecologist and that of the planner, lawyer or decision-maker – how the science should “inform”. They also link “biodiversity” – the variability across the components in the natural environment – with “ecology”, the study of the patterns and processes linking those components.

In New Zealand, the word “biodiversity” wasn’t in the Resource Management Act as enacted in 1991. That term didn’t come into common usage until after the release of the Convention on Biological Diversity in 1992 [4]. Rather, the RMA 1991 focussed on ecosystems and ecological values, recognising the importance of understanding the fundamental ecological processes in managing resources.

The RMA 1991 placed responsibility for implementing policy around protection of ecological values and assessment of effects on ecosystems with regional and local authorities. For most territorial authorities these were areas for which they had no appropriately trained staff,

nor existing approaches or methodologies. While central government focused its advice on the approach to preparing an “Assessment of Environmental Effects” it provided little support or guidance on assessment of ecological impacts or effects. In this guidance vacuum local authorities generally proceeded in isolation; in the absence of a body representing the interests of professional ecologists, there was no structured debate amongst those carrying out or auditing assessments around what might constitute good practice.

In 2015 some ecologists in the Environmental Institute of Australia and New Zealand prepared a set of ecological impact assessment guidelines for terrestrial and freshwater ecosystems; following a period of feedback and revision, a 2nd Edition was published in 2018 [5]. As **Mark Christensen** discusses in his article, these remain only a first step in getting an approach and methodology for EclA that is accepted by ecologists, understood by planners and lawyers, and recognised by decision-makers, 28 years after the RMA was enacted.

## Ecology and ecologists!

Why has this taken so long? I think that there are problems in two broad areas – the nature of ecosystems and ecological information; and the skills of professional ecologists.

It is not possible to be certain that all the ecological components and functions in an area are known and understood. One of the key steps in EclA is to make a full description of the ecological aspects of the existing environment. Guidance recommends that this should encompass plant and animal species, vegetation types, habitats and ecological processes and trends (function). This description should be based on published information and site investigations carried out for the specific proposal being assessed. Within the time-table of investigations of most proposals there is not usually time for long-term field observations or even repeated site visits.

Within a relatively small area, New Zealand’s ecosystems contain a wide range of habitats (marine, freshwater and terrestrial; from coastal to alpine; from the almost pristine to highly modified) and species (both native and introduced). Many groups of species (e.g. insects) have not been fully described and information about distribution is poor. Many require specialist input even to find them! Sharon de Luca emphasises this in her article discussing EclA in the marine environment. Native or indigenous species and habitats are most highly valued, but many introduced species and habitats now support native features and play an important role in ecosystem services – the line between “good native” and “bad exotic” is not clear cut.

There is only a short history of scientific observation and description of these features nationwide, so that records for the area in which a proposal is located are likely to be scant. Time is likely to be limited for investigations specific to the proposal so that the daily, seasonal or annual changes that take place naturally in plant or animal numbers and use of a site may be missed.

An EclA description therefore will be based on the ecologist’s interpretation of available data.

Another key step is the evaluation of the ecological components. This is used to determine the degree of effect a proposal may have on a component or place. There are few national or local evaluation lists or schedules to guide the ecologist in New Zealand. There is a comprehensive national Threatened Species classification system but nothing similar to

guide evaluation of species at the local level or habitats nationally. What is rare nationally may be common locally. Moreover, value is not determined only by rarity. There is now general acceptance that ecological value must take into account four broad matters – rarity/distinctiveness, representativeness, diversity and pattern, and ecological context. Some debate remains around how these are defined at the local level. However, these provide an accepted framework for evaluation.

The short history of ecological science in New Zealand, together with an influx of introduced species that are still invading and finding a niche in the landscape (both beneficial as food sources or adversely as pests), and the challenges of large scale and innovative development proposals, means that the prediction of effects on ecosystems of proposals depends on the experience of the ecologist making the assessment. The ecologist must recognise uncertainty in all these aspects and the risk associated with the predictions. **Carol Bannock** notes that this is particularly needed for large scale and complex roading projects.

All aspects of EclA depend on the experience and expertise of the ecologist carrying out the work and of the ecologist reviewing or auditing the ecological aspects of an application for which the Assessment of Effects has been prepared. If, as Jo Treweek pointed out, the purpose of EclA is to inform decision-making and sound environmental management, then all those involved in the process need to have a common understanding of the science, ecological evaluation, and resource management.

In my opinion this suggests that ecological impact assessment should be part of the study and training of an ecologist in both the academic environment and in their early career through Continuing Professional Development (CPD). However, that is not occurring consistently in New Zealand. For many young graduate ecologists, their introduction to EclA comes “on the job” through their employer, whether that is a consultancy or local authority. **Nick Head and Philip Grove** expand on this concern in their article.

Within local authorities, the lack of understanding of the EclA process in practice may lead to development of poor policy that is not soundly based in science. An example of this is the development of policy around biodiversity offsetting. While the internationally accepted principle of “no net loss of biodiversity” is a good goal, the practicality of implementing this on the ground locally in the absence of data on existing biodiversity and restoration goals makes it difficult to build into impact management and consent conditions. Limits to offsetting as a means of achieving “no net loss” are also not well understood. For example, it is generally not possible to ‘offset’ loss of habitat area from development; although it *may* be possible to offset some impacts on some elements of its constituent biodiversity.

I think that good communication skills are also essential to the ecologist carrying out an assessment and preparing an EclA report. Ecologists must work with a range of other professionals during the process and it is important that they can explain the values they see and the ways to manage impacts. Oral communication at site visits, during project consultation and meetings, and in hearings, along with high quality written reports, are vital for achieving good environmental outcomes.

I have been a member of a professional organisation for ecologists since 1987 when I joined the Environment Institute of Australia (EIA, later becoming EIANZ). This, and the UK’s Chartered Institute of Ecology and Environmental Management (CIEEM), provide information about CPD activities, international developments, broader environmental



management skills and the support of a network of other professional ecologists. I would like to see more ecologists join a professional organisation as a way to improve and gain recognition for their skills. This would also form a body of ecologists who can discuss ecological issues away from the confrontational hearing situation or competitive commercial environment.

The Certified Environmental Practitioner Programme offers certification to recognise general environmental skills (CEnvP), but there is also a specialist category which recognises ecology specifically. However, in New Zealand there are only 11 CEnvP Ecology Specialists (9 of whom work for consultancies); there are at least another 10 ecologists with CEnvP General status. All of these ecologists have been assessed by peers and examined on technical and ethical topics. All can be tested through a disciplinary process if a formal complaint is lodged.

However, I estimate that the total number of professional ecologists in New Zealand is over 400 (including those working in research, academia, consultancies, self-employment, and local and central government). There is a large credibility gap to bridge!

### **The future?**

So, will EclA be better understood and find a place in the AEE process in the same way that cultural impact assessment and landscape assessment have?

I believe that EclA in New Zealand will continue to evolve as the number of young professional ecologists working across the resource management process grows. These ecologists will want good training and to have recognition of their skills through higher salaries, preferential employment opportunities, and certification such as CEnvP Ecology Specialist.

Collaborative team-work on projects will be more important, especially for more complex proposals where potential interactions between activities and effects must be constantly reviewed.

The use of new technologies will assist with data collection – a programmed drone to carry out photo reconnaissance and analysis can provide scoping data in a cost-effective manner – but site visits and field identification skill will remain important. An ecologist must get their boots dirty to really understand how ecosystems work!

I also think that we need to improve the way ecologists work with people from other disciplines or backgrounds in a way that better connects ecological values with the range of other values covered in AEEs. In particular, for example, ecologists share an appreciation of the natural environment with manawhenua. We need to develop ways to work together, and help decision-makers understand both the synergies and differences that come from these different values.

All of this will lead to improvement of EclA practice – the sound environmental management that Jo Treweek sought twenty years ago!



## REFERENCES

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