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Ecological Impact Assessment

Edited by Judith Roper-Lindsay

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Carol Bannock, Senior Environmental Specialist, NZTA

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The future of Ecological Impact Assessment in New Zealand

Dr. Judith Roper-Lindsay, Ecologist/Director of JR-L Consulting Ltd.

In this introductory article I will consider how Ecological Impact Assessment (EcIA) 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.

EcIA 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 EcIA 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 <u>inform</u> 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 EcIA 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 EcIA 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 EcIA 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 EcIA 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 EcIA 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 EcIA depend on the experience and expertise of the ecologist carrying out the work <u>and</u> 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 EcIA 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 EcIA 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 EcIA 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 EcIA 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 EcIA 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 EcIA 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 EcIA practice – the sound environmental management that Jo Treweek sought twenty years ago!



REFERENCES

[1] Treweek, J. (1999). Ecological impact assessment. Oxford: Blackwell Science.

[2] Institute of Ecology and Environmental Management. (2006). Guidelines for ecological impact assessment in the United Kingdom. Institute of Ecology and Environmental Management (IEEM).

[3] International Association of Impact Assessment (IAIA). (2005). Biodiversity in impact assessment (IAIA Special Publication Series No. 3). Fargo, North Dakota: International Association of Impact Assessment.

[4] United Nations. (1992). Convention on biodiversity. United Nations.

[5] Ecological impact Assessment (EcIA). EIANZ Guidelines for use in New Zealand terrestrial and freshwater ecosystems. 1st Ed March 2015; 2nd Ed EIANZ. May 2018





There are common challenges associated with undertaking ecological impact assessments (EcIA) relevant to all sorts of different types of projects, large and small. Challenges include:

- availability of relevant data such as species distribution;
- understanding of complex ecological processes, and
- ecological assessments having to fit within project timeframes and still produce meaningful data (Treweek, 1999).

This article touches on several challenges experienced by New Zealand Transport Agency (Transport Agency) project teams when constructing new roads. Some of these challenges are unique to large road construction projects and other challenges may be experienced by other project types; however, because of their size and nature, they are likely to be more complex on road projects. A number of Transport Agency planners and project managers as well as ecological consultants who have worked on Transport Agency projects were asked for their thoughts regarding challenges associated with EcIA and their feedback provides the basis for this article.

Good information early on in project development

In the planning stages of a new road construction project there are often several different options for the route alignment and/or design. The Transport Agency undertakes an options assessment ("optioneering") where risks and opportunities associated with each option are identified and the merits of each explored and compared. The purpose of the assessment is to come up with a short-list of options that will undergo more in-depth investigations so a 'preferred option' can be chosen. For Transport Agency projects, EcIA starts at the options stage and a key challenge is for project teams to have adequate ecological information available at early and meaningful stages of project development. Good information enables the project team to make informed, robust decisions about ecological features that could be potentially affected, and how to manage effects on them. Theoretically, the earlier in the project development process accurate ecological information is received, the more likely it is that the project team can apply this knowledge when planning the route alignment, enabling the project to avoid high ecological values. The team also knows early in project development whether there is mitigation that should be designed in. It is especially important that the need for any large and/or expensive mitigation interventions be flagged as early as possible so these can be adequately factored into project design and budget.



So, at the early stages of project development there is a greater opportunity to influence the design while the project is flexible enough to allow for changes to the route alignment and construction methodologies. However, generally the level of detail in an EcIA increases as the project evolves, and through the options assessment process, the study area for EcIA becomes more focused. Here is the conundrum: where ideally at the options assessment stage there would be as much information available to the project team as possible, the reality is that there is often little desktop information available and it is not feasible to undertake detailed site investigations early on when a lot of options are on the table. For example, there were 24 different route options for one project recently. While overseas there is increasing use of geographical information systems and modelling in environmental impact assessments for highways (e.g. Banerjee et al., 2016) the Transport Agency relies on the technical expertise and regulatory knowledge of their ecologists to address this issue. A national comprehensive database showing the distribution of abiotic and biotic variables would help address this challenge considerably in that it could be used to inform the Transport Agency's 'Environmental and social responsibility screen' that is applied early in project development to help inform option assessment.

Lack of quantitative information regarding ecological effects of roads

Globally, 'road ecology' has become a recognised specialist discipline, defined as "*using the science of ecology and landscape ecology to examine, understand, and address the interactions of roads and vehicles with their surrounding environment*" (Forman, 2003). There is much international research directed to understanding how roads are affecting both terrestrial and aquatic ecosystems and species (e.g. Seilers, 2001; Spellerberg, 1998). Road ecology in New Zealand is in its infancy and currently there is little science on how roads may be affecting New Zealand's ecology; there are many knowledge gaps. Coupled with little scientific research on roads and ecology in New Zealand, is a lack of relevant data available to the project ecologist as touched on in the previous section.

While there is considerable reliance on the ecologist to provide accurate and expert technical advice, often decisions are made based on their expert opinion and experience, with limited scientific understanding of many of the species and habitats involved to support their conclusions. In addition there may be constraints on obtaining site-specific data (e.g. one season's field data only available to support assumptions). While lack of quantitative information is not unique to road projects, it can be particularly challenging when dealing with large, linear, complex projects that can have numerous direct and indirect effects. The ability to address large knowledge gaps is constrained by intense, short programme timeframes. Among other constraints, generally the timeframe for projects does not allow for robust scientific design in EcIAs, thereby introducing a reasonable degree of uncertainty in EcIA predications and effects management strategies. The issue of there being a gulf between assessment techniques used for EcIA and those researched and promoted in scientific literature is well known, (e.g. Treweek, 1999) and is being grappled with internationally (e.g. Karlson et al. 2014). Attempts are being made to bridge this gulf overseas with quantitative methods being put forward that can be incorporated into challenging project timeframes (e.g. Berthinussen and Altringhan, 2015).

The Transport Agency has started the ball rolling in New Zealand with their research into effects of roads on native bats and the resulting development of a bat framework (Smith et al., 2017). While this research provides excellent information it also highlights significant gaps in our knowledge that need to be addressed to enable the accurate assessment of the effects of roads on bats in New Zealand and the development of mitigation strategies in which project teams and consenting authorities will have confidence. In future the Transport Agency hopes to incorporate scientifically robust methods and research into projects more



frequently, and enable quantitative information on effects and ways to minimise adverse effects to be utilised for better ecological outcomes.

Accessing land for site investigations

Roads by their nature are linear and a new road project may affect hectares of land, running for kilometres across numerous land cover types and affecting multiple property owners. The ability to access all the land that the project may affect in order to undertake onsite ecological investigations can be a real challenge. Some landowners may not allow access and the Transport Agency may not be able to gain it until close to the time construction begins. This means that the EcIA may be limited to desktop assessments and viewing the site from afar for part of the project footprint/ zone of influence. In this situation the Transport Agency assesses a representative area and relies on their ecologists to apply their professional judgement and give recommendations. There is a risk that something will be missed in the initial EcIA and be discovered once access is granted that could result in programme and delay issues for the project.

Competence

The Transport Agency relies on their ecologists for an appropriate EcIA approach and accurate information. They endeavour to engage ecologists with the right level of competency so the Transport Agency can have confidence in what they are being advised. It is expected the project ecologist will produce an EcIA that helps the project team make the right decisions, applying an approach where the level of effort to undertake the EcIA suits the level of complexity of the project (the EcIA is 'fit-for-purpose'). A competent ecologist with strong road project experience will know what is needed to produce an EcIA that adequately addresses ecological effects that meet both statutory and the Transport Agency's corporate obligations. They will also ensure the EcIA is such that it can inform future monitoring requirements and effects management strategies.

Road ecology has become a discipline in its own right because roading projects have their own quirks and are complex in nature, both from the intense dynamics of a large multidisciplinary team consenting and building a road, and also the many ways roads can affect ecology (e.g. Forman, et al, 2003 ; van der Ree et al., 2015). As mentioned earlier, 'road ecology' is in its infancy in New Zealand and a particular challenge across several projects is for the Transport Agency to recognise not all ecologists have the depth of knowledge on how road projects are planned, designed and implemented, and their effects, to ultimately provide the information required to design, construct and operate a road while minimising ecological effects. For example, the ecologist needs to have the experience to work efficiently with other technical disciplines that are involved on road projects and understand other influencing factors that may need to be worked through before a feasible solution is found.

Communication

The one common challenge that the planners, ecologists and project managers raised when discussing challenges with EcIA was that of communication. It was felt there were communication barriers on both sides hindering the ecologist being able to relay their results and recommendations in a way that the rest of the project team could understand. Disconnect between different disciplines can result in different parties considering that others are not open to new ideas. From the ecologist's point of view, there appears to be a general lack of understanding from planners and the legal team that there are actions *beyond the requirements of the RMA* that the Transport Agency may need to carry out to address the



loss of indigenous biodiversity in New Zealand, and that recommendations put forward are not gold-plated or just 'nice to have'. While these actions can help to get a project consented as efficiently as possible they are put forward to minimise risk to indigenous biodiversity. Some matters may be addressed by legislation other than the RMA, such as the Wildlife Act 1953. The appropriate level of effort required when managing effects is often debated between ecologists, planners and project managers.

From a project manager's perspective, there have been risks and delays from misunderstanding the implications of what the ecologist has reported in their EcIA. There is the need for ecologists to explain the reasons behind their assessments more effectively and to provide data that can be readily interpreted by their non-ecologist audience as well as other ecologists. Greater understanding from the project team would likely ensure more support for the recommendations and result in less risk to the project. The non-expert needs to 'get' the reasons behind the recommendations both from a technical and statutory point of view. EcIAs and any subsequent ecological management plans need to be future-proofed and written in a way that makes sense to planners and project managers involved in project development and consenting. They also need to be very clear about the design and mitigation intentions for the team involved in constructing, operating and maintaining the new road (e.g. van der Ree et al., 2015).

Conclusion

The <u>Transport Agency</u> is a large government organisation whose primary function is to promote an affordable, integrated, safe, responsive and sustainable land transport system. There can be significant ecological effects when constructing roads and the Transport Agency takes this seriously, with ecological impact assessment being considered from early in project development through to operation and maintenance phases. There are big challenges associated with constructing roads and EcIA, some of which are unique to road projects. The Transport Agency is endeavouring to address some of these challenges from different angles including undertaking research and developing supporting guidelines. However, a collaborative effort across different organisations is needed to truly address the common issues experienced when undertaking EcIAs.

REFERENCES:

Berthinussen, A and Altringhan, J (2015) Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure. Defra Report WC1060.

Foreman, R and Sperling, D (eds) (2003) Road ecology: science and solutions. Island Press. 481pp.

Karlson, M., Mortberg, U., Balfors, B. 2014. Road ecology in environmental impact assessment. Environmental Impact Assessment Review 48, pp 10 – 19.

Seilers, A. (2001) Ecological effects of roads: a review. Swedish University of Agricultural Sciences, Department of Conservation Biology. Uppsala.

Smith, D, K Borkin, C Jones, S Lindberg, F Davies and G Eccles (2017) Effects of land transport activities on New Zealand's endemic bat populations: reviews of ecological and regulatory literature. NZ Transport Agency research report 623. 249pp

Spellerberg, I., and Morrison., T. 1998. The ecological effects of new roads – a literature review. Wellington, New Zealand. Department of Conservation.

Treweek, J. (1999) Ecological impact assessment. Wiley. 368pp.

Van der Ree, R., Smith, J.D., Grilo., C (2015). Handbook of road ecology. Oxford. Wiley Blackwell. 522pp.



EcIA and the Resource Management Act

Mark Christensen, Environmental lawyer at Natural Resources Law

Introduction

This note considers some issues around the Resource Management Act and the role of ecological impact assessment. Despite EcIA being a well-established input to both local planning processes and the consideration of proposals requiring resource consents, it is perhaps surprising that there remain several areas of uncertainty about the approach which should be adopted in any particular situation.

Decisions at both local authority and Environment Court levels have tended to focus on the specific facts involved rather than assessment approaches or techniques. Because of that, for some questions which I consider to be fundamental, it is difficult to discern clear principles, guidance or direction that can be applied consistently.

This note identifies what I consider to be two major areas of uncertainty about EcIA as described in the EIANZ Guidelines [1]:

use of the terms "significance" and "value", and lack of guidance about "protection". I suggest that the EIANZ's Ecological Impact Assessment guidelines 2nd edition (2018) provide an excellent start, but that there is still more work to do. While the 1st edition (2015) guidelines have been implicitly accepted in a few decisions, it appears that consideration of the usefulness and applicability of the guidelines has not been the subject of explicit consideration by a council, board of inquiry or court.

I suggest there is merit in taking a similar approach to the Institute of Landscape Architects, which involves further engagement internally within the profession and externally with the Environment Court about the Court's expectations of EcIA, and the areas of uncertainty and whether greater clarity could and should be provided.

The scope of impact assessment

In general terms, the requirements of an impact assessment are well known. A resource consent application (and by implication subsequent expert evidence) must include "an assessment of the activity's effects on the environment, as required by Schedule 4".[2] Schedule 4 is the main element of statutory guidance. The schedule lists a range of matters that must be included, [3] which must be in "such detail as corresponds with the scale and significance of the effects that the activity may have on the environment".[4] Third party challenges to the adequacy of an AEE are difficult given the general requirements for assessment of effects set out in Schedule 4. An inadequate impact assessment does not of itself invalidate an application and can be 'cured' by subsequent information through the



process. The ultimate question is whether the decision maker has enough information from whatever source including their own investigations, to perform their functions properly.

The Environment Court has commented on the information requirements of an AEE as follows:

Good resource management practice requires that sufficient particulars are given with an application to enable those who might wish to make submissions on it to be able to assess the effects on the environment and on their own interests of the proposed activity. Advisors to consent authorities and would-be submitters should not themselves have to engage in detailed investigations to enable them to assess the effects. It is an applicant's responsibility to provide all the details and information about the proposal that are necessary to enable that to be done. The proposal and the supporting plans and other material deposited for public scrutiny at the consent authority's office should contain sufficient detail for those assessments to be made [5]

Distinguishing between significance and value

The 2018 EcIA guidelines distinguish between "significance assessment" and "impact assessment". They state:

Significant Natural Areas (SNAs) are sites which have been identified by survey, or by desktop analysis and remote sensing, and are considered to be 'significant' under section 6(c) of the RMA based on interpretation of a set of criteria developed for that purpose... In EcIA the term "significant" should be reserved for use in the context of section 6(c) assessments. It is not used in the determination of ecological value or importance.[6]

The guidance notes that a significance assessment is carried out primarily to assist planners in their interpretation of district or regional plan provisions and is less relevant to the assessment of ecological impacts and the determination of appropriate mitigation which rely instead on an assessment of ecological value, resilience, sensitivity, and ecological processes and functions. The guidance states:

Significant / not significant is a binary condition – there are no degrees of significance. But the ecological value or importance of an area is a continuum, ranging from (for example) none to very high.[7]

While I agree that the distinction is important, in my experience the two issues are closely interrelated, and often overlap. In most cases, an applicant will be required to make an assessment, as part of the description of the existing environment,[8] of whether there are any 'areas of significant indigenous vegetation' or 'significant habitats of indigenous fauna' which may be affected by the proposal (the 'significance assessment). This is necessary whether or not the district or regional plan identifies or lists significant areas or habitats in some way, and whether or not the relevant planning instrument provides specific provisions about how significant areas or habitats are to be managed. Many district plans provide criteria for assessing "significance" even if there is no list, but there remains no national approach to ensure consistency and efficiency of the planning processes[9].

The reason, ultimately, that this is important is that it is a 'matter of national importance' that areas and habitats which have been identified as significant are 'protected'[10]. Areas and habitats which are not found to be 'significant' do not have the same statutory test as 'protection'. Rather, the test there is the more general one of promoting sustainable



management and how effects are avoided remedied, mitigated, offset or compensated for.[11]. I suggest that an EcIA is an important part of determining whether a significant area or habitat can be protected if the activity is consented. (I discuss below the issue of determining what is meant by 'protected').

The guidelines discuss the scope of biological assessments.[12] They state:

Depending on the size and type of project, the description of the terrestrial and freshwater components of the environment may include:

- A description of the vegetation including species lists and classification of vegetation types. The level of detail provided will vary, but may range from broad narrative description, to formal vegetation classification....
- A more detailed analysis of the areas of various vegetation types may be required, typically presented as tables listing vegetation type, area, and percentage of the Project Site (or subsite) occupied. This should be supported by a vegetation map of the same vegetation types...

This raises the issue of what is colloquially referred to as the 'clumpers versus splitters debate'. The guidelines recommend as a minimum that the assessment look to the scale of the Ecological District [13] but may also consider a smaller scale (e.g. a unique remnant), and a larger scale (e.g. national movement of migrant species). The guidelines go on to consider 'questions of spatial scale' and 'levels of ecological organisation' and include the following comments:

Questions relating to spatial scale often arise, especially when dealing with impacts that may be spread over large spatial scales, sometimes in a fragmented manner: what size units of vegetation or habitat should be considered?...

Decisions about which ecological features, and at what level of organisation and spatial scale to evaluate them, are influenced by the assessment of effects and mitigation requirements. The values and effects on individual species should not be overlooked or amalgamated or averaged; but where there are likely to be effects of a similar level, requiring similar mitigation actions, these can be addressed together at the community or assemblage level. For example, an area or site (such as a wetland) is likely to contain a variety of habitats, vegetation types, and plant and animal communities and assemblages, having different values. For example, a wetland dominated by introduced rushes and herbs may support a nationally threatened bird species; this would mean that values, effects and impact management of wetland habitat and bird species would require separate assessments.

These should be treated separately or grouped according to value, likely seriousness of effects, and mitigation opportunities for components...[14]

An overall assessment of the ecological value of a site is determined from the ecological values of species, vegetation types, habitats and ecosystems there. For any given site, it is conventional to assign value at some or all of the following levels of ecological organisation:

- Species (or in some cases sub-species or taxonomically indeterminate taxa)
- Assemblages or communities of plants and/or animals, especially when considering vegetation and soils ('vegetation types')
- Habitats of fauna. Whilst habitat may be determined by vegetation, it also
 includes abiotic components. Some habitats may contain little or no vegetation



(e.g. scree, sand or gravel spits, some freshwaters). Vegetation of low value in itself may provide habitat for high value fauna.

All of this seems non-controversial, but in situations where the district or regional plan does not comprehensively and exhaustively identify significant areas and habitats (which is the situation in almost all cases) it has become quite common for decision-makers to be faced with conflicting evidence from ecologists. This revolves around what constitutes an 'area' of significant vegetation or a 'significant habitat' lying within a proposed project footprint or that might be affected by a proposal. For example, applying exactly the same significance assessment criteria to a project area, one ecologist may identify four vegetation types that may be affected by a proposal, and another ecologist identifies 10 vegetation types. Ecologist A (the "clumper") describes each of the vegetation types as comprising part of larger areas which are significant for the purposes of section 6 RMA. Ecologist B (the "splitter") describes the 10 vegetation types of parts of much smaller areas of significant vegetation. While the ecologists might see the same ecological values on the ground in the project area, the question of what are the boundaries of "significant" areas remains for the decision-maker.

This is not just a theoretical question. The importance of taking a 'splitting' or a 'clumping' approach to significance assessment is that it determines what is to be 'protected'. While I accept that "*The purpose of EclA is to provide information about, and interpretation of, the ecological implications of a project upon all ecological components of a site, irrespective of "significance*" [15], that significance assessment is critical in determining the physical environment against which effects are to be assessed. Under section 6, each significant areas or habitat needs to be protected. In general terms, the greater the number of significant areas or significant habitats there are found to be impacted, the more difficult it will be to satisfy the 'protection' test in section 6.

Clearly, there needs to be a practical and balanced approach taken, but at what point does the 'splitting' become unbalanced so that no longer are areas of vegetation being defined, but rather assemblages of plants? Likewise, at what point does a 'clumping' approach become unbalanced so that sensible and practical differences in vegetation types are disregarded, and effects overlooked? How is a decision-maker able to assess these different approaches by different ecologists applying the same significance criteria?

The simple answer is that each ecologist has to justify their approach and the spatial scale they have adopted. In my example above (and in evidence in cases I have been involved in) both ecologists will seek to do that. But on what basis is the decision maker to decide which evidence to prefer? All decision makers will in the end decide which evidence they prefer, but from my reading of the decisions that consider this issue, the conclusions appear very site specific with no general or consistent principles applied.

Of course, every site and every proposal are different, and there will not be a magic, simple, one-size-fits-all approach. But I strongly suspect that we can improve the current situation. Discussions and arguments over this issue consume many hundreds of hours of evidence writing, expert conferencing and decision deliberation and writing. In my view, the 2018 EcIA guidelines identify the issue but do not provide any substantive assistance in adopting a consistent or principled approach.

There is some guidance at regional level about what constitutes a significant site. For example, a report to Environment Canterbury [16] provides under the heading "What constitutes a significant site?" it states:



A significant site should include the significant features, and connecting habitat and key ecological processes that help to maintain the significant features. The significant site would normally include all vegetation/habitat units that contain or constitute significant features, and any intervening or buffering indigenous habitat that helps to connect these units and form a more cohesive or compact site. Mosaics of indigenous vegetation may be included in the significant area because an assemblage of small areas, overall, can comprise a significant area.

However, at some sites this has raised questions around the definition of "indigenous vegetation" and the extent to which introduced species and habitat types in buffer areas can contribute to the overall ecological significance of a site.

In my view, EcIA under the RMA could be improved if there were further consideration of the issue of whether further guidance is possible at a national level on the issue of the scope of biological description, as a basis for assessing impact.

The meaning of 'protection'

A second, and related issue is whether the EcIA process can and should explicitly address the issue of whether an identified significant area or habitat is protected if consent is granted to a particular proposal.

Here, there is a range of questions and issues which, in my view, could usefully have greater clarification, notwithstanding the truism that each subject site is ecologically unique and each development proposal is unique. For example, is 'legal protection' of a site (eg by way of a covenant or ownership by central or local government) necessary for that site to be protected in terms of section 6 of the RMA? And, even if legal protection is necessary (over and above the legal obligations on a consent holder by way of conditions attached to a consent) is it adequate? That is, given the continuing pest and weed problems in New Zealand, can it be assumed that areas of significant vegetation and significant habitats of indigenous fauna currently within 'legally protected' areas but without active and sustained management are currently protected in terms of section 6? Does simply 'leaving them alone' (ie preventing development but nothing more) protect them in terms of section 6? Where areas of vegetation and habitats are affected by a development proposal, can protection of those areas or habitats be achieved even if there is net loss of some values? Or is 'no net loss' of values required, and if so, how is 'no net loss' to be determined, and in what spatial context?

In some situations, the relevant district or regional plan will set out clearly what is required for a significant area or habitat to be protected. At one end of the spectrum, the plan might state that adverse effects on significant areas or habitats generally, or on specifically identified areas, are to be avoided, in effect requiring that the existing values be preserved and that activities which affect those values are prohibited. Following the Supreme Court's decision in *King Salmon* [17] where a plan requires effects on values to be 'avoided' this is likely to mean what it says, so that in those districts where the plan is explicit, if the EcIA identifies an adverse effect from a proposed development, that will mean the proposal is contrary to the plan.

However, many district plans have policies which say little more than something like 'areas of significant vegetation are to be protected'. In these situations, what is the role of an EcIA in assisting the decision maker to determine that ultimate question? The guidelines provide for the level of effect to be "determined by a combination of the magnitude of the effect and the value of the affected ecological component" [18]. In my view, the guidelines set out a very helpful list of criteria for describing magnitude and level of effect on an ecological



feature (species, vegetation communities, habitats, ecosystems and/or sites) in the form of a number of clear tables [19]. I consider it would be of considerable assistance for witnesses, counsel and decision makers if this were adopted as a standardised approach to all ecological assessment and impact evidence [20].

While not preventing other methods being used, the onus should be on an ecologist (and advising counsel) to demonstrate why an alternative approach is justified. But for this to occur, I consider there needs to be a process of consultation and discussion, internally within the ecology profession, with councils and with the Environment Court in particular.

Armed with the results of such a transparent effects assessment, is it appropriate for an ecologist to go on to state his or her opinion about whether or not a significant area or habitat is protected? The guidelines say:

It is not considered the role of an ecologist to conclude an ecological impact assessment using legal or planning terms. However, the ecologist doing the work should be prepared to answer questions on this topic and assist the planner in coming to a determination about aligning ecological and legal or planning terms.

It's certainly not the role of an ecologist (or any other expert) to express a view on whether a consent should be granted or declined or whether the 'overall tests of the RMA' are met or not. That is because, in most instances, a decisionmaker must balance a range of different and sometimes conflicting considerations.

However, in my view the most appropriate person to express an opinion on such questions as whether the 'life-supporting capacity of an ecosystem is safeguarded' or 'an area of significant vegetation is protected' is an expert ecologist who has undertaken a significance assessment and a robust and transparent effects assessment. Such an assessment requires more than simply repeating the mantras in the RMA such as 'less than minor' or 'no more than minor'. In my view such an opinion is likely to be of greater assistance than an opinion on the same issue from a planner or submissions from an advocate. But therein, lies the rub.

Similar to the way in which the courts have addressed the 'clumping' versus 'splitting' issue, I can discern no overall consistent approach to the determination of what 'protection' means in the absence of specific and detailed direction in the relevant district or regional plan provisions.

Can the table of criteria for describing level of effects in the 2018 guidelines [21] be used to assist in the assessment of whether a significant area or habitat is protected?

Does 'protection' require 'no net loss' of ecological value (as assessed after considering 'like for like offsets')? Or is it acceptable for a net loss to occur in some situations?

Is 'protection' an entirely objective ecological assessment or does it vary depending on what the relevant plan provisions say?

These are all issues, in my view, which deserve further consideration and discussion. I suggest that the Guidelines would benefit from more guidance on avoid/protect and expanding the discussion of ecological and legal aspects of protection and levels or types of



protection. Some common understanding, at least, of these issues would assist in the effective, consistent and efficient approach to ecological impact assessment.

REFERENCES & NOTES

[1] Ecological impact Assessment (EcIA). EIANZ Guidelines for use in New Zealand terrestrial and freshwater ecosystems. 1st Ed March 2015; 2nd Ed EIANZ. May 2018

[2] S88(2)(c) RMA

- [3] Particularly clauses 6 and 7
- [4] Clause 2(3)(c)
- 5 Affco NZ Ltd v Far North DC (1994)
- [6] Section 4.4.2
- [7] Section 5.1.1
- [8] Section 4 of the 2018 guidelines

[9] A national approach is recommended in the 2018 report of the Biodiversity Collaborative Group

[10] Section 6(c) RMA

[11] That is not to say such areas and habitats may not be required to be protected in any given situation; but it is not a national imperative that they be protected

[12] Section 4.4.6

[13] Section 4.2 The description should use the Ecological Districts framework to set the spatial context, unless another is more appropriate to the type of environment and likely effects. See also section 5.1.3

[14] Section 5.1.3

[15] Section 4.1 guidelines

[16] Guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna in Canterbury region. Wildlands report (2013)

[17] Sustain Our Sounds Inc v The New Zealand King Salmon Company Limited & others [2014] NZSC 40

[18] Sections 6.4.2 and 6.4.3

[19] Section 6.4

[20] The use of tables in a way consistent with the 2018 guidelines have been accepted (implicitly and without discussion of and a preference expressed over other approaches) in a range of decisions, including: Transmission Gully (Board of Inquiry) – all ecology disciplines; Mackays to Peka (BOI) – all ecology disciplines; Puhoi to Walkworth (BOI) – marine assessment; East West Connection (BOI) –all ecology disciplines; Shell Oil (EEZ hearing) – marine assessment; Tamarind Taranaki Ltd (EEZ hearing) – marine assessment

[21] Table 10



Professional practice and implementation of EcIA issues for local authorities and biodiversity protection

Nicholas Head, Senior Ecologist Christchurch City Council Philip Grove, Senior Ecologist Environment Canterbury

In this article we discuss some of the issues that consenting authorities (i.e. Councils) face in implementing their statutory functions around maintenance and protection of indigenous biodiversity. In particular we focus on the professional practice and implementation of Ecological Impact Assessment (EcIA). The comments and views expressed here are based on our 25+ and 20+ year experience respectively as practicing ecologists in the public sector. In our roles over this time we have undertaken numerous assessments of ecological values or 'significance', and reviewed a great many EcIA reports, generally undertaken by consultant ecologists as part of resource consent applications.

Background

New Zealand is failing to meet national objectives and international obligations to halt the decline of its indigenous biodiversity [1]. While the acknowledged problems with pests on all land tenures (Crown and private) are key contributors to this decline, also critical are impacts of land use activities on biodiversity. Despite the Resource Management Act 1991 (RMA) and well-intentioned plans and strategies, the loss of habitats supporting indigenous ecosystems and species continues, mostly on private and crown owned leasehold land. In low altitude land of gentle relief in eastern New Zealand the loss is all but complete. In Canterbury, parts of the region which were until recently relatively undeveloped (such as hill country, inland basins and margins of braided rivers) are now the target for agricultural land use intensification. This is resulting in increasing numbers of threatened ecosystems and species, declining water quality, loss of amenity, growing public unrest etc.

Our concern is that some of this loss is caused through activities for which a resource consent was required, and an Ecological Impact Assessment was carried out; we question the content and quality of those EcIAs.

Local authority plan issues

An EcIA process and report must (among other things) identify ecological values and assess the extent of effects on those values. These values are often identified by Councils and listed in plans; if not, the ecologist preparing the EcIA report must identify them.



The RMA requires councils to protect <u>significant</u> ecological values (Sec 6c), and to maintain indigenous biodiversity *per se* (Sec 31 (1)(b)(III)). However, a large number of regional and district plans fail to acknowledge the important link between maintaining existing habitats and biodiversity protection in terms of halting the decline, and consider only the rarer features to be significant. As a result, common-place native plant communities and habitats that may also be significant are often ignored or seen as expendable. These are typically the secondary plant communities that have regenerated after past clearance. Recognition and protection of the common-place is imperative as these features often comprise the majority of indigenous biodiversity remaining in a district. Also unappreciated is the value of mixed native-exotic and exotic-dominant vegetation types as habitat for indigenous species (as these are often the only remaining suitable habitat in a local area).

As well as inadequate significance assessments in district plans, permissive vegetation clearance rules are persistent problems leading to the ongoing decline of indigenous biodiversity in New Zealand. Even when the rarest, most threatened, or very best examples of New Zealand's ecosystems and species are considered in vegetation clearance rules, plans, policies and rules may still allow losses of these exceptional ecosystems, subject to some form of compensation that does not authentically replicate or replace what was lost.

The problem partly stems from application of the Protected Natural Areas Programme [2] (PNAP) objectives, developed under the Reserves Act 1977, as the default framework for assessing ecological values or significance under an RMA context. While the PNAP ecological assessment criteria remain relevant for assessments of ecological significance under the RMA, the aims of the PNAP were comparatively narrow. The programme was intended to identify only the <u>best representative</u> sites for protection in any one Ecological District (ED). The PNAP also used a pre-human benchmark, or at best 1840, as the context for assessment of representativeness. Given the state of ecosystem loss and ecological modification that has occurred throughout the 20th and 21st centuries, restricting the assessment process to historic baselines is inappropriate in modern day New Zealand. It is not fit for purpose in an RMA context that requires the maintenance of all indigenous biodiversity, not just the "best" [3].

Applying the PNAP process (as it was originally intended) in an EcIA context inevitably results in discarding what should be significant ecological values because better examples exist, or because they are not representative of 'original' vegetation types. The losses associated with such an approach are often described as "less than minor" in consent applications, but these can still result in the permanent net loss of significant indigenous biodiversity.

DOC and some Councils have produced guidelines on how to assess significant ecological values. These guidelines provide an approach that largely takes account of the obligation to maintain indigenous biodiversity under the broader RMA context. Applying their criteria objectively should result in a greater extent and range of habitats being identified as significant than has often been the case, including the common-place, the modified, and the 'degraded' ecosystems that in their context are still significant and important for the maintenance of indigenous biodiversity.



Implementation of EcIA - plans, policies and practice

The ecologist carrying out an EcIA has to address ecological issues as well as the relevant plan policies and rules, and plans vary across the country. In her Overview article, Judith Roper-Lindsay outlines the role played by the Environment Institute of Australia and New Zealand in preparing a set of Guidelines [4] to assist in delivering a consistent approach to the ecological work.

We are not members of EIANZ. We agree with Dr Marie Brown's recommendation, in the EDS publication *Pathways to Prosperity. Safeguarding biodiversity in development* [5], that the preparation of best practice standards linked to environmental legislation should be led by central Government, not by consenting agencies or private sector practitioners, because of the potential for capture. Consistent with Dr Brown's inference, we think that the use of the "matrix approach" in the 1st Edition meant that the EIANZ guidelines were too accommodating of development interests at the expense of the environment [6]. Nonetheless, we commend their intent for seeking a more consistent and objective approach to EcIA, because unreliable approaches have been, and remain, a major contributor to ongoing losses [7]. We note that the 2nd Edition [8] responds to feedback from the ecological community in relation to the matrix approach.

Many of the EcIAs that we review offer a reductionist and static approach to significance and impact assessment and fail to address critical ecological matters. For example, some focus only on 'intact' or unmodified native vegetation types or nationally rare / threatened species. Key elements of biodiversity, such as non-vascular flora and invertebrates, are routinely ignored in assessments, as are the generally accepted significance criteria of 'representativeness' and 'ecological context'. Wider ecological functions and processes, and the role of natural ecosystems dynamics and temporal changes are not well considered in many EcIAs. The presence of exotic species is also often used to diminish or downgrade the value of a site. All these factors mean that an EcIA may downplay the ecological values present.

Banks Peninsula, Canterbury is a case in point. There, native vegetation comprises many scattered sites of almost entirely second growth forest following widespread forest removal in the 19th century and ongoing land development (~1.5% remains in original forest cover). The total combined area of existing native forest is less than the minimum threshold considered by ecologists to be necessary to ensure the maintenance of remaining indigenous biodiversity. To sustain the full extent of existing indigenous biodiversity on Banks Peninsula, including meta-populations of mobile bird species like kereru, the entire habitat network is more important than any one remnant; this includes exotic vegetation (such as willows or eucalyptus) utilised as surrogate habitats by some species. For Banks Peninsula, as for most of lowland New Zealand, preventing further loss of what remains will not be sufficient to halt the decline. It will also require assistance through habitat restoration: retiring 'unimproved' land from 'productive' use, allowing space for natural ecosystem processes to operate and for (preferably) natural regeneration to occur. Despite this ecological context, the loss of indigenous biodiversity in Banks Peninsula is still occurring.

Effects should be assessed in ecological terms by the ecologist, but they must also address relevant plan policies and rules. If these policies and rules are not scientifically rigorous then effects may also be downplayed in the EcIA.



Vegetation clearance rules in district plans do not equate to protection. They are at best a mechanism to help 'maintain' indigenous biodiversity. Protection in its true sense requires a higher level of effort and resourcing to manage threats (such as fencing or pest control). In contrast, maintenance is about stopping the loss. It is the *status quo* at best, although for some small remnants this is arguably fanciful thinking. Even when sites are captured by clearance rules, which usually take the form of set height or area thresholds, the health of the ecosystem or its quality as a habitat is not considered. Existing use rights often allow the continuation of unsympathetic management that ensures ongoing ecological loss and degradation, albeit more slowly than stark clearance.

Nonetheless, ecologically sound vegetation clearance rules are a critical bottom line that at least retain habitat extent, and therefore opportunities for better protection in the future.

Biodiversity issues

Ecological impact assessments that do not adequately assess ecological value, combined with the muddle between protection and maintenance, result in multiple failures for indigenous biodiversity. Councils, concerned at the financial and political cost, are often averse to undertaking comprehensive surveys to describe vegetation and habitats and to identify ecologically significant sites in their regions or districts. Furthermore, owing to pressure from affected landowners, district plans rarely have vegetation clearance rules that adequately capture the full extent of indigenous biodiversity remaining in the district. Consequently, other than for the very best and most obvious examples, habitats supporting indigenous biodiversity are often left vulnerable to clearance as a permitted activity or at best as a discretionary activity. And when breaches of rules do occur, Councils often lack the resources or will to pursue enforcement.

Ambiguous definitions in district and regional plans are another problem for maintenance and protection of indigenous biodiversity and may result from a gap in communication between ecologist and planner. Whether a clearance exemption applies or not is often determined by the presence or absence of small, otherwise insubstantial, words such as 'and' or 'or', in a definition's wording. Definitions of improved pasture, as well as those for indigenous vegetation, have proven particularly problematic in a number of district plans, where ambiguous wording has undermined their intended purpose. There are examples, such as in the Mackenzie Basin and at Kaitorete Spit, near Christchurch, where plan definitions have been shown to have glaring loopholes, which have been exploited, resulting in losses of high ecological values.

Professional practice

Clearly, ecological training and experience, accurate definitions and consistent ecological impact assessment approaches are all important to halt the decline. But the professionalism and objectivity of the ecological consultant undertaking the assessments also matters. Although professional standards and guidelines can help, there is no requirement to adhere to them. Local authorities do not require EcIAs to be prepared by, or reviewed by, "suitably qualified ecologists" or those having recognised professional certification (for example, Certified Environmental Practitioner). A professional ecologist providing ecological advice through an EcIA must also be confident that their advice is not ignored, misrepresented or misused by clients or decision-makers.



Like many other undertakings, ecological impact assessment is influenced by the ethics (or values) of those undertaking the work. We consider that poor ecological assessments and interpretations of plan rules and definitions that reflect an 'advocate' rather than an impartial 'expert witness' role have played a large role in permanent losses of indigenous biodiversity in New Zealand. We regularly see EcIA reports that undervalue ecological features (species, habitats, vegetation types and ecological function) thus minimising the seriousness of impacts, and giving inadequate advice to decision-makers.

In her overview article, Judith Roper-Lindsay notes that the vast majority of professional ecologists in New Zealand are not members of a professional body nor recognised by an independent accreditation organisation. We believe this means that there is considerable scope for inadequate technical work and poor ethical judgement. Consequently, some 'black sheep' of the ecological community have made a disproportionate and disgraceful contribution to the loss of our indigenous biodiversity that damages the reputation of the profession.

Solutions?

We have given some thought to improving the situation. As noted earlier, a set of guidelines developed by central government would have greater acceptability; although we recognise that this would probably be a lengthy process to allow for wide consultation.

Councils need to decline more applications that threaten indigenous biodiversity, or at least set rigorous conditions – and monitor compliance! Where ecological information is inadequate, further information and reassessment should be required. Given that there is a national certification programme for ecologists, Councils should consider whether EcIAs submitted with consent applications must be prepared by CEnvPs. This however would suggest that Councils would need to ensure that their staff reviewing reports were also certified – a move that has not been taken up by Councils to date.

Conclusion

Halting the decline of indigenous biodiversity is a matter of national importance and a statutory obligation. Ongoing losses continue owing largely to a lack of understanding of what constitutes significant ecological values in a contemporary RMA context and/or ignorance of policy frameworks requiring the maintenance of indigenous biodiversity *per se*. These shortfalls are compounded by weak and/or ambiguous planning provisions.

Overlying this problem are the vagaries of human nature and the potential for ecologists undertaking EcIAs to be influenced by their clients or councils to be unduly influenced by political considerations. There is no peer review nor accountability for incompetent or unethical behaviour among those who are not members of a professional body.

Aspirational objectives are important, but without the support of clear national guidance and standards, they have remained unachievable. The National Policy Statement on Indigenous Biodiversity will hopefully provide more substance to broad goals. Otherwise it falls to the professionalism and ethics of the environmental consultant, being often the only line of defence against further biodiversity loss.



REFERENCES & NOTES

[1] Taylor R and Smith I 1997. The State of New Zealand's Environment 1997. Ministry for the Environment and GP Publications, Wellington.

Ministry for the Environment 1997. The State of New Zealand's Environment, 1997. Ministry for the Environment Wellington.

Ministerial Advisory Committee 2000a. Bio-What? Preliminary report of the Ministerial Advisory Committee. Addressing the effects of private land management on indigenous biodiversity. Ministry for the Environment, Wellington.

Ministerial Advisory Committee 2000b. Biodiversity and private land: final report of the Ministerial Advisory Committee. Ministry for the Environment, Wellington.

Green, W.; Clarkson, B. 2005. Turing the Tide? A review of the first five years of the New Zealand Biodiversity Strategy. The synthesis report was submitted to the Biodiversity Chief Executives in November 2005.

World Wildlife Fund. 2012. Beyond Rio, New Zealand's Environmental Record Since the Original Earth Summit. WWF New Zealand.

Brown, M. A.; Stephens, R, T.; Peart, R.; Fedder, B. 2015. Vanishing Nature: Facing New Zealand's Biodiversity Crisis. Environmental Defence Society, Auckland New Zealand.

[2] Kelly, G. C.; Park, G. N. eds 1986. The New Zealand protected natural areas programme: a scientific focus. Biological Resources Centre Publication No 4. Wellington, Department of Lands and Survey. Pp. 63-87.

McEwen, W. Mary (editor), 1987. Ecological regions and districts of New Zealand. Third revised edition. New Zealand Biological Resources Centre Publication No. 5 (in four parts). Department of Conservation, Wellington.

[3] If used properly and applied in the correct contemporary context, the PNAP provides a robust set of criteria to determine significant ecological values.

[4] Ecological impact Assessment (EcIA). EIANZ Guidelines for use in New Zealand terrestrial and freshwater ecosystems. Version 1. EIANZ March 2015

[5] Brown, M. 2016. Pathways to Prosperity. Safeguarding biodiversity in development. Environmental Defence Society. Auckland New Zealand.

[6] They enable loss through restricting 'no go' thresholds to rarity and threat in the matrix ('allowable loss') table.

[7] The most recent EIANZ guidelines are better, improved considerably by removing the matrix ('allowable loss') tables.

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



Issues for EcIA in the marine environment in New Zealand

Sharon De Luca, Associate Partner / Marine Ecologist, Boffa Miskell Ltd

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 EcIAs.

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 EcIAs 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 EcIAs. 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 <u>should be avoided</u> 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 EcIAs, 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 <u>sharon.deluca@boffamiskell.co.nz</u> 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

[2] Debbie Freeman, Kareen Schnabel, Bruce Marshall, Dennis Gordon, Stephen Wing, Di Tracey and Rod Hitchmough, 2014. Conservation status of New Zealand marine invertebrates, 2013. Department of Conservation, Wellington.

[3] Ecological impact Assessment (EcIA). 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.