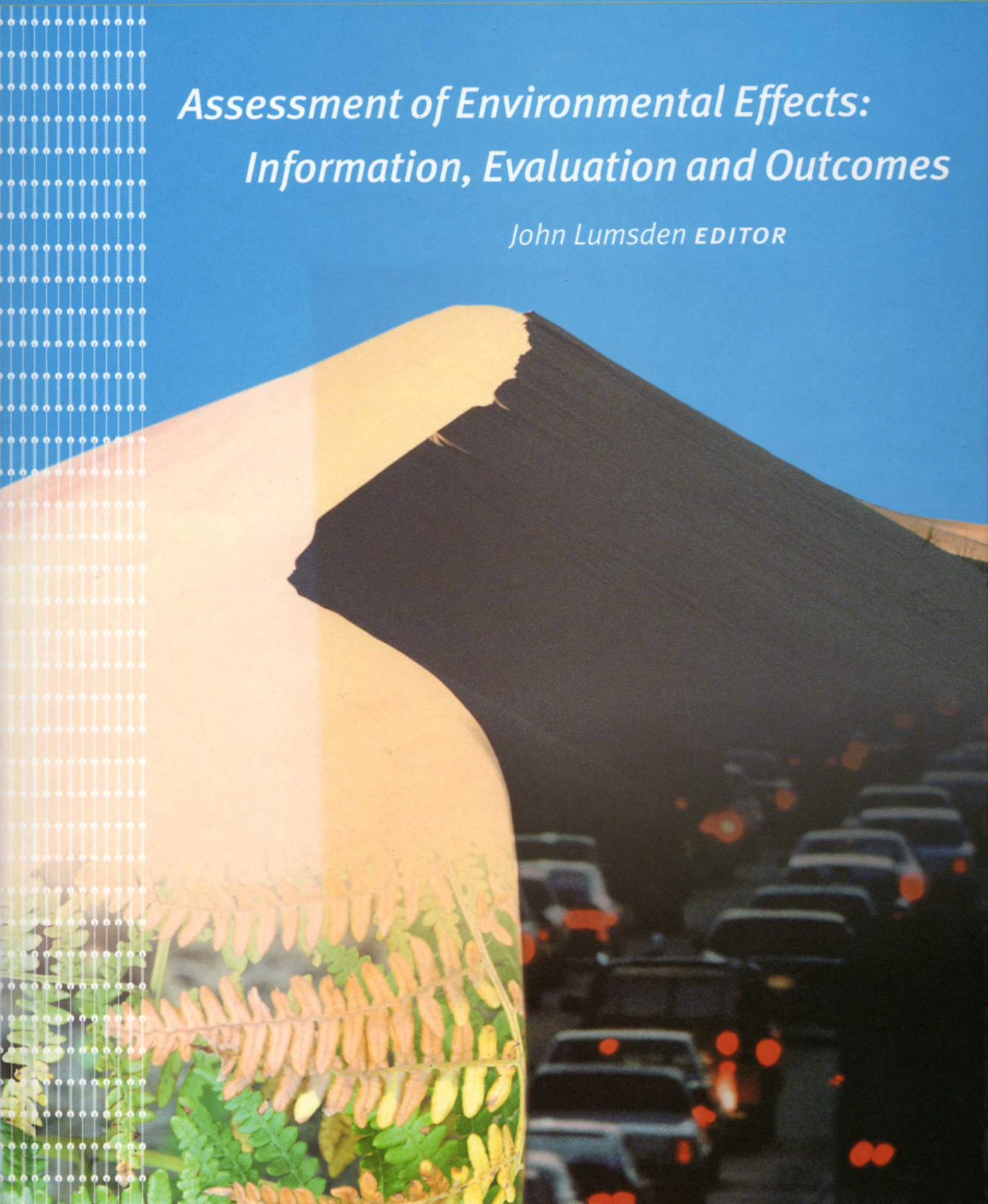


# *Assessment of Environmental Effects: Information, Evaluation and Outcomes*

*John Lumsden* EDITOR







# *Assessment of Environmental Effects*

## *Information, Evaluation and Outcomes*

*John Lumsden* EDITOR

**Based on papers presented at the CAE Conference “Assessment of Environmental Effects”**  
held at the Museum of New Zealand Te Papa Tongarewa, Wellington, on 18-19 March 1999

ISBN 0-908993-24-2

**Printing History**

First published September 2001.

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**Publisher**

Centre for Advanced Engineering  
University of Canterbury Campus  
Private Bag 4800  
Christchurch  
New Zealand

**Editorial Services, Graphics and Book Design**

Charles Hendtlass, Centre for Advanced Engineering

**Printing**

Wickliffe Press, Christchurch

**Cover Design**

Hudson Design, Christchurch/Origin Design, Wellington

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It will be noted that the authorship of this document has been attributed to the many individuals and organisations who have been involved in its production. While all sections have been subject to review and final editing, the opinions expressed remain those of the authors responsible and do not necessarily reflect the views of the Centre for Advanced Engineering.

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# Acknowledgements

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The Centre for Advanced Engineering is most grateful to the following organisations that have generously provided financial support for this project:



Opus International  
Consultants Ltd



Ministry for the  
Environment



If you would like more information about the Centre for Advanced Engineering (CAE), please visit our website <http://www.caenz.com> or contact CAE by phone + 64 3 364 2478, by fax +64 3 364 2069 or by e-mail: [cae@cae.canterbury.ac.nz](mailto:cae@cae.canterbury.ac.nz)

# Centre for Advanced Engineering

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# Foreword

This volume is a very useful contribution to the ongoing evolution of Environmental Impact Assessment (EIA) in all its complexities. My investigations as Parliamentary Commissioner for the Environment mostly involve either assessment of environmental effects in some form or the quality of such assessments by others. From these studies a few themes are emerging.

The Resource Management Act (RMA), which imbeds Assessment of Environmental Effects (AEE) into its core processes, may be devaluing EIA because of the poor quality of many AEEs and hence delays in resource consent processing. An essential problem is that AEE's are all too often seen by applicants as an imposed burden rather than a quality assurance process and hence a benefit.

To truly contribute to environmental health EIA will have to evolve into assessments of environmental or ecological sustainability as discussed by Barry Sadler in this volume. EIA was born in the 1960s when the focus of environmental problems was primarily local, often on pollution in nature and with relatively simple cause/effect relationships.

Today's environmental sustainability problems are recognised as being much more complex. Many of them are global in effect, most have many interwoven causes. They require detailed focus on systems in ecological, economic and institutional terms. Effects will often be cumulative with many unknowns. The application of genetic science/genetic engineering to land-based production and protection is an example of where there are many unknowns.

Assessment of environmental effects necessitates innovative methodologies that will probably draw as much from ecological adaptive management research as from current risk management approaches.

For EIA to truly contribute to advancing the sustainability of our natural capital it will need to develop capacities to be more forward looking and assess such attributes as the institutional capacity to truly advance sustainable development. This will require techniques to assess a number of matters including environmental/ecological literacy, how science contributes to policy, the role of the judiciary in shaping the input of environmental sciences to resource management and accommodating diverse yet deeply held values and beliefs regarding resources and their management.

There are plenty of great opportunities to advance the "science" of EIAs. Fields that will stretch current methodologies include water, waste water and stormwater management, energy supply and management, mobility provision and management, the New Zealand dimensions of global climate change, intensive landuses and agricultural applications of genetic engineering. These areas will be the test beds of EIAs over the next decade.

There is great potential for the discipline – provided it becomes very much more system and future focused. I look forward to watching – and hopefully contributing in some small way to that evolution.

Finally, my congratulations to the Centre for Advanced Engineering for bringing this collection of papers together.



**Dr J Morgan Williams**

**Parliamentary Commissioner for the Environment**



# CHAPTER 1

## **Environmental Impact Assessment: An International Perspective with Comparisons to New Zealand Experience**

Barry Sadler\*

### **Introduction**

*“Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment...”*

Rio Declaration on Environment and Development (Principle 17)

The Rio Declaration marks an international consensus on the value of environmental impact assessment (EIA) as a mechanism to identify and address the environmental impacts, risks and consequences of development proposals and actions. Now applied world-wide, EIA is a relatively standardised process with common principles and uniform elements. Even so, numerous variants are established by national systems of EIA law and procedure (so that their process schematics do not necessarily correspond). When compared to other countries, New Zealand has taken an individual approach to institutionalising EIA. This process is differently named, delineated and implemented, governed by a legal framework that is singular and possibly unique in its provisions and requirements.

Under the Resource Management Act 1991 (RMA), the process of assessment of environmental effects (AEE) is an integral part of a comprehensive, sustainability-based regime for processing resource consents. At the level of policy and plan-making, there is also implicit provision for a broader, strategic form of environmental assessment. This approach, in which AEE is said to be threaded throughout key decision-making processes (Gow, 1990), has a number of features and characteristics that are distinctive in comparison to those in place in other countries (Wood, 1995). But just how distinctive are they? To what extent does AEE differ from EIA as undertaken elsewhere? Such questions and comparisons are of interest both to AEE practitioners, who want to improve the process in New Zealand, and their counterparts in other countries who are concerned with strengthening EIA systems within a sustainability framework.

This chapter provides a context for comparing the relationship of EIA and AEE. It describes international experience in EIA by reference to key trends and issues of process development, principles of good practice, and criteria of effectiveness. These elements are either applied or have gained acceptance in countries that are considered to be EIA leaders. For present purposes, they are taken as proxies for international stand-

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\* Institute of Environmental Management and Assessment, UK

ards of EIA good practice against which experience with AEE may be reviewed. The text identifies points of reference for analysis and comparisons, leaving it to New Zealand contributors to this book to take the discussion forward and develop the implications for AEE information, evaluation and outcomes.

The following discussion is organised into three main parts corresponding to key stages in the evolution of EIA. In this schema (Sadler, 1999a):

- EIA is defined as a “first generation” process that is applied primarily to minimise and mitigate the effects of proposed projects and activities;
- strategic environmental assessment (SEA) is a “second generation” process that is applied to proposed policies, plans and programmes; and
- environmental assessment for sustainability assurance (or environmental sustainability assessment — ESA for short) is a “next generation” process in which EIA, SEA and other precautionary tools are applied to safeguard resource stocks and ecological functions. Of particular interest is whether or not the RMA anticipates and exemplifies this approach in law, process and practice.

### **EIA of Projects and Activities**

Several countries, including New Zealand, have over 25 years of experience in the use and application of EIA. This process was introduced first in the USA by the passage of the National Environmental Policy Act (NEPA) of 1969, followed by the Californian Environmental Quality Act of 1970. Soon afterwards, EIA processes were established in Canada, Australia and New Zealand (see Box 1). Beginning in the late 1970s, there were successive waves of take up of EIA, leading to its world-wide implementation by the 1990s. Now, more than 100 countries and international agencies are estimated to have an EIA system in place. This figure possibly doubles again if the EIA systems of states or provinces in federal countries are included (e.g. so-called little NEPAs in the USA).

On this basis, EIA can be said to be a successful policy instrument. In addition, over time, there has been continued innovation in EIA law, procedure and methodology.

#### **Box 1: Early Development of EIA**

- USA, National Environmental Policy Act (1969). [Amended 1975, 1982; CEQ guidelines given regulatory force in 1978].
- Canada, Cabinet Directive on Environmental Assessment and Review Process (1973). [Replaced by Canadian Environmental Assessment Act (1992)].
- Australia, Environment Protection (Impact of Proposals) Act (1974). [Replaced by Environment Protection and Biodiversity Protection Act (1999)].
- New Zealand, Cabinet Directive on Environmental Protection and Enhancement Procedures (1974). [Still in force, but largely superseded by the Resource Management Act (1991, amended 1995)].

Collectively, these developments have broadened the scope of EIA to incorporate:

- a greater range of effects (e.g. social, health and indigenous peoples issues);
- extended time and space frameworks (e.g. to take account of indirect and cumulative effects); and
- higher levels of decision-making (e.g. to examine alternatives and options to site-specific and project-level proposals). This trend has led to SEA of policy, plans and programmes; however, project-EIA remains the predominant focus nearly everywhere.

### Overview of Process Fundamentals

The fundamentals of EIA have been applied from the outset and remain in force today (see Box 2). On this level, EIA and AEE are functionally and instrumentally the same. They are undertaken to identify and offset the adverse effects of proposed developments. Both EIA and AEE are processes of information gathering and analysis that are undertaken in support of decision-making, embodied within legal and institutional frameworks, based upon the concepts and methods of inter-disciplinary science, and open to public involvement and input by those who are directly affected by or interested in proposed developments. These ‘common denominators’ can be used to outline the anatomy of EIA and AEE and to compare their points of similarity and difference.

Substantively, the immediate aim of EIA is to facilitate sound decision-making by ensuring that environmental considerations are addressed in development proposals. The ultimate goal is to achieve a given level of environmental protection that supports sustainable development. Generally, EIA is becoming more multi-purpose, in keeping with sustainability agenda (see Box 3). However, many of the objectives and principles of sustainability were foreshadowed in the US National Environmental Policy Act of 1969. For example, the declaratory statement anticipates the idea of inter-generational equity by more than a decade (see Box 4). By many accounts, New Zealand’s Resource Management Act 1991 is a more recent but comparable statutory benchmark, which makes explicit reference to sustainability concepts. Section 5 defines sustainable management, *inter alia*, in terms of its relation to the adverse effects of an activity on the environment (see Box 5). The intent in this section, according to a principal architect of the Act, is to impose a biophysical test of sustainability (Upton, 1995).

#### Box 2: Fundamentals of EIA

- Purpose led — key objectives are to inform decision-makers and protect the environment.
- Institutionalised mandate — provision made in law, regulation and procedure.
- Science-based approach — interdisciplinary use of tools and methods of natural and social sciences.
- Public involvement is a cornerstone — consultation with those interested in and those affected by a proposal.

### **Box 3: Objectives of EIA**

Instrumental (or proximate) aims are to:

- support informed decision-making in relation to development proposals and alternatives;
- identify, mitigate and/or compensate for adverse environmental effects;
- contribute to better design and planning of projects and activities; and
- provide for the involvement of the public(s) affected by or interested in a proposed activity.

Ultimate (or long term) aims are to:

- avoid irreversible, significant and unacceptable environmental effects;
- ensure development is adjusted to the potentials and capacities of the resource base;
- protect the assimilative and regenerative capacities of natural systems; and
- safeguard human health, community and individual well-being and rights, and values and interests of indigenous peoples and vulnerable minorities.

Institutionally, the provision for EIA is founded in law and regulation rather than policy directive (as used in Canada and New Zealand in the early phase of process development). Many countries use framework environmental laws that do not detail the EIA process. Others have enacted EIA-specific laws, decrees and regulations, some of which are comprehensive and prescriptive (e.g. Canada, British Columbia). By many standards, section 102 of NEPA remains the 'Magna Carta' statement of the role of EIA as an action-forcing procedure to change the way decisions are made. However, it is worth noting this intent has been implemented primarily through the courts, elaborated in a large body of NEPA case law. In New Zealand, there has been a similar, though less extensive, interpretation of AEE-related functions and duties under the RMA, notably through the Environment Court (an institution that has few parallels elsewhere) and judicial review (see Williams, 1997). Both NEPA and the RMA are about far more than, respectively, EIA or AEE; but EIA-specific laws and orders also have been the subject of extensive litigation. This is the case, for example, in Canada at both federal and provincial levels (Kennett, 1993).

By international standards, the RMA is significant as an omnibus law that repealed and amended numerous statutes, regulations and orders related to the allocation of air, land and water. Under the framework of the RMA, their functions and regimes have been integrated with the single purpose of promoting the sustainable management of natural and physical resources. *Prima facie*, the focus and coherence of the Act are its defining characteristics, relative to comparable statutes. Like any law, however, the real test of the RMA lies in its application — in this case to policy, plan-making and resource consents. This aspect has been intensively scrutinised and discussed (e.g. in the pages

#### **Box 4: US National Environmental Policy Act (1969)**

Purpose (sec. 2):

“To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.”

Declaration (sec. 101):

- (a) The Congress, recognising the profound impact of man’s activity on the interrelations of all components of the natural environment, declares that it is the continuing policy of the Federal Government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony...
- (b) In order to carry out the policy ... the Federal Government is to use all practicable means to fulfil the responsibilities of each generation as trustee of the environment for succeeding generations ... assure for all Americans safe, healthful, productive, aesthetically and culturally pleasing surroundings ... attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences ... preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice ... achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities ... and enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

of *Planning Quarterly* and *Resource Management News*). Specific attention has been given to the effects-based provisions of the Act, to the approach that is prescribed and to the implications for planning and AEE practice (e.g. Dixon and Fookes, 1995; Veart, 1997). The debate continues, fuelled from time to time by proposals to amend the RMA.

From an international EIA perspective, notable aspects of the RMA include:

- broad definition of the environment and ‘effects’;
- duty to avoid, mitigate or remedy adverse effects arising from an activity;
- requirement for an AEE to accompany applications for resource consents;
- obligation on councils to process applications within certain timeframes;
- restrictions relating to different aspects of land and resource use;

**Box 5: New Zealand Resource Management Act (1991)**

Section 5(1) states the purpose of the Act is “to promote the sustainable management of natural and physical resources.”

Section 5(2) defines sustainable management as: “the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- (b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.”

- limited guidance on matters to be considered when respectively undertaking and preparing an AEE;
- provision for any person to make a submission on a notified application for resource consent and right to appeal over processing; and
- duty to consult [imposed on local government] where Maori interests and values may be affected by a proposal.

Procedurally, there are important differences between AEE and EIA. These centre on the minimal provision that is made for AEE in the RMA when compared to EIA laws, which specify process requirements and elements (e.g. screening, scoping, etc.). Although AEE is obligatory, the RMA sets out few requirements for undertaking the process and documenting the results. Recently, however, this approach has been elaborated in good practice guidance issued by the Ministry for the Environment (1999a,b). In practice, AEE broadly follows the generic pattern of EIA steps and activity leading to the preparation of a written statement, which is the basis for decision-making and condition setting. By contrast, related systems for permitting, licensing etc. (resource consents in RMA terminology) tend to be specific to each country or jurisdiction. Whatever the arrangements for decision-making, the provision for EIA follow-up, including effects monitoring and audit and evaluation of results is crucial to successful process implementation and good environmental outcomes. In this regard, recent guidance on auditing AEE should be of international interest (Ministry for the Environment, 1999b).

Methodologically, EIA is a multi-disciplinary task; it applies the tools, knowledge and expertise of a range of natural and social sciences. This aspect of the process is well represented in the literature on EIA (e.g. Canter, 1996; Morris and Therivel, 1995) and other areas of impact assessment which have their own specialised methodology (e.g. Porter and Fittipaldi, 1998). Over time, EIA practice has increased in sophistication



and analytical power, employing quantitative and computer-based techniques as well as matrices, checklists and other descriptive (and still useful) tools that were in early use. To date, slower progress has been made in the development of integrative frameworks for the EIA process as a whole; although both geographic information systems (GIS) and expert systems are used increasingly to synthesise and structure impact studies and support decision-making (see, Julien, 1995; Joao and Fonseca, 1996). In this context, the focus is on the EIA 'tool kit' and the suitability of different methods relative to the stages of impact study (Canter and Sadler, 1997) and levels of public involvement (Sadler and Fell, 1999). EIA methodologies and information technologies are universal and non-limiting, in the sense of being readily accessible and applicable everywhere. AEE is no exception, although particular considerations may apply to evaluating significance given the broad definition of effects in the RMA and the small-scale activities that can be captured.

From the standpoint of public involvement, EIA may be seen as an exercise in "procedural democracy" (Baber, 1988). In this aspect of process development, public hearings and inquiries into the environmental impacts of major development proposals played an important early role and continue to do so today in Australia (see Richardson and Boer, 1995), New Zealand (Boshier and McClymont, 1996) and Canada (Sadler, 1995a). Modes of involvement have broadened progressively in developed countries and provision for public consultation has become instituted in the EIA processes of developing countries with different political systems. In certain countries, the so-called "open door" model of public participation is complemented by alternative dispute resolution (ADR) procedures which, by definition, are more interactive than traditional forms of public consultation, but also more limited in the number of stakeholders who can be directly involved. For example, the Canadian Environmental Assessment Act has provision for mediation as an alternative to review by an independent panel (see, Sadler, 1993). This approach is used extensively in the USA and informal use of ADR is underway or under consideration in other countries, including New Zealand, where Harris (1995) reported initial distrust and wariness of the process by community groups.

Consultation with indigenous peoples is of particular importance in EIA in Australia, Canada and New Zealand, as countries of recent European settlement, and in World Bank projects undertaken in frontier areas such as Amazonia. For example, the requirement to take account of aboriginal values and traditional uses is defined in the Canadian Environmental Assessment Act as one of the environmental effects that must be addressed. The British Columbia Environmental Assessment Act goes much further, making explicit provision for First Nations notification and consultation, participant assistance and representation on Project Committees where a proposal is on or near the vicinity of their traditional territory. Separate EIA systems have been established as part of Native Land Claims Agreements in Northern Canada (e.g. Inuvialuit Environmental Impact Screening and Review Process). In New Zealand, the duty to consult with Maori is established as a principle of the Treaty of Waitangi and is an obligation on resource consenting authorities (but not applicants) under the RMA. However the Act and case law are not definitive on the approach to iwi consultation (Ministry for the Environment, 1995, 1996).

Finally, the integrity of the EIA process is the master-key to implementing the approach holistically in the way intended (Sadler, 1996). This dimension can be addressed on two interrelated levels — by reference to operational and structural integration. Operational integration calls for the technical and consultative streams of EIA to be sequenced and linked at key stages of the process, consistent with procedural measures (which are generic) and terms of reference (which are specific to a proposal). Structural integration is achieved by relating the EIA process to the project cycle and policy planning framework so that:

- environmental considerations are addressed and incorporated into development proposals and options as early as possible (on par with economic and technical factors); and
- terms and conditions of approvals/consents are implemented (e.g. mitigation, monitoring, etc.) and carried into the next stage of the project life cycle (e.g. preparation of environmental management systems).

Many EIA systems operate as a relatively separate process, independent from other planning and regulatory regimes. The AEE process, in contrast, is an integral, but non-specific, component of a comprehensive resource management policy, planning and consenting system. From the perspective of structural integrity, the RMA, *prima facie*, rates highly when compared to the conventional EIA process. Conversely, the RMA contains few explicit provisions related to AEE procedure. From the perspective of operational integrity, this is a potential downside when compared to the procedural checks and balances that are built into the EIA process, and function as measures for quality control and assurance (described below).

### Guidance on EIA Good Practice

The practice of EIA is what happens when the process is applied and implemented. Inevitably, the quality of EIA practice can and will vary on a case-by-case basis within the same system depending upon the play of events, the complexity of the problem, the interaction of key actors, the experience and competencies of those involved, and other factors. Even more marked differences occur in the quality of EIA practice between and among countries. These differences reflect, *inter alia*, the institutional framework that is in place, the type of guidance that is provided, the availability of leading-edge tools and the knowledge and skills of practitioners in what may be termed the 3R's of EIA: vigorous analysis, responsive consultation and responsible administration.

Recently, there has been an increasing emphasis on learning from experience to improve EIA practice. This approach is useful to develop guidance on EIA practice, and to evaluate its quality and effectiveness in delivering what is required under the laws and processes of national EIA systems (e.g. Wood, 1995; Sadler, 1995b, 1996). Because the RMA is such a distinctive regime, Dixon and Fookes (1995) note that AEE effectiveness may be difficult to evaluate and compare against other EIA systems. For present purposes, what constitutes EIA good practice can be summarised by reference to international standards and dimensions of effectiveness, beginning with the attributes of EIA systems that support and are conducive to good practice.

## Enabling Institutions

Legal and institutional prerequisites of sound EIA are listed in Box 6. These summarise aspects of law and process discussed previously and comprise an initial checklist for evaluating how EIA systems measure up. As shown, New Zealand meets all but one of the criteria of an enabling institutional framework. Where these attributes are in place, they do not guarantee, in themselves, good EIA practice and effective performance. However, where they are not well established, then the process is unlikely to lead in that direction. In that regard, their interrelationship is also important; each attribute adds to the integrity of the institutional framework. A comprehensive scope of application and a prescribed process are considered to be particularly significant in relation to EIA practice and performance. The first attribute is integral to the RMA; the second attribute is only minimally represented. However, in lieu, good practice guidance on undertaking the AEE process has been issued by the Ministry for the Environment (1999a).

### Box 6: Institutional Prerequisites for EIA and their Representation in the RMA

- Clear statement of objective(s) and requirement(s) [yes]
- Mandatory compliance and enforcement [yes]
- Comprehensive scope of application to proposals with potentially significant impacts [yes]
- Prescribed process of steps and activities [no]

## Principles of EIA Good Practice

Recently, principles of EIA best practice have been issued by the International Association for Impact Assessment (IAIA) and the UK Institute of Environmental Assessment (IEA) for reference and use by their members (Sadler and Brown, 1999). The principles provide a generic framework of guidance on implementing the EIA requirements and procedures which are established by different countries. The framework comprises both basic and operational principles. In Box 7, eight of the basic principles are selected as proxies of the standards that practitioners should look to achieve in implementing the EIA process. The principles are intended to be applied as a single package, recognising that they are interdependent and, in some cases, may conflict (e.g. rigour and efficiency). Overall, the approach should be both systematic and disciplined, giving full consideration to all the relevant facts and information on significant environmental effects and having regard to the context and necessities of decision-making.

## Operational Guidelines for Quality Assurance of EIA Practice

The EIA process, itself, is the primary mechanism for controlling and assuring the quality and effectiveness of practice. A comprehensive approach encompasses the EIA process in its entirety (Sadler, 1996). Each step of the process corresponds to an operat-

### Box 7: Basic Principles of EIA Good Practice

**Purposive** —EIA should inform decision-making, resulting in appropriate levels of environmental protection and community well-being.

**Focused** —EIA should concentrate on significant environmental effects, taking into account the issues that matter.

**Rigorous** —EIA should apply “best practicable” science, employing methodologies and techniques appropriate to address the problems being investigated.

**Practical** —EIA should identify measures for impact mitigation that can be and are implemented by proponents.

**Efficient** —EIA should impose the minimum cost burden on proponents consistent with meeting process requirements and objectives.

**Adaptive** —EIA should be adjusted to the realities, issues and circumstances of the proposals under review.

**Participative** —EIA should provide appropriate opportunities to inform and involve the interested and affected publics, and their inputs and concerns should be addressed explicitly.

**Credible** —EIA should be carried out with professionalism, rigor, fairness, objectivity, impartiality and balance.

ing principle of EIA good practice in the IAIA/ IEA framework of guidance referred to above (see Box 8). This ‘whole process’ approach to quality assurance and control also provides the organising schema for the EIA Training Resource Manual, developed by the United Nations Environment Programme (Ridgeway et al., 1996). In New Zealand, the sequence described in Box 8 is abridged into an eight-step process for preparing an AEE in accordance with the requirements of the RMA (Ministry for the Environment, 1999a). Many EIA commentators also argue that a mechanism for independent review of EIAs is a critical guarantee of sound practice; examples include The Netherlands EIA Commission and the Canadian system of independent panel reviews (Scholten, 1996). However, most countries operate more informal or internal processes of EIA review.

### Application of EIA Principles

From the standpoint of the quality of EIA practice, the crucial issues are whether and to what extent principles and guidelines are followed. The ‘operating principles’ of EIA practice should be applied:

- as early as possible in decision-making and throughout the life cycle of the proposed activity;
- including relevant socio-economic and health effects;
- consistent with the concept and principles of sustainable development;

### Box 8: Operating Principles of EIA Good Practice

The EIA process should provide for:

**Screening** — to determine whether or not a proposal should be subject to EIA and, if so, at what level of detail.

**Scoping** — to identify the issues and impacts that are likely to be important and to establish terms of reference for EIA.

**Examination of alternatives** — to establish the preferred or most environmentally sound option for achieving the objectives of a proposal.

**Impact analysis** — to identify and predict the likely environmental, social and other related effects of the proposal.

**Mitigation and impact management** — to establish the measures that are necessary to avoid, minimise or offset predicted adverse impacts and, where appropriate, to incorporate these into an environmental management plan or system.

**Evaluation of significance** — to determine the relative importance and acceptability of residual impacts (i.e. impacts that cannot be mitigated).

**Preparation of environmental impact statement (EIS) or report** — to document clearly and impartially; impacts of the proposal, the significance of effects, and the concerns of the interested public and the communities affected by the proposal.

**Review of the EIS** — to determine whether the report meets its terms of reference, provides a satisfactory assessment of the proposal(s) and contains the information required for decision-making.

**Decision-making** — to approve or reject the proposal and to establish the terms and conditions for its implementation.

**Follow up** — to ensure compliance with the terms and conditions of approval; to monitor the impacts of development and the effectiveness of mitigation measures; and, where required, to undertake environmental audit and process evaluation to strengthen future EIA applications and mitigation measures and to optimise environmental management.

- to inform and involve people and communities who are interested in or affected by a proposal; and
- in accordance with law and policy of the jurisdiction concerned.

### Quality and Outcomes of EIA Practice

When applied in accordance with the above enabling conditions and principles, EIA practice should lead to informed decision-making and, ultimately, to good environmental outcomes. In ‘best case’ examples, EIA:

- provides “decision-relevant” information on the potential effects and consequences of proposed projects;
- screens out environmentally unsound projects, as well as modifying feasible proposals;
- facilitates selection of the best practicable environmental option;
- builds environmental components into project planning and design;
- establishes impact mitigation or environmental management plan;
- sets the terms and conditions for project approval (consents); and
- initiates monitoring and follow-up programme.

Ultimately, the quality and effectiveness of EIA practice is determined by what it delivers in terms of environmental protection and improvement. These substantive benefits can be identified from monitoring, auditing and other follow-up measures. However, the relationship of EIA to environmental outcomes will be difficult to correlate with any precision because so many other factors intervene. The introduction of ‘environmental acceptability criteria’ provides quality assurance for the technical aspects of EIA practice (Sippe, 1996); it also comprises a framework for auditing outcomes. Environmental acceptability can be defined by reference to:

- regulatory standards (which must be conformed to);
- public policy and management objectives (which should be achieved or supported); and
- impact significance guidelines (which are used to avoid, minimise and remedy effects).

### **Report Card on EIA Practice**

There is a massive critical literature on EIA; its strengths and weaknesses are well documented in general terms, with reference to particular countries and in relation to sectors and types of projects (see Petts, 1999). Several themes stand out that are relevant to the present discussion. Most evident is the gap between the theory and practice of EIA, between what should be done and what is done. In part, this reflects the realities under which the EIA process operates, such as limited time and budget to complete studies and the political pressures imposed by the larger decision-making process of which EIA forms part. These difficulties are not well addressed and often are not even mentioned in the methodological critiques which form a prominent component of EIA literature. Recently, however, there have been increasing attempts to prepare more systematic report cards on EIA practice; for example by classifying issues, benchmarking performance and evaluating these trends in the context of scientific and policy imperatives.

### **A Typology of Issues**

With few exceptions, the performance of EIA processes operated by countries and in-

ternational organisations leaves considerable scope for improvement in terms of both meeting substantive objectives and complying with procedural requirements and standards. In the critical literature, the areas of shortfall in EIA practice can be grouped into five categories (Sadler 1995b, Ortolano and Sheppard, 1995):

- attitudinal — proponents and development agencies resist or circumvent EA or apply it as a proforma or narrowly technical exercise;
- structural — EA is not sufficiently integrated with decision-making, notably at project preparation phase or with other supporting policy, planning and regulatory processes;
- institutional — the scope of EA is too narrowly defined or applied, such that health, social and economic factors and cumulative effects are inadequately covered;
- procedural — there is inadequate guidance and inconsistent enforcement of the EA process leading to user complaints about fairness, timeliness and efficiency; and
- technical — the quality of EISs, the accuracy of impact predictions and the suitability of mitigation measures are often highly variable, even in relatively mature advanced EIA systems.

### **Benchmarking the Performance of EIA Elements and Activities**

A recent survey of over three hundred EIA practitioners and experts has helped to identify what is done well, what is not done well, and which aspects of practice require immediate strengthening (Sadler, 1996). New Zealand practitioners were canvassed in this survey (Sadler and Ward, 1995) and comparative information also gathered from other sources, including the tripartite (Australia, Canada, New Zealand) EIA workshop (Anderson and Sadler, 1996). When benchmarking practice, New Zealand experience with AEE does not appear to differ significantly from that of EIA internationally, even though not all of the procedural steps are followed.

#### *Key findings of the international survey*

- Overall, institutional frameworks for EIA were judged to be adequate. Perceived strengths include sound legal or policy basis, the scope of application to development proposals and the provision for public participation.
- The state of the impact sciences is recognised as moderately limiting on the capability of EIA practitioners to predict effects and custom design mitigation measures; it is seen as most limiting on the assessment and monitoring of cumulative effects.
- Except for supporting research, the basis of EIA methodology (methods, data sources and information systems) was considered to have been moderately strengthened during the period 1990-1995.
- Budget and time restrictions were considered to constrain EIA good practice, far more than methodological limitations.
- Variable ratings were given to the performance of EIA at each stage of the process. Most steps were considered to be undertaken satisfactorily (recognising the limitations described above). Implementation and follow-up activities are widely acknowl-



edged as the weakest aspect of EIA practice.

- For related tasks, EIA practice was rated as satisfactory or better in establishing terms of reference and identifying issues and impacts, and as unsatisfactory in review of alternatives and assessment of cumulative effects and social impacts. Public participation practice received only a bare pass mark and a significant minority considered performance to be poor or very poor.
- Finally, the EIA process was considered to inform and influence project approvals and to result in added levels of environmental protection but to stop short of providing safeguards sufficient to ensure that development will be sustainable.

## Priorities for Improving EIA Performance

Lessons and insights drawn from EIA practitioners during the international survey are described in Box 9. A first measure to strengthen EIA practice would concentrate on key deficiencies that were identified and their relevance or otherwise to a particular jurisdiction; for example, to what extent do these apply to AEE practice? In Figure 1, four steps which have been identified as generically important to build the 'whole process' approach to quality control and assurance mentioned earlier. These comprise:

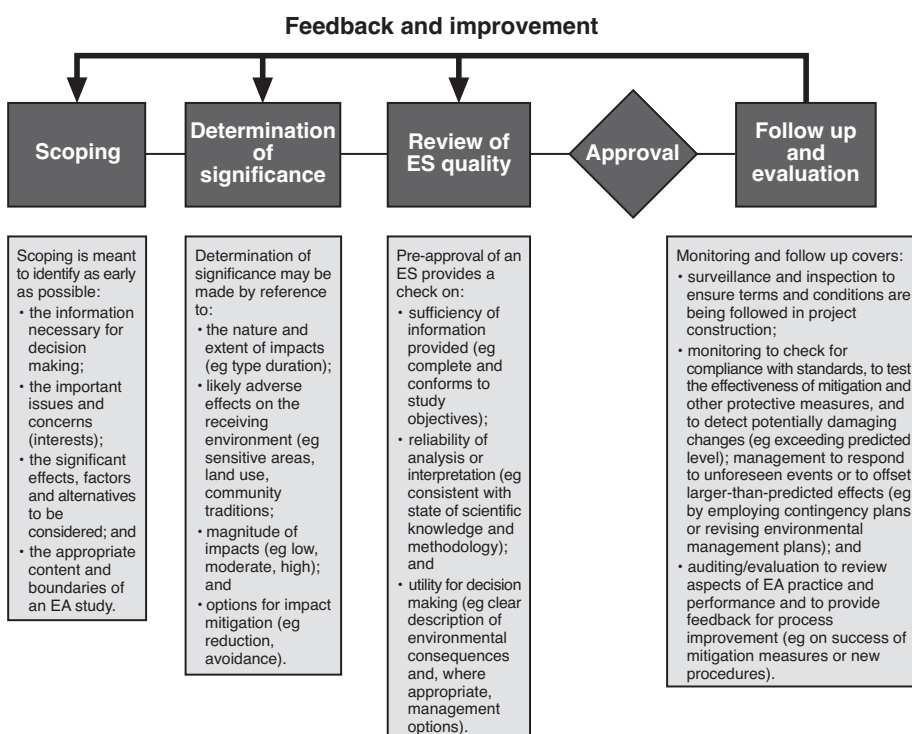


Figure 1: Quality Assurance in EIA



- “closing the scoping diamond” — narrowing the range of concerns to identify the impacts and issues that matter. If this is not achieved, the determination of significance is compromised, the EIS becomes a voluminous and descriptive document and the process of decision-making becomes protracted, inefficient and unfocused.
- “determining significance” — identifying the importance of potential environmental effects. This evaluation bears directly on project approvals and condition setting and extends throughout the EIA process in a narrowing “cone of resolution” toward residual effects, i.e. which cannot be mitigated or offset.
- reviewing the EIS — checking the sufficiency and quality of documentation. EIA review is a prerequisite for ensuring informed decision-making and condition setting.
- following up on terms and conditions — checking on implementation, monitoring effects, taking corrective actions, auditing outcomes and reviewing performance. A systematic approach will include the components described in Box 9. A performance review package is described in Appendix 1 and can be compared to the AEE auditing guidance released by the Ministry for Environment (1999b). This guidance is likely to attract international interest because it addresses the single most important step to improve EIA process, practice and, ultimately, performance.

### **Emerging Realities and Imperatives**

It is important to place the above report card and findings in the context of recent EIA-related trends and developments. First and foremost, the environmental risks and impacts that command attention today are more complex, larger scale, and have extended spatial linkages, compared to the concerns of twenty-five years ago when the EIA process was first established. Globally, human alterations are estimated by the US National Academy of Sciences to be on a par with natural processes as an agent of ecological change (Silver et al, 1990). For example, in terrestrial ecosystems, human activity is now estimated to use or pre-empt 40% of net primary productivity (Vitousek et al, 1986, 1997). The pressing issues of global environmental change include climate warming, reduction of stratospheric ozone and loss of biological diversity. All of these have well documented implications for New Zealand (Ministry of the Environment, 1998).

Regional and global environmental changes are at the core of sustainability concerns. New demands are being made on EIA and other instruments, driven by international agreements and national policy initiatives which respond to these issues. In EIA, greater emphasis is being given to analysing large-scale effects; for example addressing ecological impacts within the framework of the UN Biodiversity Convention and the New Zealand National Biodiversity Strategy. These imperatives underline both the importance of EIA as a sustainability instrument and the challenge of doing so. Currently, EIA practice often falls short of meeting even conventional performance standards. Taking the actions described above should help in that regard, recognising that SEA offers a more effective approach to addressing big picture issues.

### Box 9: EIA Good Practice Lessons and Insights

- screening — start as early as possible, preplanning is an investment in success;
- scoping — identify priority issues and impacts to focus the EIA study;
- terms of reference — establish clear timelines and requirements for EIA;
- public consultation — match techniques of involvement to the scope of the issues and the capacities of affected parties;
- best practicable science — choice of methods should be consistent with the type and importance of impacts;
- mitigation — custom design measures to the problem, follow up on the success of untried innovative techniques;
- evaluation of significance — draw judgements based on the likelihood, range and severity of residual effects;
- preparation of EIS/EIA report — write in plain English for decision-makers and other users to identify the main issues, predicted impacts and estimated consequences of a proposal and the alternatives considered, and specify confidence limits in analysis;
- review of EIA quality — undertake as required, whether a quick final check (e.g. for a small-scale assessment) or expert or independent public review (e.g. for major proposals)
- follow up — apply some or all of the following steps depending on the potential significance and uncertainty of estimated effects:
  - inspection/surveillance to check terms and conditions are implemented;
  - effects monitoring to determine if impacts are as predicted;
  - impact management to address unanticipated problems;
  - audit EIA to identify outcomes; and
  - performance review to learn from experience.

*Source: Sadler, 1996*

## Strategic Environmental Assessment

Strategic environmental assessment (SEA) has evolved in response to two main imperatives. These also define its aims (Box 10). First, SEA is intended to complement and strengthen EIA projects. It does so by applying the principles of EIA at the level of policies, plans and programmes, addressing the issues of why, what and where development should take place. The introduction of SEA helps to overcome the inherent limitations of project EIA as a “stand alone” approach, applied relatively late in the

**Box 10: Key Aims of SEA**

To promote sustainable development by:

- integrating environment considerations into the mainstream of development decision-making;
- focusing on the issues of environmental deterioration at their source in the policy making process; and
- providing early warning of cumulative effects resulting from sectoral or spatial plans.

To strengthen and streamline project EIA by:

- identifying environmentally sound alternatives at prior stages of decision-making;
- giving environmental clearance for justification and location of major development proposals; and
- reducing the time and effort necessary to undertake the process.

decision-making process. These stem from the foreclosure of alternatives and options in policy and plan-making without systematic consideration of the environmental implications. SEA corrects this deficiency, thereby allowing the project-level EIA to be streamlined and better focused on issues of how development should be implemented.

Second, SEA is meant to promote sustainable development. As a sustainability instrument, SEA is undertaken to ensure that environmental considerations are systematically addressed and taken into account in policy and plan making at the same time as economic and social factors (Sadler and Verheem, 1996). Thus defined, the approach:

- corresponds generally to the thrust of the sustainability agenda, addressing the problems of environmental deterioration at their ‘upstream source’ in the decision-making process, rather than mitigating their ‘downstream symptoms’ or project-level impacts; and
- responds specifically to what the World Commission on Environment and Development (1987) called “the chief institutional challenge of the 1990s”.

**Status of Process Development**

At present, SEA is still at an early stage of process development and take-up, roughly comparable to EIA in the early 1980s. To date, there are only a limited number of fully operational SEA systems. However, the SEA processes that have been established are relatively differentiated, far more than is the case in EIA. Recently, too, SEA practice has become more extended and diversified, respectively, in relation to sectors and areas of application and the approaches taken. The literature on this field, sizeable already, is growing rapidly (a note on sources is contained in Box 11). Early themes include the

conceptualisation of SEA and the review of procedural and methodological issues in relation to the EIA process, sometimes overlooking or downplaying alternative models and means.

### **Box 11: SEA Literature**

Early reference to the application of EIA principles to policies, plans and programmes are contained in several sources, including the proceedings of the 6th and 7th tripartite (Australia, Canada and New Zealand) workshops on EIA (Ministry for the Environment 1991; Commonwealth Environment Protection Agency, 1996) and the pilot study by countries of the UNECE (1992).

Beginning c1992, other studies focused on the rationale, concept and scope of SEA, compared the similarities and differences between the SEA and EIA processes, defined emerging methodological and procedural issues, and reviewed the status of process developments (e.g. special issue of *Project Appraisal* 7(3), 1992).

Later, evaluations and comparisons of SEA practice were carried out of the features of national systems and their case-specific application; for example as part of the international study of EA effectiveness (de Boer and Sadler, 1996; Sadler and Verheem, 1996). The study drew on SEA experience in New Zealand (Gow 1996; also 1998). Recent updates of these and other trends in SEA can be found in various chapters of *EIA Methods Review* (Porter and Fittipaldi, 1998) and *Handbook of Environmental Assessment* (Petts, 1999).

Under the RMA, for example, 'SEA' is not a separate and distinguishable process, rather it is an implicit aspect of the policy-making and planning regime. As discussed later, this integrated framework stands at the other end of the spectrum to the EIA-based approach to SEA and, potentially, makes the latter redundant. However, the relevant provision in the RMA (s 32 refers) requires central and local government to carry out an evaluation of the effects, benefits and costs of alternatives to proposed objectives, policies and rules. The process and content of such an analysis are still open to question (see Grinlinton, 1995). What does seem clear is that local councils are not required to prepare a specific SEA of (or for) policy statements and plans (Dixon and Fookes, 1995). This will be less an issue if a new generation of capacity-based plans is being drawn up and other instruments are used to take account of the environmental effects of development strategy (e.g. land use zoning, cumulative impact analysis, state of the environment reporting). So far, experience at this level appears to be relatively limited and, in this context, SEA practice elsewhere may be of interest.

### **Overview of SEA Systems**

Except for the USA, formal provision for SEA is recent, dating from c1990. In that year, Canada established a process for environmental assessment of government poli-

cies and programmes, separate from that applied to projects. The separation of SEA and EIA was precedent-setting, ending the de facto practice of concentrating on projects and overlooking policies, plans and programmes. All countries had followed this practice, including the USA, where the provision for programmatic EIA is a long-standing but still relatively little exercised component of NEPA (as discussed below). However, the exclusion of policies, plans and programmes had no basis in early EIA laws and orders — as exemplified by NEPA and the Canadian Cabinet Directive of 1973. Both were intended to apply to all types of activities that were environmentally significant. From this perspective, the provision for SEA can be seen as a return to the original intent of EIA, namely to reshape public policy-making (see Caldwell, 1998).

To date, a relatively small number of countries and international organisations have well-established SEA systems with a formal mandate and institutional framework. Others propose to introduce SEA or amend current provisions, or may be required to do so as a result of supra-national requirements (e.g. European Commission draft Directive on SEA) or to conform to international conditions for lending and assistance (e.g. World Bank EIA policy). In addition, many countries and international organisations apply elements of SEA, either informally or as part of EIA or planning regimes. The wider introduction and use of SEA is recognised as a priority internationally, for example in European countries that so far have made little or no provision for this process (see Box 12).

**Box 12: Declaration by the Environment Ministers of the region of the United Nations Economic Commission for Europe (UNECE) on Strategic Environmental Assessment**

“We recognise that strategic environmental assessment facilitates the systematic analysis of the environmental impacts of proposed policies, plans and programmes and invite countries and international finance institutions to introduce and/or carry out strategic environmental assessments...in areas such as transport, energy and agriculture...[These] should be undertaken as a matter of priority.”

From the declaration of UNECE Environment Ministers at the Aarhus conference, 23-25 June 1998 (ECE/CEP/56)

About twenty countries are estimated to have operational SEA systems. Their infrastructure, role and characteristics vary, in some cases significantly. Key differences among SEA processes can be found with respect to mandate, scope, procedure and relationship to decision-making processes and other policy instruments. The SEA systems listed in Figure 2 are considered by many to be leading examples internationally. (In addition, the SEA systems of certain states within federal countries are at an equivalent level of development, e.g. California, Hong Kong and Western Australia.). The list in Figure 2 is illustrative of the types of frameworks that have been instituted and provides a basis for comparison of the elements of SEA systems established by countries and international organisations.

Country/ Organisation	Provision	Scope of Application	Key Characteristics
Canada	Cabinet Directive 1990, amended 1999	Proposals to Cabinet (since 1990) and to individual Ministers (since 1999)	Policies are included in the Directive but projects are addressed under a separate law
Denmark	Administrative Order 1993, amended 1995 and 1998.	Proposals going before Parliament (all types of activities and sectors)	Also applies to policies, laws, regulations and other Government proposals
The Netherlands	Environmental Impact Assessment Act (1987) Cabinet Order (1995)	Specified plans and programmes only	Two-tier system with a separate requirement for an environmental test of law and regulation
New Zealand	Resource Management Act (1991)	No separate provision for SEA	Comprehensive system of policy statements, regional and district plans and resource consents
United Kingdom	Instructions and guidance to officials (1991-99, ongoing) New regulations and guidance on local planning (1999)	Environmental appraisal of policies (national level) and development plans (local level)	Appraisal-based; guidance emphasises links to sustainable development
USA	National Environmental Policy Act (1969)	In principle, all major initiatives; in practice programmes and legislation	Project EIA are tiered to programmatic EIS
European Community	Proposed Directive (in negotiation 1999-2000)	Plans and programmes in specified sectors, linked to development consent frameworks	Policies are not included
World Bank	Operational Directive (1989); amended 1999	Sectoral and regional environmental assessments	Assessments to implement safeguard policies and provide framework for project EIA

*Figure 2: Elements of SEA systems by country/organisation*

**Provision for SEA** This varies within as well as across jurisdictions. In aggregate, SEA systems are designated in law, regulation, administrative order and operational policy. Some countries, notably The Netherlands, have more than one form of SEA with different provisions for each. Other countries have established SEA under a comprehensive environmental statute (e.g. USA, New Zealand), as part of EIA law (e.g. France) and planning regulation (Sweden), and through separate administrative order or Cabinet memorandum (e.g. Canada, Denmark). The United Kingdom has established near-equivalent processes of environmental appraisal through policy direction and guidance. World Bank SEA procedures are similarly defined.

**Scope of Application** No SEA system appears to provide full and comprehensive coverage of all environmentally-significant government policy, plan and programme proposals. Arguably, NEPA and the RMA are intended to do so. The fundamental concerns regarding the scope of application of section 32 assessments under the RMA were noted earlier. Similar issues attach to NEPA. The Act applies to any “major federal action significantly affecting the quality of the environment” (s102 refers) which the Council on Environmental Quality has interpreted to include policies, plans and

programmes. However, in practice, the NEPA process has had only limited application to programmes and legislation (see below), and little or no application to policies and budgets (pre-empted by a combination of court ruling and political resistance). Federal agencies have used the “no proposal” argument to avoid NEPA review of laws, policies and plans which do not contain specific actions. Recently, for example, the Department of Energy has used this argument to avoid NEPA review of a comprehensive national energy plan (Clark, 1998).

The Canadian, Danish and Dutch SEA systems appear to be the nearest approximates to a comprehensive approach. In Canada, the SEA process applies to all policy and programme initiatives submitted for Cabinet decision. The Danish SEA process applies to government bills and proposals sent before the Parliament. A two-tier SEA process is in place in The Netherlands, comprising the ‘e-test’ of policy and regulation and EIA of specified plans and programmes. However, in all three countries, other, non-prescribed policies and plans are not subject to SEA even though they may be environmentally significant. Most countries apply SEA only, or primarily, at the level of plans or programmes, and to a limited range of sectors and activities. These are specified in some cases (as in The Netherlands) and categorised generally in others (e.g. NEPA requirements for programmatic EISs). Spatial and land use plans are well represented and water, waste, transport and energy are among the main sectors covered by SEA processes. At this level, the European Commission’s SEA draft Directive promises to both extend and formalise the scope of application of SEA in member states of the European Union (EU) and the accession countries of Central and Eastern Europe.

**Administration and Guidance** Typically, the SEA process is undertaken by the competent authority for the proposed policy or plan. The responsibility for SEA process development, guidance and oversight is vested in the Ministry of Environment or an equivalent special purpose body, such as the Canadian Environmental Assessment Agency and the US Council on Environmental Quality. In The Netherlands, the information prepared as part of the SEA process for specified plans and programmes is subject to independent review by the EIA Commission. However, this body has no designated role or responsibility in overseeing the environmental (E) test of draft regulations. Instead, a joint support centre has been set up for this purpose by the environment and economic ministries to provide advice and assistance to other government agencies (Verheem and Tonk, 1998).

Other countries have issued guidance on SEA procedures and their application. Examples include the Canadian Environmental Assessment Agency (1999) “Guidelines for Implementing the Cabinet Directive on SEA of Policies” which federal departments are expected to both follow and customise to their needs in developing plans, programmes and policies (see Box 13). The Danish Ministry of Environment (1998) has prepared guidance materials on screening and the conduct of assessment consistent with administrative and data limitations, backed by case examples of applications by different sectors. Also worth consulting is UK ‘good practice’ guidance on environmental appraisal of government policy and spatial planning; the latter has an evident sustainability dimension and reference to global, regional and local environmental effects (UK Department of Environment, 1993).



**Box 13: Guidelines for Implementing the Cabinet Directive on SEA of Policy, Plan and Programme Proposals, Canada**

The 1990 Cabinet Directive on SEA of Policy and Programme Proposals was updated in 1999. The amended Directive is intended to strengthen the SEA process by clarifying the obligations of federal departments and agencies and linking the process to the implementation of Sustainable Development Strategies. New guidance has been issued by the Canadian Environmental Assessment Agency which:

- provides the decision-making context for the environmental assessment of policies, programmes and plans, in particular its link to departmental goals in sustainable development;
- outlines the obligations of departments and agencies to conduct environmental assessments of policies, programmes and plans; and
- provides advice on implementing the Cabinet Directive, including guiding principles and questions of applicability, methodology, public concerns, documentation and reporting, and roles and responsibilities.

**SEA Process and Procedure** Generally, the process followed for SEA includes some form of screening, scoping, impact identification and public reporting. In many countries, these stages are applied in practice even when they are not specified or required in law or regulation. EIA-based steps in the process are subject to greater modification and flexible application in policy-level SEA systems; e.g. as in the Danish procedure for review of bills, and The Netherlands E-test of regulations. A comparable approach is the system of environmental appraisal of policy undertaken in the UK. However, this also forms part of a larger system of policy appraisal, which follows Treasury Board guidance on the use of benefit-cost analysis and other economic tools. In the case of New Zealand, SEA is not a separate or distinguishable process at all; rather, under the Resource Management Act, it is incorporated into policy and plan preparation (e.g. to determine which options best achieve the objectives set).

The European Commission (EC) draft Directive on SEA of plans and programmes, first issued in 1997 and still being negotiated, will significantly influence the SEA process followed in Member States and possibly elsewhere. An earlier EC study of SEA practice in Member States had found that all of the countries studied had some elements of approach, but none consistently met all of the basic requirements to be included in a Directive. For the Commission, this means applying an EIA-based process and procedure, exemplified by the stipulation that “environmental assessment means the preparation of an environmental statement”. The types of information that the competent authority must include in the statement are annexed to the draft Directive (see Box 14). Procedural requirements include assessing the significance of environmental effects, providing an opportunity for the public and statutory bodies to express their opinions on the proposal and the accompanying statement, and taking account of the environmental statement in decision-making.



#### **Box 14: Information required for an SEA under the proposed EC Directive**

- The contents of the plan or programme and its main objectives.
- The environmental characteristics of any area likely to be significantly affected by the plan or programme.
- Any existing environmental problems that are relevant to the plan or programme.
- The relevant environmental protection objectives, and the way these and other environmental considerations have been taken into account.
- The likely significant environmental effects of implementing the plan or programme.
- Alternative ways of achieving the objectives of the plan or programme and the reasons for not adopting these.
- The measures envisaged to prevent, reduce and offset any significant adverse effects on the environment.
- Any difficulties (such as technical deficiencies) encountered in compiling the information.

### **A Typology of Approaches to SEA**

In summary, four types of approach or institutional models of SEA can be recognised (see Figure 2):

- conventional or EIA-based approach — separate, step-by-step process, applied programmatically (to a sector of activity) or regionally (to an area or ecosystem that is subject to development pressure) (Type 1);
- environmental appraisal approach — equivalent process with minimum formal provision and procedure but greater linkage to economic and social appraisal (Type 2);
- integrated, sustainability-oriented approach — SEA forms part of comprehensive policy and plan-making to achieve environmental objectives and priorities (Type 3); and
- two-tier or hybrid approach in which two (or more) of the above approaches are combined (Type 4). In practice, of course, the difference between these approaches is a matter of emphasis and their distinguishing elements may be variously represented in individual SEA systems.

### **National Experience with SEA Practice**

The above typology provides a framework for comparison of SEA practice in countries that operate different systems. Four examples are discussed below to illustrate and compare SEA experience at the national level:

- the US system of programmatic SEA (Type 1);
- the UK system of environmental appraisal (Type 2);
- the New Zealand system of integrated resource management (Type 3); and
- The Netherlands system of two-tier SEA (Type 4).

### **United States Experience**

The USA has the longest record of experience of EIA and SEA. Section 102 of the National Environmental Policy Act 1969 (NEPA) requires the preparation of a “detailed statement” for any “major federal action significantly affecting the quality of the environment”. As noted earlier, this is interpreted by the Council on Environmental Quality (CEQ) as including policies, plans and programmes but, in practice, applications at this level have been limited. Since 1979 only a small fraction of the approximately 27,000 EISs prepared by federal agencies have been registered by the US Environment Protection Agency as programmatic EISs or PEIS (Clark, 1998). For much of this period, agencies were reportedly reluctant to undertake PEISs because of perceived costs, possible time delays and restrictions on action during their preparation.

Most PEISs relate to the management of resources or waste in which proposals are grouped generically, geographically, or by stage of technological development, and can be tiered to project-level EIAs. A smaller number of legislative or generic EISs have been completed; for example, in support of wilderness designation. To date, the NEPA process has not been applied to broad economic and fiscal government policies, due to both legal and political factors described earlier. Policy critics argue that the NEPAs most fundamental limitation has been its lack of purchase and influence on the higher level of federal decision making (Caldwell, 1998); for example, appropriation bills that create perverse environmental impacts. This criticism also applies to almost all countries; however, compared to other countries, the US does not have a strong tradition of strategic and land use planning.

In this context, PEISs assume a greater proportional significance in developing sector and resource plans than otherwise might be the case (see Box 15). Where the NEPA process is applied, CEQ requirements typically initiate a comprehensive and participatory approach. For example, the PEIS for the US Environmental and Waste Management Programme took five years to complete, involved over 20 scoping meetings, and comparatively examined the risks and impacts of five major alternatives. The PEIS approach is also being used to implement the principles of ecosystem management, for example in military lands (Keiter and Adler, 1998). However, while the benefits of PEISs are widely promoted, Grassetti (1999) also argues they are open to manipulation by agencies to minimise the environmental effects and avoid necessary action.

### **United Kingdom Experience**

Currently, the UK has a non-statutory system of environmental appraisal that covers, respectively, central government policies; regional and local authority land use plans; and, to a limited degree, sector plans and programmes. The UK’s traditional approach

**Box 15: SEA for Forest Planning, USA**

The US Forest Service has applied the NEPA to integrated, long-range planning of 11 national forests in northern California (44,440 km<sup>2</sup>). The Sierra Nevada ecosystem has undergone major transformations through human action, leading to a Congressional mandate to study the issue. The PEIS process focuses on the issues of biodiversity, old growth timber, threatened and endangered species, protection of riparian areas, and other environmental concerns. Even though the Forest Service controls sizeable lands, these are recognised as insufficient to address ecosystem-level management and a partnership of stakeholders is required for this purpose. The PEIS process is a first step toward creating a regional ecosystem approach involving the relevant stakeholders.

*Source: Clark 1999*

has been to integrate SEA into existing policy and planning processes with the minimum of formal provision and procedure (although this will change if and when the EC draft Directive comes into force). The present system exhibits marked differences in scope of application between the three levels (and in this respect the approach has parallels to the Dutch system).

At the policy level, environmental appraisal has been in place since 1991. It is part of a larger process of policy appraisal based on economic valuation and benefit-cost analysis. Government departments and agencies are expected to follow good practice guidance. However, studies have shown that environmental appraisal of policies is not being systematically carried out and that a more rigorous and consistent government-wide approach is needed. Consequently, the Department of the Environment, Transport and the Regions (1998) issued revised guidance for non-specialist government officials and prepared technical guidance on appraisal methodology. Other reforms are taking place to reinforce environmental accountability in all departments (so called “green governance”). These will be critical to make non-mandatory SEA practice work in the way intended.

Local planning authorities are required to take account of environmental considerations when preparing development plans (statutory plans at county and district levels that set out land use policies and the framework for development consents). Environmental appraisal at this level is relatively advanced. The approach is set out in a policy guidance note and elaborated in a good practice document, which incorporates a policy impact matrix based on sustainability criteria (Department of the Environment, 1993). Over time, the application by local authorities has increased significantly, the methodologies used have evolved and the quality of practice has improved, building on the experience gained. However, further work is necessary to strengthen practice in SEA of development plans, integrating it more firmly into overall strategy. New proposals are set out in the consultation draft of the revised Policy Planning Guidance Note 12 on development plans.

A new generation of strategic plans and environmental appraisals are also being rolled out. Under draft guidance, regional planning conferences (groupings of local authorities) are asked to include a sustainability appraisal of their plans. A proposed methodology has been developed for application to the London and South East Regional Planning Conference, SERPLAN. This is a welcome development, but at present still falls short of a capacity-based approach (as the case example in Box 16 indicates). Also notable are the SEAs being carried out by privatised water and power companies that operate under a government appointed regulator and are required to take a long-term view of customer demands, and to have regard to wider environmental responsibilities. Currently, Thames Water Utility Ltd., is undertaking an SEA of water resource options to identify the Best Practicable Environmental Programme for meeting future demands. This process is of interest because it evaluates a range of demand and supply measures and provides a framework under which subsequent project EIAs can be carried out, for example of reservoir sites.

**Box 16: Capacity-based Appraisal in the UK: The West Sussex Example**

In the UK, land use plans usually are not capacity based or explicitly directed at sustainable levels of activity. A notable exception was the study of environmental pressures in West Sussex by the local planning authority. This concluded that limits may need to be placed on human activities that adversely affect the environment. Other key findings:

- Overall, the environment is deteriorating and biodiversity is under severe stress from development pressures (particularly, road traffic growth).
- Little unconstrained land is available and there are no easy development options.
- Levels of developments beyond those proposed in the Draft Structure Plan could produce an irreversible decline in the quality of life and the environment.
- A cautious approach to development is recommended, based on strong environmental protection measures and identification of “least unsustainable” locations for development.

*Source: West Sussex County Council, 1996*

**New Zealand Experience**

The New Zealand system of strategic policy-making and planning to protect the environment is based on three cornerstones (Gow, 1998):

- The Resource Management Act (already described);
- Strategic Result Areas — a political framework under which government policies are developed, including those related to or affecting the environment; and
- Environment 2010 Strategy — which provides a benchmark against which environ-

mentally related activities, budgets and work priorities are judged (Box 17).

Under the Resource Management Act, the preparation of policy statements and plans takes place on three levels (Gow, 1998):

- national policy statements and environmental quality standards established by the central government;
- regional policy statements to establish objectives, methods and expected results for integrated resource management; and
- regional and district plans that set the ground rules for managing natural and physical resources and controlling the effects of development.

### **Box 17: Strategic Assessment and Planning in New Zealand**

#### *Strategic Results Area No. 9 — Protecting and Enhancing the Environment*

Sets out the basis of policies and strategies to achieve that goal:

- apply the principle of sustainable management of natural and physical resources
- integrate environmental, economic and social considerations
- have regard to regional and global environmental impacts
- impose least cost on the economy and the environment

#### *Environment 2010 Strategy*

Outlines the government's vision, principles, issues and actions for the environment, based upon public and interest group consultation. The Strategy is used as a baseline against which environmentally related activities and expenditure are tested and prioritised. An annual review includes:

- evaluation of the extent to which outputs delivered by Government departments are advancing the goals of the Environment 2010 Strategy; and
- analysis of any implications for Strategic Result Areas and for resetting priorities in the following year.

*Source: Gow, 1998*

At each level, the requirement is to determine which combination of objectives, policy and rules best achieve the purpose of the Act. Currently, however, policy and planning frameworks are incomplete and, reportedly, difficulties are being encountered in implementing an integrated approach. This appears to be the case especially at the national level, for example in integrating the sustainable land and water management strategies and setting coherent priorities that guide regional plans (Dalal-Clayton and Sadler, 1996). In some measure, this situation is understandable, not least because

institutional change takes time.

Ultimately, the test of these strategies, as with RMA implementation, can be determined only by monitoring the state of the environment to establish whether standards and critical thresholds are being maintained. Work is currently nearing completion on a framework of indicators for environmental monitoring and performance evaluation that is expected to help in making strategic judgements about risks and impacts and their relationship to policy and plan objectives (Ministry for the Environment, 1998). However, after seven years of policy and planning experience, much of it driven by RMA implementation, it is time to ask the hard questions about how much has really changed.

### **The Netherlands' Experience**

A two-tier system of SEA is in place in The Netherlands. It comprises an environmental (E) test for draft legislation and what the Dutch call "strategic environmental impact assessment" (SEIA) for specified sector and spatial plans and programmes. The E-test was established in 1995 by Cabinet Directive and is applied through a relatively simple appraisal-type procedure. By contrast, SEIA is a statutory requirement under the Environmental Impact Assessment Act (1987). This applies to plans and programmes that fix the location of physical projects for which an EIA is required, e.g. for waste management, electricity production, land development and water supply.

SEIA follows the process established for specific projects, i.e. provision for public involvement, examination of alternatives, independent review of documentation and monitoring and evaluation of plan implementation. More than 30 SEIAs have been carried out to date. After some initial teething problems, including over-elaborate analysis, SEIA is considered to be an effective approach, not least because it is integrated with national procedures for spatial planning (Sadler and Verheem, 1996). The Netherlands Government is currently considering whether or not this process should be expanded to other types of plans and programmes, not covered in the Environmental Impact Assessment Act.

The E-test was introduced to give appropriate consideration to environmental effects when drafting new laws. It is part of a broad assessment, which includes review of enforceability, feasibility and the effects on business. The E-test procedure is outlined in Box 18. An "environmental paragraph" is included in the explanatory memorandum to the Council of Ministers (Cabinet) to describe the anticipated effects of the draft legislation on the environment and how it will contribute to sustainable development. A checklist of sustainability criteria is used for this purpose. The E-test is to be given equal weight to other assessments that are prepared concurrently and Dutch Ministries are encouraged to apply it, as opposed to forcing them to do so. So far, experience with implementation is limited and insufficient to draw conclusions about the effectiveness of the process.

However, the principles on which the E-test is based appear to have potentially wide application. The approach is (Verheem and Tonk, 1998):

### Box 18: Netherlands E-test Procedure

Screening/scoping phase: an interdepartmental working group identifies those proposals to be E-tested and the issues to be examined.

Documentation phase: the E-test is undertaken by the responsible Ministry, with assistance of the Joint Support Centre and the results are documented in the Explanatory Memorandum to the draft legislation.

Review phase: the Joint Support Centre, in co-operation with the Ministry of Justice, reviews the quality of the information in the Explanatory Note and decides if the draft can be sent to the Council of Ministers.

*Source: Verheem and Tonk, 1998*

- client oriented — with a helpdesk and Joint Support Centre set up by the environment and economic ministries;
- selective — minimum procedures are used, e.g. to address only those proposals with significant environmental effects (screening) and to identify the priority issues (scoping); and
- integrated — the E-test process matches the internal and informal process for drafting legislation followed in The Netherlands, but with safeguards to review and ensure quality.

### Some Lessons from SEA Practice

The variable configurations of policy and plan making are reflected in different jurisdictional arrangements. These have a critical bearing on SEA practice. A differentiated, rather than “one-type-fits-all” approach is necessary, as exemplified by the national experiences described above. SEA processes are far more diverse than is the case with project-level EIA; for example, in their application to general policies that have no environmental and spatial referents compared to plans and programmes that initiate concrete projects and activities, and fix their location. These differences, in turn, have implications for SEA procedure and methodology, beginning with screening to determine whether or not the process should apply and in what form.

### Initiating SEA

A generic screening procedure can be used to check which proposals should be subject to SEA and identify the type of approach that should be followed. The *aide-mémoire* in Box 19 is undertaken by reference to two main components:

- The policy area or sector covered. In general, all policy areas that concern or lead to changes in the use of land and natural resources, the production of raw materials, chemicals and other hazardous products and/or the generation of pollutants, wasted and residuals, are potential candidates for SEA.

### **Box 19: A Pre-screening Procedure for Determining SEA Requirements**

The following questions can be used to make a quick judgement about SEA requirements:

- What is the actual content of the proposal?
  - is it concerned only or primarily with broad general direction(s)?; or
  - does it address or specifically include operational measures (projects, activities, etc.)?
- What policy area or sector is targeted in the proposal?
  - is it one known to have or likely to cause environmental effects (e.g. energy, transportation, housing, agriculture)?; and/or
  - are there components that are likely to have cumulative or long-term consequences for the environment (e.g. trade, industrial diversification, technology development)?
- What environmental considerations are raised by the proposal? Does it appear likely to:
  - initiate actions that will have direct or evident environmental impacts?;
  - raise broad environmental implications and/or issues that should be addressed?; or
  - have marginal or no environmental consequences?

*Source: Sadler & Verheem (1996)*

- The type of environmental effects that can be anticipated. These vary with the generality or specificity of the proposal and their relationship to “impact traceability”. When moving from the policy to the project stage of the decision cycle, environmental considerations correspondingly shift from indirect to direct effects and, as described later, impact assessment methodology becomes more and more applicable.

### **SEA Principles**

Five principles, three of which are additional to EIA basic principles outlined earlier, are considered to be particularly important when undertaking SEA (Sadler and Brooke, 1998). Specifically, SEA should be:

- fit for the purpose, i.e. customised to the process of decision-making;
- objectives-led, i.e. undertaken with reference to environmental goals and priorities;
- sustainability oriented, i.e. concerned with ensuring development options and proposals are consistent with maintaining the source and sinks functions of natural systems;



- decision-relevant, i.e. focusing on the issues that matter and the information required to make choices; and
- cost-effective, i.e. ensuring the process meets the objectives and requirements as efficiently as possible.

A seven-step guide to SEA practice in support of these principles is described in Box 20. This framework draws on experience in both EIA-based and policy appraisal experience. It should be applied flexibly and pragmatically, consistent with environmental significance of the policy or plan proposal under review. Depending on the scope and importance of the issues, the steps may be combined or modified to suit. The following lessons, distilled from case experience in a number of countries, are intended to help implement the framework (Sadler, 1996):

- Begin, as soon as it is feasible to do so, the process of policy, plan or programme formulation.
- Start with a “reality-check” that recognises:
  - assessment is part of a larger process;
  - the purpose is not to produce a study but to inform decisions.
- As a rule of thumb, the specificity or generality of assessment corresponds to that found in a proposal.
- Look to secure environmental benefits, as well avoid adverse impacts;
- Compare alternatives and options to establish best practicable environmental out-

### **Box 20: Implementing SEA Practice**

Screen to trigger SEA and identify likely scope of review needed.

Scope to identify key issues and alternatives, clarify objectives and to develop terms of reference for SEA.

Elaborate and compare alternatives, including no action options, to clarify implications and trade-offs.

Undertake an impact analysis or policy appraisal to examine effects (issues), evaluate alternatives, and identify mitigation and follow up measures.

Document the findings of the SEA with supporting advice and recommendations to decision-makers on terms and conditions for implementation.

Check the quality of the SEA report to ensure the information and advice is concise, sufficient and relevant to the decision being taken.

Establish necessary follow-up measures, e.g. for monitoring effects, checking implementation, and tracking any arrangements for subsidiary level assessment.

*Source: Sadler and Verheem, 1996*

come;

- Use the simplest procedures and methods consistent with the task.

## **SEA Methodology**

When selecting the most appropriate method(s) for an SEA, the required level of detail and format (i.e. quantitative or qualitative results) will be important criteria. This distinction also points to the potential of a stepped methodology, in which policy appraisal tools are applied to generic proposals and impact assessment tools are used for policies, plans and programmes that initiate projects and activities. The following questions provide a pointer to making this determination and extends the screening procedure outlined in Box 19:

Does the policy, plan or programme proposal initiate or fix the type, form, location of concrete projects?

- Yes, go to 'impact assessment' track

SEA to identify well-defined alternatives and quantitative impacts

- No, go to 'policy appraisal' track

SEA to discuss issues, broad options and environmental implications.

In conclusion, a differentiated approach and customised methodology are necessary to relate SEA to the varied geometry of policy and plan making. However, there are a number of principles for the design and operation of all types of SEA. The framework of guidance outlined above is considered to have generic or wide application across different SEA processes (although there is not the same measure of agreement as for EIA). In addition, the principles and measures for implementation lend themselves to specification of performance-based standards and criteria that can be used to evaluate particular systems in terms of meeting both substantive and procedural objectives (Sadler 1998; and Verheem and Tonk 1998).

## **Environmental Assessment for Sustainability Assurance**

Many reputable scientists consider that environmental deterioration may be reaching critical thresholds beyond which there could be serious and irreversible loss of functions performed by natural systems. Despite recent advances, EIA and SEA fall short of realising their full potential as a means of providing environmental sustainability assurance (ESA) to development decision-making. ESA means that the critical resource stocks and ecological functions must be safeguarded, depletion and deterioration of sources and sinks must be kept within acceptable levels or safe margins and losses of natural capital must be made good (Sadler, 1996). This is the spirit of New Zealand's RMA. There are a range of policy tools available for this purpose (Goodland and Sadler, 1996). The key argument made here is that sustainability assurance is best achieved by an impact compensation protocol that can be applied to all types of development decision-making, using EIA and SEA as front line instruments to identify and remedy environmental effects. Such an explicit procedure is not evident in the RMA nor any other EIA law, that the author is aware of.

## A Framework for Assessing Sustainability

The concept of sustainable development has become internationally accepted as a basis for addressing environmental issues and relating them to economic and social priorities. Basic aims and principles for implementing this approach are contained in the Rio Declaration on Environment and Development, Agenda 21, and other agreements from the Earth Summit. With adaptations, these aims and principles provide a basis for defining the characteristics of environmental sustainability. This is the first step toward developing a framework of criteria against which development trends, options and proposals can be assessed to see if they approximate toward or away from the requirement.

Broadly, two main avenues have been followed in attempts to define operational principles of sustainability. The first is based on economic valuation of the “capital” stock(s) that should be passed from one generation to the next (e.g. Serageldin and Steer, 1994). The second approach attempts to specify the physical and ecological conditions of sustainable development (e.g. Robert, et al 1997), which the World Bank has translated into input and output rules for assessing projects and activities (see Box 21). These rules can be supplemented by other capacity-based concepts of sustainable development to help identify thresholds and standards of acceptable change to natural and managed systems.

### Box 21: Operational Definition of Environmental Sustainability

#### 1. Output Rule:

Waste emissions from a project or action being considered should be kept within the assimilative capacity of the local environment without unacceptable degradation of its future waste absorption capacity or other important services.

#### 2. Input Rules:

Renewables: Harvest rates of renewable resource inputs must be kept within regenerative capacities of the system that generates them.

Non-renewables: Depletion rates of non-renewable resource inputs should be set below the rate at which renewable substitutes are developed by human invention and investment.

*Source: World Bank, 1991*

In reality, deterioration to unacceptable levels cannot be reliably monitored let alone predicted before the fact. Environmental managers and scientists have addressed uncertainty by pragmatism rather than precision, i.e. by erring on the side of conservation and forgoing maximum productivity. Accepting the principle of strong sustainability for example, means maintaining natural capital at current aggregate levels (no net loss). Under this regime, development options and proposals would be assessed against the following criteria (Sadler, 1999):

- avoid irreversible or serious damage to environmental sinks (especially global life support systems);
- minimise impacts on valued resources and critical ecological functions to safeguard regenerative capacity; and
- mitigate and offset significant environmental effects consistent with the principle of no net loss or deterioration of natural capital.

Environmental standards and regulatory limits on waste emissions are a conventional means of maintaining the capacity of sinks. Under the UN Framework Convention of Climate Change, these include the “stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”

At the Conference of the Parties in Kyoto, targets or ceilings for reducing greenhouse gas emissions were agreed. These involve an average cutback of 5% by industrial countries over the next fifteen years (e.g. from -15% to +28% in EU member states). Emission caps for individual countries provide a framework against which EIA and SEA can be applied to identify climate warming effects and implications of development proposals (e.g. in the energy and transport sectors). As yet, however, there are few examples.

Biodiversity is a key to regenerative capacity; it ensures ecosystems have sufficient integrity (or self organising capacity) to maintain their structure and function in the face of stress (resilience). The UN Convention of Biological Diversity provides a global framework for this purpose. Specifically, its objectives are to conserve biodiversity at ecosystems, species and gene pool levels, to promote sustainable use of living resources, and to encourage fair and equitable distribution of the benefits derived from their use. Within this framework, particular attention should be directed to ensuring no further decline in the number of threatened and endangered species (as classified in the IUCN Red Lists). These “significance criteria” are applied already in EIA and further indicators of biodiversity need to be incorporated to provide for sustainability assurance.

The criterion of no net loss of natural capital is a more rigorous standard than avoiding irreversible and serious losses and minimising effects on critical ecological functions. Meeting this criterion requires all residual (non-critical) environmental losses to be compensated for by various arrangements for in-kind compensation or equivalent offsets, i.e. keeping resources, stocks and ecological processes more or less at their present aggregate levels. The premise here is that, world-wide, the availability of natural capital has become limited and is limiting on development and must be treated and valued separately from other forms of capital stock. Impact compensation is consistent with the precautionary and polluter pays principles; both are accepted as international standards to guide decision-making.

### **Strengthening EIA and SEA as Sustainability Instruments**

EIA and SEA are key mechanisms for applying the framework of sustainability de-

scribed above. This framework identifies capacity-based principles against which development proposals can be tested for their conformity with criteria for achieving strong sustainability (weaker versions of sustainability may also be used). On the demand side, the precautionary principle guides the application of EIA and SEA and the polluter pays principle underpins the argument for impact compensation or remedy for residual damages. In this scheme, EIA and SEA are concerned with maintaining the capacity and integrity of natural systems rather than minimising impacts. From this standpoint, three measures are proposed to sharpening EA as a sustainability instrument (Sadler, 1996):

- (re)focus on environmental ‘bottom lines’ with particular reference to environmental standards and safe margins;
- evaluate the ‘acceptability’ of potential environmental effects against the composition and value of natural capital stock, paying particular attention to critical resources and ecological services; and
- require ‘in-kind compensation’ for the residual impacts (i.e. that cannot be mitigated or avoided) for all acceptable development projects and activities.

More than any other single measure, the incorporation of the no net loss criterion is the single most important measure to upgrade EIA and SEA as sustainability instruments. The criterion can be readily introduced as a mitigation requirement. No net loss principles are already widely applied in fish and wildlife management, for example in the US and Canada. Undoubtedly, this type of asset-trading and replacement will be crude and imprecise. As such, impact compensation will need to be promoted and implemented pragmatically, not least because it will be seen as onerous by proponents.

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## Appendix 1: Checklist for Review of EA Process Effectiveness

The checklist is broken down into four parts. Each step can be completed as a separate exercise or as part of a comprehensive process-wide or proposal-specific review. Some adaptation to circumstances will be needed. Not all questions may be relevant, and for in-depth review supplementary ones will certainly need to be added. Finally there are two levels of detail at which the evaluation may be undertaken:

- marking whether the item is present or not with comments as required;
- grading the level of appropriateness of component or performance of our activity as per the rating scales used in each sector.

### Step 1: Appropriateness of institutional controls

The following rating scale may be used to answer the following questions in detail:

- A excellent (comprehensive and sufficient)
- B good (minor gaps and inadequacies)
- C satisfactory (some gaps and inadequacies)
- D poor (significant gaps and inadequacies)
- E very poor (fundamental flaws and weaknesses)
- F no opinion (insufficient basis/experience on which to judge)

Is the EA Process based on or did it include:

- a) clear legal provisions?
- b) explicit requirements to cover all environmentally significant proposals?
- c) broad definition of environment/coverage of factors?
- d) opportunities for public involvement?
  - i) at specified stages only?
  - ii) throughout the process?
- e) procedures for independent, expert review of EAs?
  - i) by inter-agency committee?
  - ii) by a permanent commission or equivalent body?
  - iii) by ad hoc panel, board or tribunal?
- f) guidance on application of procedures, including?
  - i) proposal-specific terms of reference?
  - ii) agreed timelines for completion?
- g) visible linkage to decision making (e.g. approval, permitting etc. based on submission of report)?

- h) specification of terms and conditions for implementation?
- i) with provision for follow up (e.g. monitoring)?
- ii) that are legally enforceable?

**Step 2: Adequacy of operational performance for main stages and components of EA**

The following rating scale may be used to answer the following questions in detail.

- A excellent (thoroughly and competently performed)
- B good (minor omissions and deficiencies)
- C satisfactory (some omissions and deficiencies)
- D poor (significant omissions and deficiencies)
- E very poor (fundamental flaws and weaknesses)
- F no opinion (insufficient basis/experience on which to judge)

Main stages: Were the following activities completed fully and successfully?

- a) screening — proposal classified correctly as to the level and requirement for assessment?
- b) scoping — process completed and resulted in initial closure?, i.e.
  - priority issues and relevant impacts identified?
  - key actors involved?
  - reasonable alternatives established?
  - terms of reference/study guidelines prepared?
- c) impact analysis — has the process completed in scope and depth necessary, including:
  - affected environment (baseline) conditions described?
  - estimation and prediction of main impact categories?, including
    - (a) indirect and cumulative effects?
    - (b) other relevant factors?
  - suitable database and methodologies used?
- d) mitigation — necessary measures or environmental management plan identified?, including:
  - follow up and monitoring arrangements if strategies are untried or impacts uncertain?
  - specification of contingency plans or non-standardised operating responses?

- e) significance — residual effects evaluated as to potential severity?, including reference to:
  - their scope, duration and irreversibility?
  - relative importance to dependent communities or ecological functions?
  - possible compensation or offset mechanisms (also 2d)?
- f) EIS/EA report — information included is consistent with the process followed?, and is:
  - complete - informed decision can be made?
  - suitable - right type of information included?
  - understandable - easily apprehended by decision maker?
  - reliable - meets established professional and disciplinary standards?
  - defensible - risks and impact are qualified as to proposal uncertainties?
  - actionable - provides clear basis for choice and condition setting?
- g) review of quality - undertaken to the degree and the level necessary, including:
  - use of suitable methodology?
  - subject to public review and expert comment?

Key components: Were the following components undertaken fully and success fully? (Note: this analysis may be completed for the process as a whole or included as part of a step-by-step examination of 2(a) - (g) above.)

- h) technical studies:
  - rigorously conducted, consistent with the nature and complexity of the issues?
    - at all stages?
    - at some stages?
  - work conformed to prevailing standards of good science and EA practice?
    - at all stages?
    - at some stages?
    - resulted in the preparation of high calibre, defensible basis for assessment?
      - at all stages?
      - at some stages?
- i) public involvement:
  - opportunities were responsive to the people involved having regard to
    - likely extent of environmental impact and social dislocation?

- degree of public concern/conflict that was evident?
- the traditions of the affected population?
- approaches and techniques used were relevant to issues and constituencies involved?
- in all cases?
- in some cases?
- resulted in views and concerns of affected and interested parties being clearly identified and incorporated?
- into all key documentation?
- into final EIS report only?
- j) process administration
  - applied in accordance with established principles and basis provisions?
  - at all stages?
  - at some stages?
  - process managed efficiently, i.e. without undue delay or cost to proponents and others? with
    - timelines and schedules negotiated up front?
    - completion in accordance with these?
  - oversight of activities was consistent and impartial? e.g. recognising
    - need for fairness to minority and other groups?

### *Step 3: Relevance of Decision Making*

The following rating scale may be used to answer the following questions in detail.

- 1) Very Influential
- 2) Moderately Influential
- 3) Marginally Influential
- 4) Not Influential

Did the EA process evidentially result in the following (as documented by records of decision or as reported by a cross-section of participants):

- a) at the pre-approval stage — proposal was modified or changed for the better environmentally on the basis of EA:?, e.g. by
  - alteration of the initial concept?
  - selection of alternative approach?
    - technological?
    - locational?

- redesign?
  - other pre-submission decisions by the proponent?, e.g. to
    - provide offsets, such as setting aside natural areas?
    - negotiate impact compensation package with affected communities?
    - other?
  - b) at the formal approval stage — information from the EA process provided an end basis for approval(s) and condition setting, e.g. as
    - documented in the EIS (see 2f)?
    - as supported by the adequacy of
      - technical studies (see 2h)?
      - public involvement (see 2i)?
      - process administration (see 2j)?
  - c) influence on decision-making, specifically where the conclusions/advice and recommendations in the EIS/EA report
    - fully or substantially followed?
    - partially or moderately followed?
    - ignored or marginally followed?
  - d) if the EIS/EA report was partially or marginally influential on approval and condition setting, what were the reasons?, e.g.
    - as described by the analysis of input to decision-making?
    - due to intrusion of other factors and circumstances, please specify:  
Note: What is the evidence for the interpretation?
      - comparison of EIS report content with record of decision?
      - interviews with participants?
      - other?
  - e) identification of follow-up requirements including:
    - supervision or surveillance of compliance?
    - impact monitoring?
    - environmental management plan?
    - environmental or impact audit?
    - post project analysis or other research or studies?
  - f) terms and conditions implemented:
    - fully?
-

- partly?
- inadequately or not at all?
- g) if terms and conditions were not fully implemented, what were the reasons, e.g.
  - unforeseen impacts and/or ineffectiveness of mitigation measures necessitated changes?
  - other events and circumstances intervened?

#### ***Step 4: Overall Results and Effectiveness***

Based on evidence from monitoring, auditing and other sources, what were the overall results of the EA process?

- a) impacts were as predicted or forecast?
  - in most cases >66% (with only minor inaccuracies)?
  - in fewer cases <33% (with some major inaccuracies)?
- b) mitigation measures or management plans worked as intended?
  - in most cases >66% (with no or minor problem)?
  - in fewer cases <33% (with some major problems)?
- c) environmental objectives, criteria or standards met by the project/plan as implemented?
  - as confirmed by compliance or effects monitoring?
  - as evidenced by other sources of information?
- d) impacts were avoided, mitigated or reasonably compensated?
  - in most cases >66% (with no unacceptable loss or damages)?
  - in fewer cases <33% (with some unacceptable loss or damages)?
- e) other environmental and community benefits were realised as described?
  - in most cases >66% (with only minor difficulties encountered)?
  - in fewer cases <33% (with major difficulties encountered)?
- f) the EA process was within the usual 1% cost range in relation to the overall capital investment in proposal development?
  - yes?
  - no (specify why)?
- g) on balance, was the EA process effective when judged against the basic yardsticks?
- i) substantive - were terms of reference and basic objectives achieved?



- as documented by inputs to decision-making?
- as demonstrated by environmental and community benefits (impact avoidance)?
- ii) procedural — did the process conform to established or accepted principles, provisions and procedures, i.e.
  - as shown by appropriate institutional controls?
  - as evidenced by successful completion of main stages and components?
- iii) transactive — were the results and environmental gains that were achieved, cost-effectively?, e.g.
  - at least cost as shown by an appropriate methodology?
  - at reasonable cost as estimated by informed judgement?

Note: for many judgements in this section, reviewers will need to customise ‘band widths’ (e.g. 2a, b, d, e) and incorporate EA audit frameworks and protocols.

Sources: Sadler, 1996



## CHAPTER 2

### Preparation and Auditing of AEEs

Karen Blair\*

#### Introduction

“Too bureaucratic, too costly and too untimely”...

While the Resource Management Act appears to enjoy overwhelming support for its focus on environmental protection, some people perceive it to have significant shortcomings.

Although changes to the law are being considered, it is not appropriate to rely on these to address concerns expressed about practice. Legislation is not a magic cure; even a well-crafted frame will buckle and strain under the pressure of impractical use. It is necessary to look carefully at practices and procedures in an effort to curb some of the criticisms about the Act.

One area where practice can be improved is in the preparation and auditing of assessments of environmental effects (AEE). The AEE document is critical — it is the basis by which a consent is given or refused, and by which a number of processing decisions are made along the way (e.g. notification and affected party approval). The requirement for an AEE to accompany an application for a resource consent is mandatory, yet it would appear that, according to anecdotal evidence at least, they are neither being prepared properly nor processed efficiently. While this may be an over-generalisation, there is sufficient anecdotal evidence to suggest that this is the case.

The problem is, where to start.

Without identifying the potential pitfalls and problems in both preparing and auditing AEEs, and the concerns arising from both processes, it can be hard to know what is required and, therefore, what constitutes good practice.

The pitfalls and problems are many. They include:

- a desire for quick and efficient processing at low (or no) cost;
- the lack of plans (many consents are required simply because the Act deems the activity to be an offence unless otherwise authorised and, in some cases, plans addressing these activities may not be operative) or, when plans are in place, their lack of an effects focus (not adequately stating what effects the council is seeking to address by requiring consent);
- a lack of integration in consent authority structures (making interaction and feedback between information givers, processors and plan drafters somewhat difficult);
- a lack of trust between preparers of AEEs and those who audit them;

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- a reluctance to involve specialists either through ignorance or an unwillingness to bear the attendant costs;
- a lack of appreciation of the value of consultation; and
- a lack of appreciation of the inter-relationship between the quality of the AEE and the ability to process the consent application.

In 1999 the Ministry for the Environment (MfE) published two new guides that are designed to give good practice guidance to those involved in the processes of both preparing and auditing AEEs. In the following sections, the purpose and scope of each guideline is summarised, and the key messages highlighted. Copies of the guides are available at [www.mfe.govt.nz](http://www.mfe.govt.nz).

### **A Guide to Preparing a Basic AEE**

The preparation guide develops a number of key themes about AEE. Firstly, however, it is important to understand what is meant by the phrase “AEE”.

#### *AEE is a process*

The outcome of the AEE process is a written statement identifying the effects of an activity on the environment and seeking to achieve good environmental outcomes. The resultant report will accompany an application for a resource consent (see Figure 1).

Included in the AEE report will be an accurate and objective statement about the effects the proposed activity or structure will have on the environment. This statement will identify any adverse effects and whether or not they are acceptable or need to be avoided, remedied or mitigated.

The MfE preparation guide develops the concept of AEE as a process rather than an outcome (or a report identifying the effects of an activity on the environment and attached to a consent application). It tries to get applicants into a mindset of exploring and developing an initial proposal.

#### *The AEE process should be carried out progressively in conjunction with the design process*

The guide promotes the AEE process as part of the conceptual stage of a proposal, rather than as a linear process executed independently of the proposal process. If the proposal, or part of the proposal, is going to have a negative effect, the AEE process should be used to identify how these can be avoided, remedied or mitigated.

The guide identifies that steps such as consultation and obtaining specialist advice may result in new or changed issues and a need to modify (or dispense with) certain ideas and designs. Such changes may be necessary to control or address adverse effects, or be merely desirable, perhaps, to secure the approval of an affected party. In this way, the process of conducting AEE is aimed very much at meeting the needs of councils and those affected when processing a consent application. This should also inherently meet the needs of the applicant. That is, it is in the applicant’s interest to “get it right” because, in doing so, an applicant will reduce associated costs and risks — including

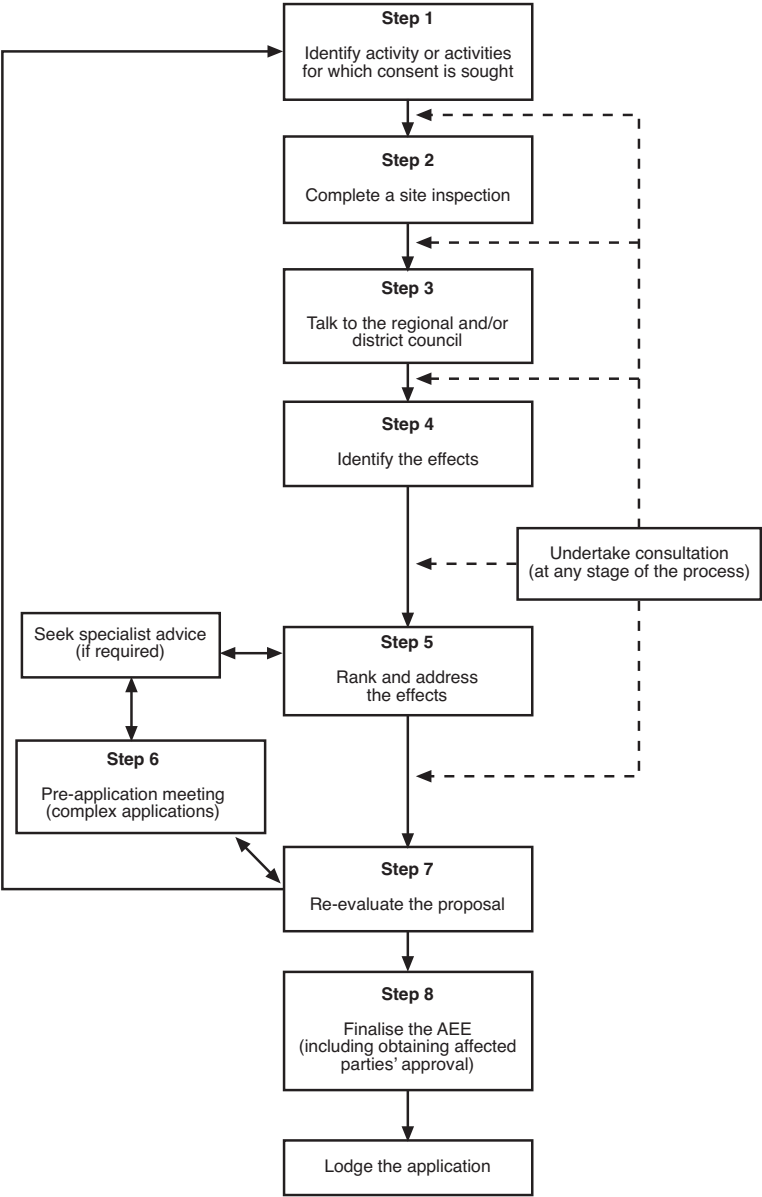


Figure 1: The AEE process — steps for preparing an AEE

keeping the time frames for processing to a minimum.

In order for an AEE process to be influential during the design process, the minimum outcome needs to be known so an applicant knows how much a proposal can be changed or modified without compromising the outcome. This does not necessarily mean that once an applicant reaches a minimum outcome the AEE document should just be final-

ised and the application lodged (although this might be the result if, say, an applicant was having difficulty in negotiating an approval from an affected party). What it does mean is that an applicant needs to set a benchmark against which to reassess whether or not to proceed with an application. The applicant probably also need to be prepared to reassess that benchmark as the process unfolds.

*The AEE process is important*

The AEE process is important to both the sustainable management principle of the Resource Management Act 1991 (RMA) and the applicant. Section 88 of the RMA provides that every application shall be accompanied by an AEE. The applicant should not be granted a consent if the AEE fails to address significant effects. Further, significant delays and costs may be incurred by an applicant if a deficient AEE document is submitted.

*The AEE process helps towards achieving sustainable management of natural and physical resources by identifying adverse effects, and how these can be avoided, remedied or mitigated.*

The purpose of the RMA is to promote the sustainable management of natural and physical resources. The Act requires that adverse effects on the environment be avoided, remedied or mitigated. Essentially, if a resource consent is required it is (or should be) because the council has identified or anticipated that the activity may have an adverse effect on the environment. There is a caution here because, for both regional and district councils, this is not necessarily the case during the transition and planning phase.

*The AEE process reduces the likelihood of new issues being raised after lodgement.*

The AEE process should help an applicant to understand the effects of their proposal, to identify major hurdles at an early stage, and to modify a proposal as necessary. In this way the process can be valuable as a means of achieving better environmental outcomes, and in recognising possible problems that will slow or halt the application as it goes through the consent process.

*The AEE process is the basis for sound, unbiased assessment.*

This may be, more often than not, contrary to people's perception, and at present is probably often contrary to reality. When an AEE is prepared and then drafted in the manner proposed by the MfE guide, it can be expected to assume greater weight by providing a very important opportunity to involve others in assessing effects openly and positively.

*The AEE process establishes the means by which an application is processed.*

The AEE document is critical to most decisions made by the person processing an application. It helps form the basis for decisions about whether to require further information, whether to notify or not, whether to grant consent, and, if so, what conditions to impose, and whether monitoring of a consent is required.

If the processor of an AEE considers it to be inadequate or unsubstantiated, incomplete or biased, then the processor can, at cost to the applicant, commission specialist reports

to independently audit the information provided. A decision regarding the means by which an application is processed will be delayed pending the outcome of such audits.

*An AEE process helps in the early identification of both positive and negative effects*

An AEE process should enable an applicant to identify both negative and positive effects early in the process.

*The definition of 'effects' and 'environment' are both broadly defined in the RMA.*

One of the on-going concerns with AEE documents is that they can constitute an unsubstantiated statement of nil effect that may not be contested during the process. The MfE guide is designed to get people thinking on a broad level about effects and the environment.

*Use a number of resources to identify potential effects.*

People going through the AEE process should use their own knowledge, that of others including the council and affected parties, and the relevant policy statements and plans. In cases where complex technical issues are involved, it may be desirable for the AEE to be subject to an independent review. Each is important, as considering one without the other may mean an applicant fails to identify all of the potential concerns associated with the proposal. For example, using the information contained in the relevant plan may not identify any particular effects resulting from any unique characteristics of the proposed site and, quite naturally, a neighbour may see a proposal differently from an applicant.

*One resource available for use are statutory instruments.*

Council's policy statements and plans should be used to identify issues of concern (or potential effects).

A key point made here is that reference to plan provisions is truly important in the preparation of an AEE. While the RMA doesn't require an AEE to assess the plan provisions, only the effects of the proposal, statutory instruments can be used to identify effects that may be of concern to the council and the community. The guide does not advocate quoting *ad nauseam* from the plan. Rather, it advocates that an applicant apply the effects identified as being of concern in the plan to their proposal. This is most true for (full) discretionary and non-complying activities.

For controlled and restricted discretionary activities, the preparer is advised to only address issues identified in the plan. For (full) discretionary and non-complying activities, however, the potential effects will be as broad or narrow as necessary. The objectives and policies of relevant documents may be of some assistance in issue identification. The MfE guide gives some practical examples of how to use plan provisions to assist in issue identification and then progresses these through such later steps as the ranking process. It also notes that using the plans in this way can help determine the extent of effort required by a party preparing an AEE document.

The issues and information requirements that are identified in a council plan are, there-

fore, assumed to have a significant impact on the quality of the AEE provided. This is really important to plan drafters. If significant issues are omitted from the plan, then it may be that applicants who consult the plan will not give full consideration to all the effects of their proposal. To help combat this, the guide emphasises obtaining information from a range of sources, and looking for gaps.

*Familiarity with the site and its environs is also promoted.*

Another source of information is the site. A preparer needs to get to know, if they don't already, the site. Site knowledge is vital. The plan can go so far in identifying generic effects, but the site's characteristics, and those of the wider environment, will really determine the scale and nature of effects.

*Discussions with other parties are advocated.*

Other people's knowledge is also important and useful. Preparers of AEEs need to consider other people's views, look at consultation as an opportunity, and be willing to communicate openly. Consultation should be seen as an opportunity to identify other issues or resolve uncertainties. It should be seen as much more than just an opportunity to tell people about the project.

The role of consultation in the process is critical in avoiding, remedying or mitigating adverse effects. It is also quite often the key to success, often being more effective in demonstrating the acceptability of a proposal than technical argument — especially at a political level.

A key message in the guide is that while consultation with other people can be initiated at any stage of the process and as often as required, it needs to be initiated early, before the AEE document is written, and certainly before its detail has been finalised.

Early and full consultation is encouraged as it can:

- identify and resolve issues (especially by bringing in local knowledge and helping to identify different ways of addressing particular effects);
- reduce affected parties' concerns with and/or opposition to a proposal; and
- enable written approvals from affected parties to be obtained (and noting that if consent from an affected party cannot be obtained, the decision not to notify is effectively taken away from the council).

*Council checklists and other measures may be available and should also be used where possible.*

Preparers of AEEs are encouraged to seek out any checklists a council may provide (especially for activities that are often undertaken in the area). Again, however, preparers are advised that checklists are tools and have limitations. They are designed to cover most potential effects associated with an activity, so will be quite broad and may not address matters that are peculiar to a particular site (e.g. vegetation and topography).

The council (or more correctly the council staff) should not be used as *de facto* consultants. An applicant is advised to have thought out in advance what is required, and to



know what information is needed from the council. Applicants are also warned about asking for advice as opposed to seeking information. In this respect, preparers of AEEs are warned to take care when receiving advice, quoting that advice and, in particular, using it to suggest an application has already received a *de facto* approval.

Furthermore, sometimes people will expect payment for assistance given. In particular, this includes the council and persons or bodies offering specialist services, including iwi.

*Effects that are not understood should not be ignored.*

Filling in the blanks, but ignoring the key issues, is likely to result in an application being placed “on hold”, and result in the council commissioning reports, or lead to an application being declined on the basis that it fails to address the potential effects of an activity. If people have difficulty identifying or adequately mitigating adverse effects, they are advised to seek help before making significant investments of time and money.

### *Basic Requirements*

The final AEE document should contain a number of core basic requirements. An application should not be lodged knowing the AEE is deficient.

In this respect, once the process is complete, an AEE should be able to be drafted that:

- contains an accurate description of the activity;
- contains an accurate description of the site and locality;
- contains an effects checklist, which ranks the effects and discusses how any adverse effects may be avoided, remedied or mitigated, and outlines any consultation undertaken and its results;
- clearly identifies any restrictions on a proposed activity where these have been agreed to;
- resolves affected parties’ concerns;
- where significant effects are likely to occur, identifies alternatives considered and why they were rejected; and
- identifies any proposals for monitoring potential and actual effects.

### *Comment*

The MfE preparation guide is quite substantial. It covers not only the process for preparing an AEE and how it should be drafted, but also the theory of why resource consents are needed, what an AEE is, why it is needed, and how comprehensive it needs to be.

The question and answer format used in the guide focuses on key concepts within the chapters and allows the reader to by-pass certain sections of lesser interest, conversely drawing attention to matters for which answers are specifically sought.

There may be potential for criticism because of the length of the document. But, instead

of criticising, it may be preferable to look at it in another way. If a proposal is likely to have so few effects that it doesn't require a considered process such as is promoted, then why does it require a consent in the first place?

This leads into the final key message of this particular publication and that is *to become involved in the regional policy statement and regional and district plan preparation processes*. Lessons learnt from the consent process can be used in a positive way to help develop the next generation of statutory documents. Such documents are critical to those involved in the AEE process. They are supposed to identify the issues of importance to the community and to provide guidance regarding what an AEE will need to address. They are the vehicles for determining whether or not resource consent is needed and how that consent is likely to be processed.

Feedback into the plan can help to:

- identify whether activities or structures requiring resource consent are appropriately included in the plan;
- ensure that a region or district's significant resource management issues are correctly identified;
- ensure that the ways of addressing resource management issues are appropriate and practical;
- ensure that the consent categories and performance standards are appropriate, especially in considering cumulative effects; and
- identify the basic information requirements that an AEE should address.

### **Auditing of Assessments of Environmental Effects**

This guide to good practice contains reminders and procedural advice, discusses case law and contains a number of examples of information or questions that councils or individual staff may wish to develop. Rather than being limited to evaluating just the information contained in an AEE document, it deals with the broader elements of processing consents. It also looks at using information in the AEE document to make decisions, such as whether or not an application should be publicly notified, or whether consent should be granted and, if so, should conditions be attached. It will be difficult to complete any of these tasks if the AEE report is unsuitable in the first instance, so the council also has a critical role in setting the standards for and maintaining the quality of AEE documentation.

#### ***The Council's role is to audit the AEE***

Chapter 1 of the MfE Audit Guide sets the scene. It argues that the council's role is to audit the AEE document, which accompanies the application for resource consent. This is not always current practice. In the past, many councils have largely duplicated AEE documents. Decision-makers then read the summary duplication report, rather than the application. This is not necessarily good practice, although it can be said that the quality of AEE documents often currently presented and received by councils, doesn't al-

ways give much scope for an alternative practice. Unless the quality of AEE documents lodged is improved, it will be difficult for councils to adopt a true audit function. What is required is an impetus for an improved AEE process and resultant changes and improvements to processing practice (along the lines of auditing as opposed to duplicating).

*The council's audit role is directly related to the way an application is processed and to decision-making.*

The audit process should identify areas where there are differences of opinion or deficiencies in information provision. It should determine how an application is actually processed (i.e., as stated before, either with or without notification).

The audit role should not duplicate the material in the AEE document (or the application as a whole), nor should it prepare material that has not been provided. As far as the Resource Management Act 1991 (RMA) is concerned, it is the applicant's role to apply for a resource consent, and to meet the requirements of section 88 (which includes the requirement to prepare an AEE) and section 92 (which requires that further information be provided in certain circumstances).

While a council can commission reports, these should relate to auditing the AEE document, and should not be required to "fill in the gaps" of the application or duplicate information already provided. The audit process includes providing a report to the decision-maker which recommends accepting or rejecting the material in the AEE document.

The guide recommends that this report comments only on those parts of the AEE document where opinion may differ. It should not repeat, to any significant degree, such matters as the site description, the application details, the proposal, or the analysis of effects that are agreed. It should be assumed that the decision-maker has read the actual application before making a decision. However, if the AEE document is very technical or lengthy, a brief summary of the facts may be useful. Any outstanding issues should be the subject of a section 92 (RMA) request for further information, and any contentious issues should then become, and remain, the focus of the AEE audit document. This means that the applicant, the processing party, any submitters, and the decision-maker(s) can all focus on areas that are not in agreement.

While for all activities the audit function relates to the information that is supplied (judging the adequacy of that information, including accepting or rejecting subjective opinions), this function varies according to the status of consent being sought.

- For controlled activities, the audit function relates to the need to impose conditions according to the matters over which the council has retained control.
- For restricted discretionary activities, it relates to whether or not consent should be granted and whether or not conditions should be imposed relating to matters over which the council has retained its discretion.
- For discretionary activities, it relates to whether to grant or refuse consent and whether or not there is any need to impose conditions on any consent granted.

- For non-complying activities it relates to the ‘test’ in section 105 (2A). This requires that the consent authority must be satisfied that the adverse effects on the environment (other than any effect to which section 104(6) applies) will be minor, or if this test cannot be satisfied, that the application be consistent with the plan’s objectives and policies. If one test is met, then the audit function extends to whether consent is granted, subject to conditions or otherwise.

Essentially, there are three phases of the audit process. These are pre-lodgement, lodgement and processing.

### *Pre-lodgment phase*

*The council’s role in auditing AEE documents extends to the provision of information prior to the lodgement of an application.*

While the council should not be called upon to provide a consultancy service, staff have a crucial role in providing accurate information concerning the consent process to applicants, where applicants seek prior advice. While a number of resource consents are received without warning (and without early discussion with the council), it is only by clearly establishing the consents required and the information needed to accompany those applications, that the quality of applications received will improve.

Every council has a slightly different style. What is important is that their individual processes are clear and systematic. It is important that all users are comfortable with the approach being implemented and that good outcomes in the form of accurate AEE documents are lodged.

To achieve such outcomes, a council must know what an adequate AEE is expected to contain and then be able to apply that to the specifics of individual applications. The minimum requirements for an application must be based on section 88 of and the fourth schedule to the RMA. Accordingly, there is really no minimum for an AEE document other than it must provide sufficient information to enable a proper assessment of the effects the proposed activity will have on the environment. The Fourth Schedule in the RMA is merely a guideline, not a blueprint. Completeness and correctness are, in theory, essentially discretionary. In practice, however, the elements of completeness and correctness should, at least in the majority of cases, be both definable and defined.

### *Lodgement phase*

*The practice of auditing AEEs and receipting them once this is complete is an abuse of the time provisions in the RMA.*

The time restrictions set out in the RMA refer to the period between receipting an application and undertaking various tasks. Receipting an application is based on the council receiving a complete application, which may contain an AEE document that covers all the necessary matters, but is substandard in respect of the quality of that information. Staff should resist the temptation to simply receipt applications and then peruse them at a later time.

The pre-receipting process is extremely important but fraught with difficulty. It may

not be easy for pressured council staff to ask deliverers of applications to wait while they check the adequacy of information provided. It is vital that a council resources the application checking phase as it has the potential to cause major problems when not addressed properly. Even basic things like the completion of a standard pre-application checklist by an applicant (and an assessment of its completeness by the person receiving the application) should increase the level of consistency in handling applications.

### *Processing phase*

*Responsibility for processing should be allocated on an application by application basis.*

One consent processor should be allocated an application to process, although there may be difficulty with complex technical issues. The allocation process should recognise the skills and experience of staff members and take into consideration the likely complexity of the application. Ideally, the application process should be driven as little as possible by the desire to achieve equity in the number of applications each consent processor currently has. Overall responsibility should include all processing aspects (including ensuring compliance with time frames, co-ordination of specialist input, etc.).

*An initial assessment and a site inspection should be undertaken and the consent processor should confirm their ability to process the application.*

An initial assessment of the application should be made promptly with three key functions in mind:

- The first function is checking what resource consents are required and that the applicant has applied for all of them.
- The second function is checking the key anticipated effects that have been identified and if there may be any additional effects needing assessment, and whether the information required by the relevant plan or plans, consistent with the Fourth Schedule, has been included to the level of detail required.
- The third function is determining the application process (i.e. public or without notification).

Checking the level of detail required is important. Just as the plan gives guidance to those preparing AEE's, it should also guide those auditing them. The scale of the application, in accordance with the site, will also dictate to some degree its complexity. One of the keys to dealing with this is to ensure consistency. An application to undertake filling as part of a wider project requiring excavation should, for example, generally be treated in the same manner as an application to carry out the same level of filling subject to its own application even though the former may need to be assessed in more detail in the context of cumulative effects.

Again, the importance of a site visit should not be underestimated. The level of detail required will, to a large extent, depend on the nature and characteristics of the site and its environs.

Assessing the effects addressed is important. A person auditing an AEE document should ask themselves such questions as how an effect was identified and ranked, and whether

or not it has been accurately assessed and based on sound predictions. Auditors also need to look at whether or not people were given a chance to raise issues and whether or not these have been addressed, and whether or not any unacceptable effects (including cumulative effects) can be mitigated. Most importantly, that person also needs to ask what effects should have been addressed but have not.

The initial assessment should also ensure that obligations under section 8 (RMA) concerning Treaty of Waitangi issues will be met. Case law on these matters is not clearly established. However, the principles of the Treaty of Waitangi require more than just consultation. Council has an obligation to recognise *tinō rangatiratanga*, including managing resources and other *taonga* according to Maori cultural preference. It also has the obligation of active protection. Both principles require positive action and access to enough quality information to be able to fully consider the implications of the application on those interests. That duty will sometimes oblige the person reporting to the council to consult with *tangata whenua*. At other times an applicant's consultation may be enough.

*One definitive and exact request for further information should be made.*

A request for further information under section 92 (RMA), including contracting specialist advice, should only be made where it is necessary for better understanding of the application, where it would directly relate to the potential for significant adverse effects arising from a particular proposal, and where it would be focused on areas of omission. A request for further information should not cover material that can reasonably and lawfully be covered by conditions of consent.

It is important to note, however, that an applicant has a right to appeal or object to a condition in isolation from the decision to grant consent. Care must be exercised, therefore, if the precise nature of that condition is absolutely critical to whether or not a consent is granted.

Council staff may sometimes have 'insufficient understanding' of specialist environmental areas to require definitive requests for further information. The practice councils often adopt to address this is to refer an application to specialist advisers or consultants for comment. This is really part of the initial assessment process. Such specialist advice should be contracted to be provided within the time frames directed in the RMA. This should mean that the definitive request for further information can still be issued within the statutory 10 working days.

The MfE audit guide advocates that, even if the purpose of obtaining specialist advice is to assist in informed decision-making and ensure the best environmental outcomes, consultation with the applicant should occur before such advice is sought. While there may well be instances where an applicant would prefer decision-makers not to confer with a particular expert, an applicant should have the right to know what is sought, why and from whom, and to reconsider or withdraw their application if costly specialist advice is required, or to volunteer to get the advice themselves.

*A decision should be made regarding notification.*

Once any further information required is received and assessed, a council needs to

make a decision on notification. The importance of undertaking a site inspection before making this decision is again emphasised. A council that predetermines, for example, that all the neighbours, say to a depth of three sites, are potentially adversely affected, is failing to exercise its discretion on a case-by-case basis.

*The audit report should not duplicate the AEE document.*

The recommendation report by the council should emphasise the application and the AEE document lodged, then the audit — not the other way around. Applicants will not be happy paying for an audit that essentially restates their application over five or six pages then addresses an area of conflict in one paragraph with maybe one or two proposed conditions.

The council's audit report should focus on whether the effects identified as part of the AEE are correctly assessed and if not, why not. Specialist reports commissioned should form part of the audit document. Its bulk should be on the recommendations and conditions, where appropriate. A copy of the application (which the decision-maker is expected to read), notification recommendations and supporting effects checklists should be sent to the decision-maker as part of the audit report.

*The application needs to be assessed in accordance with sections 104 and 105 of the RMA, and reasons for granting or declining an application should be stated in full.*

Section 104 (RMA), which provides a suite of matters that are to be considered before a decision is made on a resource consent application, places Part II of the RMA as the primary matter for consideration. Everything in section 104 is subject to Part II. Where there is a conflict of interest between the matters of national importance (section 6 matters), or between the other matters to be considered (section 7 matters), the processor must measure the significance of the conflicting interests in light of the facts of the particular case. In general, it is accepted that the words “shall recognise and provide for” in section 6 has precedence over “shall have particular regard to” in section 7.

Subsection (a) of section 104 (1) refers to the actual and potential effects on the environment of allowing the activity. There is some debate as to whether this requires both positive and negative effects to be considered. The Environment Court has indicated that unless all the effects, positive and negative, of a proposal are considered together, the decision on whether a consent should be granted or refused may be incomplete and distorted. Case law indicates that these can be balanced, but not to the detriment of Part II matters, and without sacrificing environmental principles. Within these constraints, balancing can only occur on a case-by-case basis.

Subsections (d) - (f) in section 104 refer to provisions in a plan. If the opinions of the preparer of the AEE document are correct in the circumstances of the site, and the plan provisions are inappropriate, this should be recognised and acknowledged in the section 104 analysis.

Further, where there are both transitional and proposed plans, or an operative plan and a proposed plan, plan change or variation, the provisions of both documents must be considered. The stage that the proposed document is at will be important in determining the relevance and degree of importance placed on it in the consideration of section



104 matters. The extent to which the provisions of a proposed plan are relevant should be considered on a case-by-case basis. The High Court has given the following guidelines:

- the extent (if any) to which the proposed measure might have been exposed to testing and independent decision making;
- circumstances of injustice;
- the extent to which a new measure, or the absence of one, might implement a coherent pattern of objectives and policies in a plan.

Conditions, including monitoring, should be recommended where, after analysing the AEE and the application as a whole, effects that need to be avoided, remedied or mitigated have been identified.

Recommended conditions should be discussed with the applicant first. If agreed to, a decision may then be able to be made under delegated authority, instead of having to go before a hearing committee.

The AEE document should be used to help develop conditions and monitoring strategies. Conditions must fairly and reasonably relate to the development authorised by the application, and they must not extend the scope of the application. The AEE document should also be used to determine the length of the consent (where applicable) whether review conditions are appropriate (for example where the actual adverse effect in question cannot be foreseen, although the type of effect can be specified with some certainty) and whether monitoring is required. How much monitoring or review of conditions is required should reflect the level of risk of adverse effect.

Before monitoring is imposed, a council should establish what use the data will have. Data collection is useless unless it is linked to providing a specific result. The amount of information supplied with the application and any modelling and testing provided as part of the AEE should affect the length and frequency of monitoring. Monitoring of effects should also be incorporated into the plan provisions over time.

### *Feedback should occur*

Feedback can occur through a number of channels. This includes:

- to other resource consent processors or staff within council (e.g. counter staff, engineering advisors);
- to key parties making applications;
- to the decision-makers; and
- to the regional policy statement and/or regional and district plan process.

Without feedback there will be little guidance on whether practice has improved or further improvements are required. The audit function is likely to be compromised by accepting and processing applications with inadequate AEE documents. Instead of complementing each other, the preparation and auditing of AEEs will continue to cause conflict.



## Conclusion

While it is difficult to prepare an adequate AEE without some guidance from the Council regarding what it requires, it is also impossible for a Council to swiftly and effectively audit an inadequate AEE. The quality of AEEs is unlikely to improve unless a consent authority demands that this happen and is then well-placed to back its demands by providing appropriate prelodgement guidance, by receiving only adequate applications and then by efficiently processing the applications received. When this occurs, preparers of AEEs will need to rise to the challenge.

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## CHAPTER 3

# Environmental Risk and the Role of ERMA New Zealand

Stephen Thornton\*

### Introduction

Inevitably, when we look to the future with a view to making decisions about what we ought to do, we are acting in the face of uncertainty. There is a chance that things could turn out differently to what we might expect. There are risks associated with our actions (or non-actions).

The complexity of environmental systems means, arguably, that risk is a much more prominent feature of environmental decision-making than it is in other areas. Whatever the case, risk analysis and risk management have certainly become much more readily accepted in recent years as a core part of good environmental management. The science and practice of environmental risk management is now a well established, albeit still evolving, discipline.

This chapter begins by providing an overview of the Environmental Risk Management Authority (ERMA) and how it approaches its functions under the Hazardous Substances and New Organisms Act (1996)(HNSO). It then describes the experience of the Authority in considering applications made to it to date.

Finally, some of the more interesting and problematic aspects of risk management, based on the author's experience as a risk analyst within ERMA New Zealand, are covered, including risk identification, the nature of uncertainty, values and ethics.

The views expressed are those of the author, and do not necessarily reflect the views of the Environmental Risk Management Authority.

### The Environmental Risk Management Authority

The Environmental Risk Management Authority was established under the Hazardous Substances and New Organisms Act 1996 as an independent, expert, decision-making body.

Its primary function is to consider applications to introduce new hazardous substances and new organisms (including genetically-modified organisms) into New Zealand. In addition, it has a number of ancillary roles including:

- provision of advice to the government;
- monitoring and reviewing the performance of the Act in achieving its objectives;
- raising awareness of the adverse effects of hazardous substances and new organisms;
- co-operation and contribution to international fora; and

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- conducting inquiries into incidents and emergencies.

The Authority is also obliged to keep registers of hazardous substances and new organisms, which have been approved under the HSNO Act and any other Act.

The HSNO Act provides the directions under which the Authority must carry out its functions and duties. The purpose of the HSNO Act is contained in section 4 of the Act and is as follows:

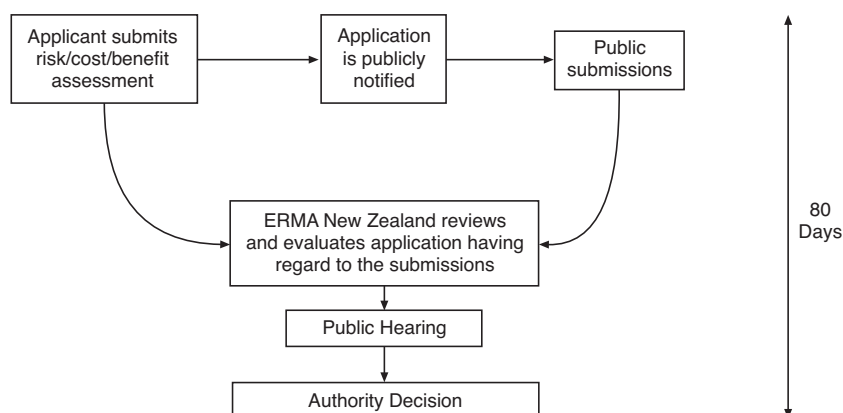
*To protect the environment and the health and safety of people and communities by preventing or managing the adverse effects of hazardous substances and new organisms.*

Of particular note is the fact that ‘environment’ is defined extremely broadly in the tradition of the Resource Management Act definitions. It encompasses natural, physical, social, cultural, economic and aesthetic conditions.

The Authority is supported in its work by a Secretariat known as ERMA New Zealand, organised into Operations, Science and Analysis, Corporate Services, Transfer of Substances and Communications divisions.

### The Authority’s decision-making

The process for considering applications is comprehensively defined within the HSNO Act. It varies a little depending on the precise nature of the application. For example, the process for considering an application to import a new organism into a contained environment, such as a laboratory, is different to that applying to an application for the release of the organism into the environment. However, in general, the application follows the path outlined in Figure 1.

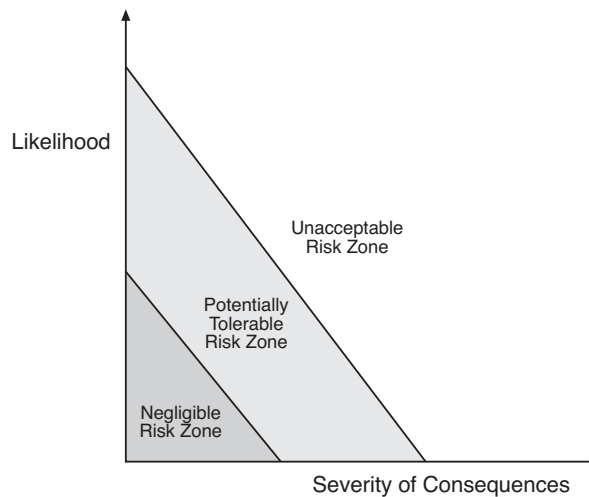


*Figure 1: Generalised application process*

Essentially, the applicant is required to submit a risk/cost/benefit assessment. The application is publicly notified and public submissions are called for. ERMA New Zealand then reviews and evaluates the application having regard to the submissions. If requested by any of the parties, a public hearing is held followed by the Authority’s

decision. In general, the process is designed to be able to be concluded within a period of 80 days, although this may be extended if additional information is required.

The Authority approaches its decision-making within the framework shown in Figure 2. It provides for the risks associated with an application to be classed, in aggregate, as falling in one of three zones. Risks are defined as being a combination of the magnitude of the adverse consequences and the probability that the consequences will eventuate.



*Figure 2: Zones of risk relevant to the Authority's decision making*

The first zone is the zone of negligible risk. Negligible risks are those risks that are of such little significance in terms of their likelihood and effects that they do not require active management and/or after the application of risk management can be justified by very small levels of risk.

At the other end of the spectrum is the zone of unacceptable risk. Unacceptable risks are risks of a type or level that the Authority will not accept (after taking account of the scope for risk management) irrespective of any benefits that might accrue. In between these two zones is the potentially tolerable risk zone. Within this zone the Authority must weigh up the benefits on the one hand with risks and costs on the other.

The HSNO Act defines the range of risks, costs and benefits relevant to the Authority's decision-making. They are extremely broad and include the following:

- sustainability of all native and valued introduced flora and fauna;
- the intrinsic value of ecosystems;
- public health;
- relationship of Māori and their culture and traditions with their ancestral lands, water, sites, etc;
- economic and related benefits; and
- New Zealand's international obligations.

In considering applications, the Authority must determine what its approach to risk will be in each case. The government has given the Authority some direction on this matter through the Methodology Order-in-Council promulgated early in 1998. It obliges the Authority to be more cautious when:

- exposure to the risk is involuntary;
- the risk will persist over time;
- the risk is subject to uncontrollable spread;
- the potential adverse effects are irreversible; and/or
- the risk is not known or understood.

### **Experience to date**

At the time of writing, only the new organisms part of the HSNO Act was operational and the hazardous substances part of the Authority's work was expected to begin later in 1999. The Authority had made decisions on 10 applications, all of which were for the development or importation of new organisms in containment. There had been no applications to release new organisms (including genetically modified organisms) into the wider New Zealand environment.

All of the applications were deemed to be in the negligible risk zone. None were declined. As a consequence, many of the more broader methodological issues associated with decision-making in the tolerable risk zone, such as how one compares seemingly incommensurable risks and benefits, have largely been untested.

However, although it is difficult on the basis of the limited experience to gain much of an insight as to how the Authority will approach its decision-making, it has been possible to form some views about how the process is working generally and, in particular, how applicants and submitters are going about their tasks.

With respect to applicants, it is clear that many are still struggling to come to terms with the requirements of a systematic approach to risk assessment. To some extent this is not surprising given that many of the applicants, to date at least, have come from Crown Research Institutes and may not be well-versed in the process of risk analysis and risk management.

With respect to the submitters, it is noteworthy that many of the submissions are generic in nature, to the extent that they focus on the pros and cons of genetic modification generally, for example, rather than the pros and cons of the proposed modification in front of the Authority. It is also clear that questions of values and ethics have predominated in the submissions.

### **Key issues**

Some of the key issues relevant to the Authority's decision-making function that have emerged to date include risk identification, uncertainty, values, and ethics.

### *Risk identification*

Before beginning the discussion of risk identification, it is useful to remind ourselves of the risk management process. Figure 3 sets out this process as described by the Australia New Zealand Risk Management Standard, AS/NZS 4360:1999. Broadly speaking, it consists of five main stages as follows:

- *establishing the context*, in which the risk management tasks are related to the wider goals, objectives, and interests and capabilities of affected parties;
- *identifying risks*, where one considers what might happen;
- *risk analysis*, where one considers in more detail the likelihood of events occurring and the magnitude of their consequences;
- *risk evaluation*, where the decision-maker makes some judgement as to whether the risks should be tolerated, taking account of the scope for risk management; and
- *risk treatment*, where the risk management strategies are prepared and ultimately implemented.

All of these stages are accompanied by a process of monitoring and review, and risk communication.

Risk identification is arguably the most important step in risk analysis. Clearly, if a risk is not identified in the first place, then there is no hope of evaluating it and treating it subsequently.

The process of risk identification is interesting in that it requires a combination of structured and unstructured thinking. It requires one to consider both the obvious things that can happen and also things that may not seem obvious, but which may still be important if indeed they did happen.

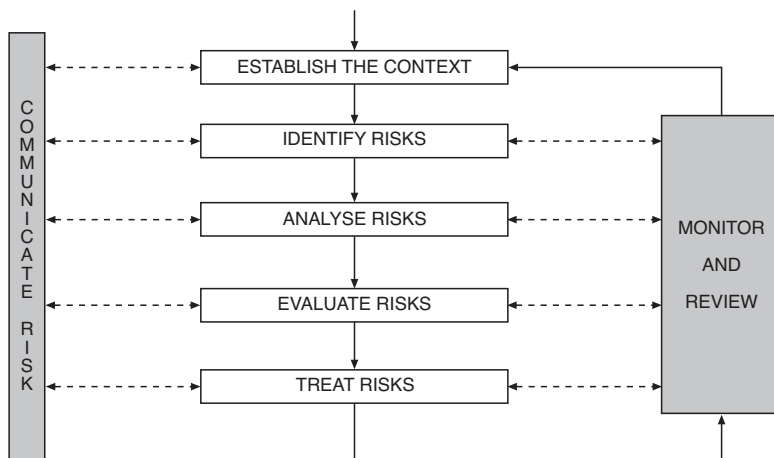


Figure 3: The risk management process (source: AS/NZS 4360: Risk Management)

Techniques of risk identification include (to name but a few):

- *what if analysis*, in which the imagination is given free reign to range broadly in postulating what might go wrong with a given proposal;
- *scenario analysis*, in which a set of representative outcomes ranging from “best case” to “worst case” are modelled;
- *review of historical data*, involving a comparison of the present situation with like past situations; and
- *check lists*, in which a series of prompts are used as an aid in identifying what might go wrong with a proposal.

The structured/unstructured nature of the task means that risk identification is particularly well-suited to group brainstorming techniques. It is particularly useful to include within the group a variety of types of thinker, ranging from those deductive reasoners who can follow through the logical consequences of any scenario, to the lateral inductive thinkers capable of generating all of the matters that need to be canvassed. Sceptics and pessimists have their own special place!

### *Uncertainty*

In risk analysis one is always dealing with uncertain information. To ensure that decisions are made in the best possible way it is important to understand precisely the nature of the uncertainty one is dealing with.

To this end, risk analysts often distinguish between variability and uncertainty. Variability is a function of the nature of the system. For example, when one is looking at the importation of camels from Australia, and in particular the likelihood of a camel being imported from Australia being disease free, there is likely to be a considerable amount of variability in the incidence of diseased camels imported due to the fact that some of the camels in Australia will have diseases and some won't.

This concept can be distinguished from uncertainty. Uncertainty describes a lack of knowledge. For example, if a camel is currently being unloaded at Port Wellington, it may not be possible to know whether or not that particular camel is disease free. There is no variability involved here to the extent that the camel either is disease free or it is not.

The distinction between uncertainty and variability is not just one of academic interest. It becomes important in a practical sense when considering the possibility of generating new information to help with decision-making. For example, if risks are due to variability there may be little scope for improving the decision with better information. However, if there is uncertainty due to lack of knowledge, then there may be advantages in postponing the decision until that information is generated.

The latter case, can be represented as shown in Figure 4. It is sensible to generate further information until the marginal cost of obtaining the additional information exceeds the marginal benefit of that additional information.



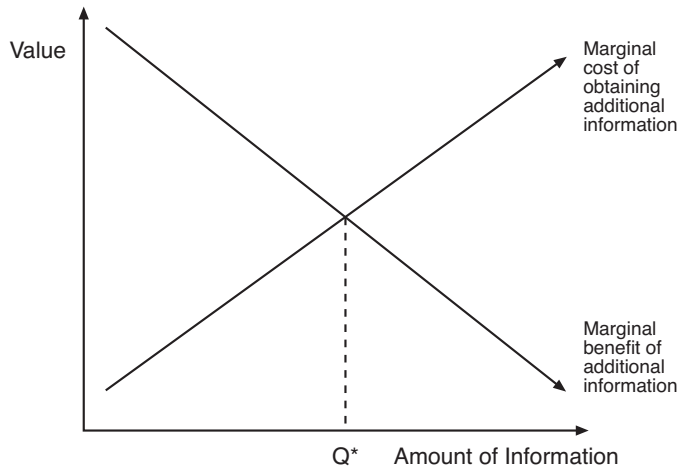


Figure 4: Obtaining additional information when faced with uncertainty

### Values

As mentioned earlier, values have figured prominently in submissions received by ERMA in applications to date. This means it becomes extremely important to be able to approach the analysis of values in a rigorous and robust way.

In the author's view, it is useful to distinguish between two types of value statements. The first might be termed empirical value statements. These are claims about how people value particular outcomes. An example of a value statement of this type is, "Most New Zealanders do not want genetically-modified food".

The second type of value statements are of a more normative nature. They consist of assertions about what ought to be done. Examples of statements of this type include, "All genetically modified organism applications should be rejected" and, "Genetic modification is morally wrong".

This type of distinction helps in the analysis of value statements. It is clear that empirical value claims are amenable to verification or falsification. For example, if somebody claims that most New Zealanders do not want to eat genetically modified foods, it is possible to go out and verify or falsify that statement (through a survey, for example).

In contrast, normative value assertions are not amenable to such analysis. That means it is not possible to go out and measure, or assess in any objective way, whether genetic modification is morally wrong in the same way as we would assess whether or not New Zealanders do not want genetically-modified food. However, this does not mean that progress cannot be made with normative value assertions. Rather, it means that different techniques of analysis are required. In particular, it becomes necessary to rely more heavily on a scrupulous examination of the robustness of the arguments presented.

### Ethics

Ethical claims are essentially a special type of normative value statement. Thus, in

examining the validity of ethical claims, it is necessary to look carefully at the supporting argument.

As indicated earlier, ethical claims have featured strongly in submissions received by the Authority to date. However, in the author's view, one of the most disappointing features of these ethical claims is the fact that the justification for the particular ethical views presented is mostly lacking.

There are at least two possible explanations as to why this should be the case. First, it may be that (as with risk analyses) parties to HSNO processes may not be experienced in this area and it will take a little time for the required proficiency to develop. Alternatively, it could be that submitters are aligning themselves with subjectivist or relativist theories of morality, and thus do not feel the need to provide reasons for their positions.

Ethical subjectivism is the view that there is no objective right or wrong, but that ethics is simply about feelings. Cultural relativism is a view that rightness and wrongness are culturally bound and culturally determined. Both of these theories have been the subject of considerable analysis and have generally been found wanting as ethical theories.

Although there is not the space to examine fully these theories here, the following provides a glimpse of why these theories have been rejected by most moral philosophers.

Firstly, ethical subjectivism does not seem to allow scope to be mistaken about moral judgements. It implies people are infallible. (The fact that people are not infallible suggests that ethical subjectivism cannot be correct.)

Secondly, ethical subjectivism does not seem to allow for the possibility of two people putting forward alternative moral views to be viewed as being in any kind of disagreement. (The fact, to all intents and purposes, they do seem to be disagreeing suggests that ethical subjectivism cannot be correct.)

With respect to cultural relativism, the weakness of the theory is tied up with its inherent attraction. If a position is adopted that rightness and wrongness should be judged against the moral codes of society, it can be concluded that slavery in nineteenth century America was right (as it was consistent with the moral code) and what's more that those who fought against slavery were morally wrong (as they were acting against the moral code), etc., etc.

How, then, can progress be made with ethical claims? In brief there are two main responses to this question. The first is that consequences are always important. That is, when examining the ethics of a proposal it is always important to examine the consequences that might flow from that proposal. The second point is that reason and logic are the tools of the trade. As indicated above, the fact that ethics cannot be measured in the same way as empirical values, means that an examination of the robustness of arguments put forward in support of various ethical positions is all that is left. If there is no argument presented, then there is no way of determining whether or not the ethical position presented is any better than any other ethical position. We are no further advanced.

## Conclusions

The establishment of the Environmental Risk Management Authority marks an important milestone in the practice of environmental risk management in New Zealand.

In addition, the work of the Authority provides a context within which many of the interesting and exciting challenges, both at the practical level and at the intellectual level in the field of risk management, can be examined and progressed.

At the practical level, there is considerable scope for improving environmental and public health risk assessments when dealing with the potentially diverse risks associated with the introduction of new organisms and new hazardous substances. There is also the challenge of providing better assessments for the softer side of the information base, values and ethics.

At the intellectual level, there is the challenge of the evolution and implementation of the decision-making methodology itself, in particular the weighting of the seemingly incommensurable factors that need to be considered in the forming of a judgement as to where the balance of risks, costs and benefits might lie.

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## CHAPTER 4

### Maori and the Resource Consent Process

Basil Keane\*

#### Introduction

This chapter considers issues arising from the interaction between Maori and resource consent applicants in the resource consent process under the Resource Management Act 1991. During research in connection with preparation of a video for *Nga Kaiwhakamarama I Nga Ture* entitled *The RMA - an introduction for Maori*, a number of issues concerning both Maori and applicants, became apparent. This chapter will look at these issues and argue that the most practical option for both parties is to work together to resolve differences that they have. In support of this conclusion, the process will be looked at from the point of view of Maori, and then from the perspective of resource consent applicants.

#### The Resource Management Act

The purpose of the Resource Management Act 1991 is “to promote the sustainable management of natural and physical resources” identified in Section 5, Part II.<sup>1</sup> In promoting the sustainable management of resources, decision-makers are required to consider sections 6 to 8 of the Act. These sections are accepted as being the principles of the Act.<sup>2</sup> The sections that are specifically relevant to Maori are sections 6(e), 7(a) and 8 of the Act. To many Maori new to the area of resource management, these sections initially appear to hold great promise. Unfortunately, this optimism does not always last as Maori become more aware of the reality of the situation.

Under section 6(e) decision-makers are required to “recognise and provide for...the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, *waahi tapu*, and other *taonga*”.<sup>3</sup> Because Maori do not need to show that they still own lands for them to be ancestral lands, section 6(e) has been more useful to Maori than it would otherwise have been.<sup>4</sup> This is because most of the land, water, sites, *waahi tapu* and other *taonga* that are the subject of the resource consent process are no longer owned by Maori. Another useful decision for Maori is that of *CDL Land NZ Ltd*, which determined that it was not necessary to prove a site was *waahi tapu* by reference to archaeological sites. It was enough to show that the area was *tapu*.<sup>5</sup> However, despite these decisions, the Planning Tribunal, and later the Environment Court, have found that the matters contained in section 6(e) can be balanced against other considerations. The former Planning Tribunal (Environment Court) said that a party cannot expect to achieve total success where a case involved *waahi tapu*.<sup>6</sup> The Environment Court in *Waihi Gold Co.* has also said that, though the streams relevant to the case were highly valued *taonga*, the concerns could be overcome when balancing them against the benefits that could result in that case.<sup>7</sup> Therefore, while Maori are able to

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utilise these sections, they may find that they still fail to prevent an application going ahead as these concerns are overridden by other concerns.

Under section 7(a), decision-makers are directed to “*have particular regard to*” ‘*Kaitiakitanga*’. ‘*Kaitiakitanga*’ was originally defined as “the exercise of guardianship [including] the ethic of stewardship”.<sup>8</sup> Perhaps because of this very broad definition, the Environment Court found that *kaitiakitanga* was not limited to Maori, but was a general concept that could apply to anyone.<sup>9</sup> Many Maori found it difficult to comprehend how the concept of *kaitiakitanga* was not limited to Maori. Fortunately, this decision has now been addressed by Parliament changing the definition of ‘*Kaitiakitanga*’ to:

*the exercise of guardianship by the tangata whenua of an area in accordance with tikanga Maori in relation to natural and physical resources; and includes the ethic of stewardship (emphasis added)*<sup>10</sup>

In *New Zealand Rail Ltd v Marlborough District Council*,<sup>11</sup> and *Mangakahia Maori Komiti v Northland Regional Council*,<sup>12</sup> it was decided that the principles of the Treaty of Waitangi, referred to in section 8, included consultation. More recent cases, such as *Kemp v Queenstown Lakes DC EnvC C229/99*, and *Ngati Kahu Ki Whangaroa Co-op Soc Ltd v Northland RC EnvC A95/2000* have supported this approach. However, there have been two approaches to consultation. These approaches have been referred to by the Environment Court in *Mason-Riseborough*, as the “obligation” decisions and “no obligation” decisions.<sup>13</sup> In referring to what has been characterised as the “obligation” decisions, the Parliamentary Commissioner for the Environment has noted that the “...line of cases commencing with *Gill v Rotorua District Council* supports the existence of a duty on consent authorities to consult with *tangata whenua* in relation to resource consents...”. The Commissioner has also noted, in referring to the “no obligation” decisions, that “[these] decisions of the Planning Tribunal have departed from the *Gill* line, commencing with *Hanton v Auckland City Council* and including *Greensill*...[where]...Judge Treadwell stated explicitly that there was no compulsion to consult on the part of the applicants nor council officers”.<sup>14</sup>

On the other hand, in *Tangiora v Wairoa DC EnvC A6/98* an alternative explanation to the “obligation” and “no obligation” decisions was put forward. While endorsing *Mason-Riseborough*, the court did not support the suggestion that there were two lines of cases. Instead, the court suggested that the principles of the Treaty of Waitangi, which included consultation, needed to be taken into account in all cases. However, the individual circumstances of each case would influence what action was required by the principles of the Treaty.

Whether there are actually two approaches, or whether consultation depends on the individual circumstances of the case, it is still difficult to be certain on the need to consult under section 8. However, there are some general principles that appear to be undisputed. Firstly, as the Tribunal in *Rural Management Ltd v Banks Peninsula* has pointed out, a consent authority is acting in a quasi-judicial capacity and accordingly it is not appropriate for it to consult with *tangata whenua*. If consultation is considered necessary, then officers of the consent authority may consult and then report back to the

consent authority.<sup>15</sup> Secondly, although a resource consent applicant may not be required to consult with *tangata whenua*,<sup>16</sup> or anyone else for that matter, it is considered wise to do so, particularly where proposals may affect matters referred to in sections 6(e) or 7(a).<sup>17</sup> Thirdly, whether or not to consult, and the extent of consultation will depend on the extent and likely effect of the proposal under consideration.<sup>18</sup> Finally, in undertaking consultation it is important to ensure that the party consulted has adequate information to enable it to respond intelligently and the party consulting consults with an open mind, and a willingness to change.<sup>19</sup> To be successful, it is essential that the consultation process be managed in such a way that the exchange of information is two-way.

### Maori Perspectives

It is this framework of the Resource Management Act 1991 that Maori utilise when looking at particular resource consent applications. It is also within this framework that Maori have experienced a number of problems. The first problem Maori have experienced has been the strength of sections 6(e), 7(a) and 8. The second problem which is related to the first, has been the interpretation of these sections by the Tribunal and the courts. The third problem Maori have faced has been, in general, the burden on time and resources in terms of the resource consent process, and, in particular, in terms of the consultation process.

The strengths of sections 6(e), 7(a) and 8 have been a major concern for Maori. Firstly, there is the actual weight to be placed on each section. Section 6(e) requires decision-makers “to recognise and provide” for the relationship of Maori with those matters listed in the section. This requires a two-step process in which the relationship must first be established and recognised and then provided for in some way.<sup>20</sup> Furthermore, when decision-makers consider matters within section 6 in their balancing exercise, they must give it due emphasis. They cannot let it be just an equal part of a general balancing exercise.<sup>21</sup> Section 7(a) requires decision-makers to “*have particular regard to*” ‘*Kaitiakitanga*’. Decision-makers must recognise section 7 matters as important to the decision and must consider and weigh them before coming to a conclusion.<sup>22</sup> However, while these matters need to be considered, they should not be seen as requirements or standards which need to be fully met.<sup>23</sup> Section 8 requires decision-makers to “*take into account*” the Treaty of Waitangi. Things which must be taken into account will affect the discretion of the decision-maker. Furthermore, the decision-maker is required to weigh things that must be taken into account with other relevant considerations and be able to demonstrate that this has been done.<sup>24</sup>

So, each section has a different, often unclear, weight attributed to it by the Act. Furthermore, these sections are only some of the matters to be considered by decision-makers and must be balanced against the other sections in Part II of the Act. It is the strength of the sections themselves, combined with the requirement that they be balanced against other matters, that have made many Maori feel that Maori concerns have been given too little statutory protection.

The way that the sections have been interpreted by the courts has also caused concern for Maori. Many Maori feel that the interpretation by these bodies often leaves uncer-

tainty and demonstrates a mono-cultural bias. An example of interpretations, which lead to uncertainty, has been noted above regarding the interpretation of section 8, where it is now unclear for Maori, applicants and councils as to whether or not consultation will be required by the Environment Court. There have also been a number of examples of interpretations that suggest an apparent mono-cultural bias. One example, as noted above, was an interpretation of a Maori concept, '*Kaitiakitanga*', by the Environment Court as being a general concept which could apply to anyone, rather than just Maori. Furthermore, in cases such as *Mahuta v Waikato*,<sup>25</sup> *Ngati Wai Trust Board v Whangarei District Council*,<sup>26</sup> and *Waihi Gold Co v Waikato*,<sup>27</sup> it has been found that in balancing Maori concerns against other factors, Maori concerns are outweighed by these factors and, therefore, the proposals should be allowed to proceed.

The reason why Maori interests are outweighed by other interests is illustrated by the case of *Watercare Services Ltd v Minhinnick*. In this case an attempt had been made to get the Environment Court to grant an interim enforcement order under section 319 of the RMA to stop the construction of a sewer line across the Matukuturua Stonefields which are considered by *tangata whenua* to be *waahi tapu*. This attempt was made on the basis that the work was offensive and objectionable to such an extent that it would be likely to have an adverse effect on the environment under section 314(a)(ii) of the RMA. The Court of Appeal did not accept the High Court finding that an appropriate test to see whether the construction of a sewer line over *waahi tapu* was offensive or objectionable was to consider a reasonable Maori person who was representative of the Maori community. The Court instead considered that, whether or not this action was offensive or objectionable, should be considered from the perspective of ordinary reasonable persons.<sup>28</sup> As noted by Mikaere and Milroy in "Maori Issues", this illustrates that while the courts may represent the community at large, they do not represent Maori in 'any way, shape or form'.<sup>29</sup> Despite this, the view in *Watercare Services Ltd* has been adopted by the Environment Court in *Kemp v Queenstown Lakes DC*,<sup>30</sup> and *Te Ohu O Nga Taonga Ngati Manu v Stratford DC* where the court found that the test should be "...whether the 'reasonable person' who was properly informed would consider that a proposed activity was offensive to Maori".<sup>31</sup> Therefore, it is clear that when courts are to weigh all the matters under Part II of the Act, the weight that should be given to the Maori sections will be based on non-Maori perceptions of the importance of these matters.

Finally, the consultation process has also caused concerns for Maori. Many Maori involved in this area are concerned that there is no clear process to be followed and also that councils and resource consent applicants treat consultation as a box that needs to be ticked. Furthermore, it is unclear as to who resources Maori involvement in this process. Maori are often required to fund their own involvement on meagre resources. While many accept the burden due to their wish to be involved as *kaitiaki*, this does not lessen the reality of the burden. It is unclear under the Act as to who is required to fund Maori involvement in this process.

### **Applicant's Perspectives**

The difficulties involved in the resource consent process are not limited to Maori. Re-



source consent applicants also face uncertainty in considering whether or not to consult with Maori. In the *Quarantine Wastes* case it was noted that there is no obligation on applicants to consult with *tangata whenua* under the Fourth Schedule of the Act. Any potential requirement to consult falls on the consent authority, not on the applicant.<sup>32</sup> On that basis, applicants may feel that consultation is not something that they need to consider. However, there are other factors which point in another direction.

In the *Paihia and District Citizens Assn Inc* case it was noted that consultation may be prudent, particularly where proposals may affect sections 6(e) or 7(a).<sup>33</sup> In the *Aqua King Ltd* case the Tribunal found that a consent authority may, on the basis of section 92, require applicants to consult with Maori, so that it can be provided with information relating to *tangata whenua* interests.<sup>34</sup> Therefore, if applicants fail to consult, particularly where there are issues relating to Maori, they may find their application delayed by a requirement to go and consult. In addition, in the case of *Worldwide Leisure Ltd*, the High Court found that the council, in considering whether or not to publicly notify the application, should have ensured proper consultation was carried out. It said that it was necessary for the council to either obtain the written consent of the *tangata whenua* or notify the application.<sup>35</sup> It is likely that councils will now be more cautious about whether or not to notify an application that affects Maori, particularly where there has been a lack of consultation. Therefore, a lack of consultation may also lead to delays due to an application being notified, where it might not have been notified had adequate consultation been carried out. These are not, however, the only delays that may be caused by a failure to consult.

If an application is notified then opposition by Maori may significantly delay a proposal. It has been the experience of the writer that Maori are likely to oppose an application that they feel will affect Maori matters such as *waahi tapu*, ancestral lands, *taonga* and the like. Often, this opposition is put up regardless of the prospects of success in a case. Furthermore, Maori are often unrepresented before council hearings and Environment court appeals. These two factors combined can potentially lengthen the process for applicants as they are forced to go through the appeal process, a process which is further drawn out by Maori lacking legal representation during the process.

## Conclusion

Both Maori and resource consent applicants face difficulties within the resource management process. Maori have to contend with a lack of time and resources together with the uncertainty of the consultation process. Similarly, applicants have the difficulty of being unsure whether or not they need to consult in any given situation. The most pragmatic path is for Maori and developers to work together, whether it be through consultation, or an ongoing relationship. There are clear mutual benefits in this approach. Applicants, of course, are free to choose to ignore Maori interests. However, that is a decision they should only make after being fully informed of the possible perils of that option.

## Notes and References

- 1 “Sustainable Management” means: managing the use, development, and protection

of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety, while:

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- (b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Section 5(2) Resource Management Act, 1991.

2 Parliamentary Commissioner for the Environment 1998. *Kaitiakitanga and Local Government: Tangata Whenua Participation in Environmental Management*. Wellington: Parliamentary Commissioner for the Environment, p 14.

3 Section 6(e) RMA 1991.

4 *Royal Forest and Bird Protection Society v Habgood* [1987] 12 NZTPA 76.

5 *CDL Land NZ Ltd v Whangarei District Council* (1996) 2 ELRNZ 42.

6 *Ngati Wai Trust Board v Whangarei DC* [1994] NZRMA 269 (PT).

7 *Waihi Gold Co v Waikato RC* EnvC A146/98.

8 Section 2(1) RMA 1991.

9 *Rural Management v Banks Peninsula District Council* [1994] NZRMA 412.

10 Section 2(4) RMA Amendment Act 1997 (No 104).

11 *New Zealand Rail Ltd v Marlborough District Council* [1994] NZRMA 70.

12 *Mangakahia Maori Komiti v Northland Regional Council* [1996] NZRMA 193.

13 *Mason-Riseborough v Matamata-Pikao DC* (1997) 4 ELRNZ 31.

14 Above note 2, p 19.

15 Above note 9.

16 *Quarantine Wastes (NZ) Ltd v Waste Resources Ltd* [1994] NZRMA 529.

17 *Paihia and District Citizens Assn Inc v Northland RC* A77/95.

18 *Paul v Whakatane District Council* A12/95.

19 *Wellington International Airport Ltd v Air New Zealand Ltd* [1993] 1 NZLR 671 (CA).

20 *Haddon v Auckland RC* [1994] NZRMA 49.

21 *Harrison v Tasman DC* [1994] NZRMA 193 (PT).

22 *Marlborough DC v Southern Ocean Seafoods Ltd* [1995] NZRMA 220.

23 *Donnithorne v Christchurch CC* [1994] NZRMA 97 (PT)

24 Above note 20.

25 *Mahuta v Waikato RC* EnvC A91/98.

26 Above note 6.

27 Above note 7.

28 *Watercare Services Ltd v Minhinnick* [1998] 1 NZLR 294.

29 “Maori Issues” 1998 NZ Law Review 467, 479.

30 *Kemp v Queenstown Lakes DC* C229/99.

31 *Te Ohu O Nga Taonga Ngati Manu v Stratford DC* W74/99 quoted in *Maori LR* Aug 1999 p5.

32 Above note 16.

33 Above note 17.

34 *Aqua King Ltd v Marlborough DC* [1995] NZRMA 314 (PT).

35 *Worldwide Leisure Ltd v Symphony Group Ltd* [1995] NZAR 177.



## CHAPTER 5

### Consultation as a Source of Information

Jenny Boshier\*

#### Introduction

The promotion of public participation in environmental decision-making is a cornerstone of the Resource Management Act 1991 (RMA). It is seen as an essential principle of sustainability (Birdsong, 1998). The process of determining what constitutes a sustainable activity in a community will be assisted by identifying the community's preferences and by bringing the community into decision-making processes.

There are a number of ways in which public participation under the RMA is encouraged:

- open standing;
- enforcement orders;
- *tangata whenua* requirements; and
- matters in Part II.

The open standing requirements have expanded the opportunities for people to participate at all levels of RMA processes, such as in the preparation of national policy statements and plans, in the determination of applications for notified resource consents, and in taking matters to the Environment Court. The RMA allows any person to apply to the Environment Court for an enforcement order in defined circumstances in order to promote sustainable management.

Consultation is an essential element of public participation. Both councils (through their staff) and applicants for resource consents may need to consult with stakeholders. It is generally accepted that better environmental decisions will result from a greater flow of information, including that from stakeholders and communities.

The purpose of consultation in the resource consent process is to ensure that the decision-maker is fully informed on the application under consideration. Consultation is not, however, the only source of information for the decision-maker, but it can be a very useful way of obtaining relevant information held by members of a community.

Consultation with *tangata whenua* may arise in a number of ways. There is the requirement to consult in the preparation of regional and district plans. An interpretation of the provisions of Part II, RMA, is that some obligations imposed by sections 6 and 7 cannot be complied with unless there has been adequate consultation. The Treaty obli-

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gation to consult arises under section 8 of the Act (PCE, 1998).

There are other matters in sections 6 and 7 (Part II) where public participation is required to assess the significance of natural features and to discuss and agree on how such matters will be recognised and provided for.

The observations and findings in this chapter are based on a number of Parliamentary Commissioner for the Environment (PCE) reviews conducted during 1995-1998 as part of the Commissioner's Local Government Review Programme. In all of these reviews, aspects of consultation have been examined as part of each investigation. The reviews are:

- *Assessment of Environmental Effects (AEE): Administration by Three Territorial Authorities* (1995);
- *Public Participation under the RMA — The Management of Conflict* (1996);
- *Information Needs of the RMA: A Review of the Information used for Discharge Permit Applications* (1998); and
- *Kaitiakitanga and Local Government: Tangata Whenua Participation in Environmental Management* (1998).

## Environmental Assessment

Under the RMA, the purpose of an Assessment of Environmental Effects (AEE) is both to inform potentially affected parties so they can effectively participate in the consents process, and to provide information concerning the effects of the activity in the environment to the consent authority so that the authority can ensure its consent decisions are consistent with sustainable resource management.

There is no mandatory requirement for applicants to consult with stakeholders as part of an AEE, but it is recognised as good practice both by the Courts and by the PCE. The Fourth Schedule to the RMA requires applicants to identify interested or affected persons in the AEE, to record consultation undertaken, and any response to the views of those affected. This implies that pre-application consultation should be part of an AEE process, and, in fact, is often a good way of identifying key issues for the applicant's consideration, and for obtaining information that has not been available from other sources.

## Who to Consult

Firstly, *tangata whenua* need to be consulted where any development proposals may affect matters in Part II, that is, section 6(e) and section 7(a)<sup>1</sup>. Secondly, the community should be consulted to identify community expectations and values. Thirdly, applicants need to consult with interested and affected persons in order to find out if there may be any effects on people and the environment as a result of the proposed application.

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<sup>1</sup> Section 6(e): The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga. Section 7(a) Kaitiakitanga.

It is possible to get sharp distinctions in communities where there are different value sets operating, for example, those who see the need for job creation may conflict with the views of those who favour protection of environmental quality.

From the Kaitiakitanga and Local Government review (PCE 1998a), there were some firm messages from *tangata whenua* about consultation. *Tangata whenua* in some areas were concerned that consultation was seen as little more than a “politically correct” gesture and that the application would go ahead regardless of the outcome of any consultation. *Tangata whenua* were also very concerned about the assumption that culturally sensitive information would be made available to people who did not recognise its worth and importance. The review found that the establishment of good relationships with *iwi* and *hapū* was the key to effective consultation. There are practical frameworks for consultation that are being established in some areas, such as *iwi* resource management units, to facilitate more effective communication and participation of *tangata whenua*.

There is no explicit requirement for an applicant for a resource consent to consult, and council officers are not required to consult in the applicant’s place. However, an applicant risks receiving a request for further information (section 92), which may, in effect, require consultation to take place to identify specific information. Although applicants may perceive that consultation can be frustrating and time consuming, there is a risk that if consultation is not carried out early in the resource consent application process, they may be required to consult later in the process thus contributing to delays in processing their consent applications. Council officers may consult to gather relevant information for decision-makers if insufficient information is presented with an application and that can also prolong the resource consent process.

### Method of Consultation

The Wellington International Airport Ltd case in the High Court<sup>2</sup> clarified the nature of consultation. For the purposes of this chapter, there are two principles of consultation that need emphasising:

- the party consulted should be adequately informed so as to be able to respond intelligently; and
- what is appropriate in the way of consultation will vary with the context.

The courts have also established that consultation does not mean that the views of any persons consulted will be paramount; neither does it mean that a right of veto exists in any person consulted.

### Information from Stakeholders

#### *Tangata whenua* information

There is a variety of information concerning natural and cultural values that applicants

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<sup>2</sup> The Court of Appeal endorsed McGechan J’s statement on consultation made in the High Court proceedings. 1 NZLR 671 (CA).

or councils may need to seek from *tangata whenua*. The *iwi*, *hapū* or *whānau* of each area have ongoing responsibilities for the *taonga* of that place. Only *tangata whenua* can provide some kinds of information, or assess the potential impacts of proposed activity on *taonga*. Therefore, consultation will be necessary.

The unique *mauri* and integrity of a place or resource may need to be recognised; for example, waterways have particular sensitivity to *tangata whenua* in the impacts of discharges or of mixing of waters from different catchments. *Mauri* is legally recognised by the courts (NZLR, 1987); it is not a physically measurable quality, but can be affected, or even destroyed, by physical impacts.

Places and resources of significance for identity and history, including *wāhi tapu*, may be affected by a proposal. *Tangata whenua* may be reluctant to identify exact sites, preferring to indicate the general area in which such special places are located. There may or may not be any visible signs of *wāhi tapu*, *pa* sites or other historical sites in the landscape. Protocols should be developed before a project starts to set out what to do if any *urupā* are uncovered during construction activities, what to do with the *kōiwi*, and who is to be involved in managing this. Information may also be required on natural resources on which culture depends, for example weaving materials, medicinal plants, or habitats of fish and eels, and other important *taonga* species of wildlife.

Further information may need to be found on *iwi*, *hapū* and *whānau* structures, relationships of particular people or families with particular places or resources, and relevant contact persons in order to know with whom an applicant should consult. Historical information about a place and/or resource, what it used to be like, methods of traditional management, etc., may be sought, although this kind of information will often be very sensitive and non-Maori should not expect that this information would be made available in every circumstance. Consultation may provide useful information on possible alternatives and options for project design, which would ensure appropriate protection for Maori values and accommodate *tangata whenua* concerns.

### *Examples of consultation: a source of information*

The following three examples, two where consultation with stakeholders added information to the resource consent application and a third where consultation would have assisted the process by providing information, have been taken from the PCE's report "Information Needs and the RMA" (PCE 1998).

#### *Large coal mine*

This coal mine is the largest in its region and the applicant consulted interested parties prior to lodging the resource consent application. The applicant was, therefore, able to address many submitters' concerns in the AEE, and comments made to the regional council were that the interested parties were very satisfied with the AEE information received from the applicant. However, council staff identified another requirement for biological assessment and chemical monitoring of the stream that was receiving the minewater discharge. That issue had not been raised in the pre-application consultation, but was identified by council staff during the evaluation of the consent application and the AEE. Once this information was provided, the resource consent proceeded smoothly through the process and was granted.



*Small farm quarry*

The applicant applied to the regional council for a resource consent to work a farm quarry for a small number of days per year. Although the regional council regarded this activity as permitted in their plan, the applicant wanted the certainty of having a resource consent. The regional council provided a customised form for small quarry activities and the applicant worked through the application filling it out accurately. The council decided that informal consultation with *iwi* would be useful and *iwi* advised that there were no *wāhi tapu* at or near the site. With that information in mind, the regional council dealt with the application as a non-notified consent and granted it with straightforward conditions.

*Tourism development*

An applicant wished to construct a tourist lodge on the side of a very sensitive water body in the region. When the AEE and the resource consent application were submitted to the regional council, the council was not convinced that the proposed sewage system would perform as claimed in the application. On notifying the application, submitters were also sceptical of the performance information. The council therefore commissioned a technical audit of the performance of the sewage treatment system at the applicant's expense. During the resource consent hearing, a submitter provided information on the significance of the receiving water for fish spawning, information that the applicant had not provided. In this case the decision-maker granted all but one of the consents with strict conditions to ensure the sewage treatment plant would operate effectively, thus minimising effects on the sensitive water body. One consent was declined because of insufficient information.

**Non-notified Consents**

In the "Information Needs and the RMA" review (PCE 1998), the councils in two of the three case studies above sought information from potentially affected parties. Because of the establishment of good relationships, informal consultation by council staff, e.g. with the Department of Conservation and Fish and Game Council, had elicited information on the significance of any potential environmental effects. The councils view this informal checking of information in an AEE as an important quality assurance measure.

However, there may be instances where informal consultation for non-notified consent applications is not undertaken. In the PCE's "Kaitiakitanga and Local Government Review" (PCE 1998), *tangata whenua* consulted were keenly aware of some consent applications being processed as non-notified applications where there were significant values at stake. A number of the citizens' concerns received by the PCE relate to the non-notification of resource consents where people in the community have been unable to contribute information to the council's processing of an application.

**Conclusions**

The following conclusions are drawn from the four PCE reviews referred to in this chapter.

- consultation is a good source of information for applicants and decision-makers;
- information obtained from consultation is often used as quality assurance for the decision-makers; and
- to obtain relevant information one needs to establish good relationships, for example, between councils and communities, *tangata whenua* and applicants.

In conclusion, in a video on the RMA and the opportunities for *tangata whenua* involvement (Maori Legal Services, 1999), there is a quote from Turei Reedy (Ngati Porou) which sums up what consultation under the RMA is all about:

*the RMA is about relationships — the environment, communities, and decision-makers*

## Acknowledgments

The assistance of Ms G James and Ms Ronda Cooper of the Parliamentary Commissioner for the Environment's office in the preparation of this chapter is acknowledged.

## Glossary

<i>hapū</i>	family or district groups, communities
<i>iwi</i>	tribal groups
<i>kaitiaki</i>	<i>iwi</i> , <i>hapū</i> or <i>whānau</i> group with the responsibilities of <i>kaitiakitanga</i>
<i>kaitiakitanga</i>	the responsibilities and <i>kaupapa</i> , passed down from the ancestors, for <i>tangata whenua</i> to take care of the places, natural resources and other <i>taonga</i> in their <i>rohe</i> , and the <i>mauri</i> of those places, resources and <i>taonga</i>
<i>kōiwi</i>	human remains, bones
<i>mauri</i>	essential life force, the spiritual power and distinctiveness that enables each thing to exist as itself
<i>pā</i>	occupation site, often in a strategic location such as a hilltop
<i>tangata whenua</i>	people of the land, Māori people
<i>taonga</i>	valued resources, assets, prized possessions both material and non-material
<i>urupā</i>	burial place
<i>wāhi tapu</i>	special and sacred places
<i>whānau</i>	family groups

## References/Notes

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## CHAPTER 6

# Scoping — Foundations for Effective Environmental Impact Assessment

Martin Ward\*

### Introduction

Scoping is the process of defining and prioritising the issues to be covered in environmental impact assessment. It is the foundation for effective environmental impact assessment, of which Assessment of Environmental Effects is one, project-based, variant. In the Resource Management Act (RMA) context, inadequacies in scoping can be shown to lead to poor assessment of effects, inadequate consultation, and requests for further information. This can result in a difficult, sometimes attenuated, and often more expensive consenting process.

The development of scoping practice is described in this chapter, with reference to experience in New Zealand, the United States and the Netherlands. Three principle scoping methods are presented and evaluated in the context of large and small projects. Some signposts to potentially significant issues arising from practical experience are given.

The chapter comments on the constraints on effective environmental assessment (including scoping) within the context of the RMA, and the roles of council staff in response to resource consent applications.

### Definitions

**Scope:** The sphere or area over which an activity operates or is effective; the field covered by a branch of knowledge, an inquiry, concept, etc. Extent in space, spaciousness. Hence, scoping (Shorter Oxford Dictionary).

**Environmental Impact Assessment:** Environmental impact assessment is a process whereby a conscious and systematic effort is made to assess the environmental consequences of choosing between the various options that may be open to the decision-maker. Environmental impact assessment must begin at the inception of a proposal, when there is a real choice between various courses of action including the alternative of doing nothing. It must be an integral part of the decision-making process, proceeding through all the development stages of a proposal to actual implementation. (Commission for the Environment, 1971).

**Assessment of Environmental Effects:** “(An application for a resource consent shall be in the prescribed form and shall include) ... an assessment of any actual or potential effects that the activity may have on the environment, and the ways in which any adverse effects may be mitigated.” (Section 88, Resource Management Act, 1991).

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## **Sequence**

Scoping is the first and founding step in the sequence of activities that comprise environmental impact assessment (EIA). In summary, these activities are generally considered to be:

- scoping;
- impact prediction;
- assessment of impact magnitude;
- selection between alternatives; and
- management and mitigation planning.

While this is a well-defined sequence, the process overall is highly iterative, and prior stages may be revisited. It is clear, therefore, that if a formal scoping step is missed, or a scoping study is incomplete or misdirected, an incomplete environmental impact assessment will result. Inadequate or inappropriate decisions on siting, design, or operational set up, may result as a consequence.

The role and importance of scoping is also well-illustrated by the definition of environmental impact assessment noted above. This is taken from the New Zealand Government's Environmental Protection and Enhancement Procedures of 1971, the forerunner of the Assessment of Environmental Effects provisions in the Resource Management Act 1991 (Fourth Schedule).

Environmental impact assessment has been recognised as a project analysis tool since the introduction of the US National Environmental Policy Act (NEPA) in 1969. In a useful review of its modern application internationally, Canter (1996) observes that most commentators have cited its objectives as:

- to provide decision-makers with information about the beneficial and adverse effects of projects, programmes, plans and policies; or
- to ensure that environmental factors are able to be considered alongside economic, technical and political considerations on decision-making.

To meet these objectives, a rigorous approach must be taken; one that must also involve the public as a source of knowledge and valued opinions. As much as scoping is the essential foundation of effective EIA, so public participation is fundamental for its effective operation and successful conclusion. A comprehensive step-wise analysis of EIA is shown in Figure 1.

In New Zealand, with rare exceptions, environmental impact assessment is formally applied only to projects, and this is through the application of the Assessment of Environmental Effects requirements for resource consents under the Resource Management Act, 1991. In other jurisdictions environmental impact assessment is specifically applied to programmes, plans and policies.

## **Purpose**

The purpose of scoping is to identify, in advance, the full range of social and physical

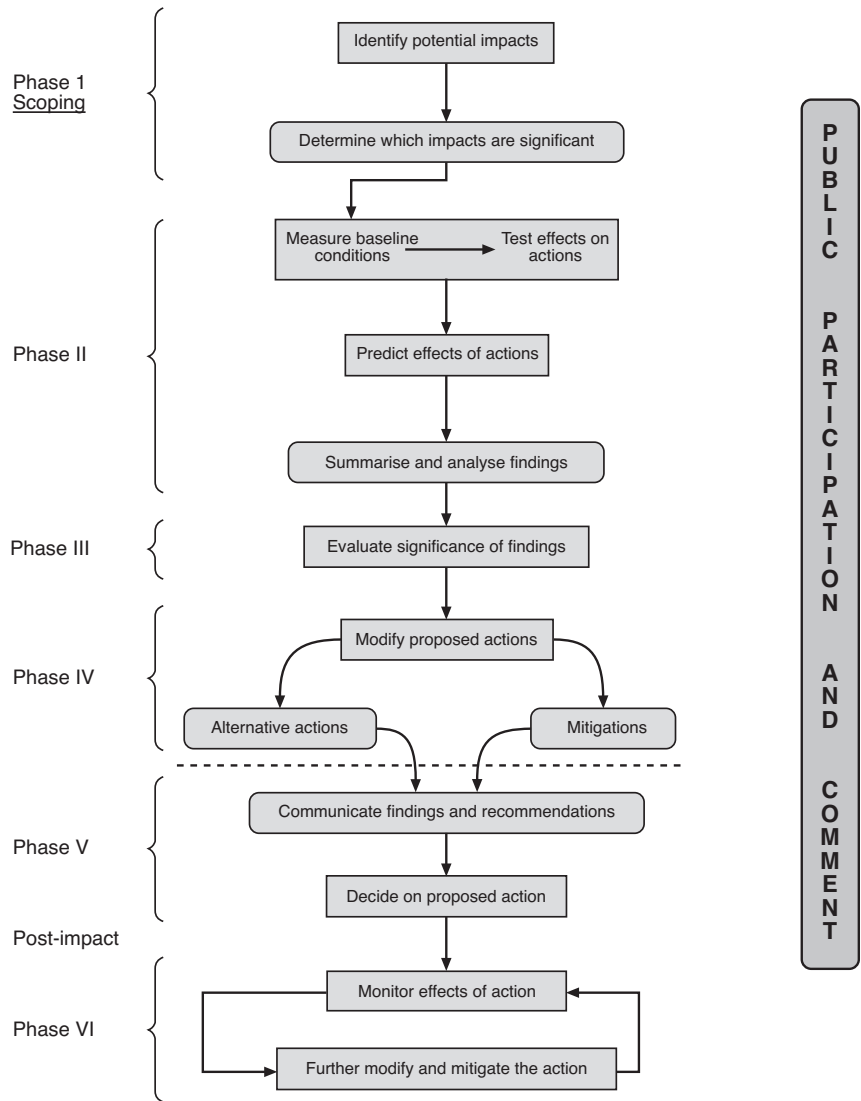


Figure 1: Phases of impact assessment (after Westman, 1985 in Canter 1996)

issues that need to be studied and assessed to effectively understand the nature and extent of the environmental impact of a project. Where alternative locations are being considered a comparative component is added.

The international literature is surprisingly silent on the definition of scoping. A recent reference with a suitable reflection of the ‘people and communities’ focus of the RMA is in a paper by Taylor et al (1998):

*Scoping: Initial public involvement and identification of issues, establish variables to be described/measured, and links between biophysical and social variables, and likely areas of impact and study boundaries.*

This definition was developed with reference to social assessment, which is an important subset of environmental impact assessment. No changes are needed to apply it to EIA, although the purist might choose to relegate ‘initial public involvement’ to the end of the definition.

Scoping must also satisfy another, potentially opposing, objective and that is focusing. As well as canvassing the breadth of potential environmental concern, scoping must involve a focusing mechanism to start to identify the areas of more important potential conflict between the proposal and its setting — the ones that require the most intensive or longest period of study.

Scoping was first formally recognised in statutory procedures in the USA. A National Environmental Policy Act regulation was brought in nine years after the Act in recognition that there should be an early, initiating process to enable agencies and others to pinpoint significant issues warranting study and analysis — a response to early environmental impact statements that tended to be information rich but analytically poor. The NEPA regulation describes scoping as “an early and open process for determining the scope of issues to be addressed and for identifying the significant issues relating to a proposed action”.

## **Benefits**

The benefits of thorough scoping can be considerable. Substantial savings of time, money and community goodwill can be achieved. Savings arise from:

- avoiding unnecessary investigations or surveys;
- early understanding of priority issues to assist design or site selection decisions;
- including all matters relevant to EIA at the outset thus avoiding delays while matters overlooked have to be revisited later (this is particularly important for inter-seasonal studies); and
- involving all interested communities from the outset reduces the possibility of public opposition.

Including some form of public consultation in the scoping study is clearly necessary to capture these benefits.

## **Scope**

If one takes as a starting premise that EIA is an iterative process, it follows that the initial scoping work will be revisited as new information or options come forward. Further, as EIA is a flexible process, it can be concluded that fixed or arbitrary boundaries between stages are neither necessary nor helpful.

However, there is a paradox in these statements, because the objective of scoping is to reduce and ideally eliminate the need to revisit issues or to introduce others at a later time. This tension between creating boundaries around a set of environmental assessment studies and keeping the study programme open to relevant new issues is frequently reflected in a similarly tense relationship between the project proponent (and



the manager of the EIA programme) and the regulator and auditor of the EIA report.

In New Zealand, formal guidance on scoping first appeared in a draft Ministry for the Environment publication prepared to assist with better implementation of the Environmental Protection and Enhancement Procedures, but set aside with the pending arrival of the RMA. Scoping was proposed as a very wide-ranging activity as follows (Ministry for the Environment, 1988):

- “ (a) to identify the possible effects of the proposal on the environment;  
 (b) to identify the possible effects on people of predicted environmental changes;  
 (c) to inform potentially affected people of the proposal;  
 (d) to understand the values held by individuals and groups about the quality of the environment that might be affected by the proposal;  
 (e) to evaluate concerns expressed and the possible environmental effects for the purpose of determining how or whether to pursue them further;  
 (f) to define the boundaries of any required further assessment in terms of time, space and subject matter;  
 (g) to determine the nature of any required further assessment in terms of analytical methods and consultation procedures;  
 (h) to organise, focus and communicate the potential impacts and concerns, to assist further analysis and decision making.”

This list appears without amendment in the Ministry for the Environment scoping guideline produced in 1992 to assist with the interpretation and use of the Resource Management Act.

At first glance, the list appears to be a somewhat over-comprehensive prescription for moving into the further stages of EIA. However, there is no element that can be readily edited out. It is an excellent guide. In a contemporary AEE, professional lack of focus on these core elements would lead to a loss of professional rigour that would do scoping and EIA a disservice.

In summary, it can be stated that scoping must identify and bring into the environmental impact assessment study the full range of issues of potential concern, and help focus attention on the ones that require closest examination.

This would include, in particular, issues requiring multi-season longitudinal study and those of greatest magnitude in terms of adverse social and/or biophysical impact. The communities that might be affected by any aspect of the proposal must be identified and methods adopted that are most appropriate to both project type and community interests so as to identify their values and concerns and involve them in decisions.

## Approaches

Internationally, approaches to scoping are understandably influenced by the legislative framework for the whole EIA procedure. Many countries require the regulatory body,

not the project proponent, to undertake the scoping. This leads to formal advice to the project proponent on what must be included in the EIA report. This advice can be from officials, or from a specially convened panel.

In the International Study of the Effectiveness of Environmental Assessment, Sadler (1996) finds that ‘objectives-led’ or ‘decision-orientated’ scoping is important “*to set out the appropriate terms of reference and to assist participating agencies, as well as the public, to focus on their key responsibilities and mandates*”. In their scoping advisory role to project proponents, the Netherlands Commission for the Environment includes “reasonable” alternatives to the proposed activities that must be studied as well.

The Ministry for the Environment (Ministry for the Environment, 1988) offers practical advice on some basic steps as follows:

- Develop a communication plan (decide who to talk to and when).
- Assemble information that will be the starting point of discussions.
- Make the information available to those whose views are to be obtained.
- Find out what issues people are concerned about (make a large list).
- Look at the issues from a technical or scientific perspective in preparation for further study.

The guidelines note that the circumstances of a particular proposal will determine the extent (and depth) to which they are followed.

### **Information Requirements**

There are two fundamental sets of information needed before scoping can commence. These are:

- a clear idea of what the proposal is — its physical and social characteristics and its resource needs; and
- the site or locational requirements of the project. This embraces both physical and social factors.

It is from the repeated and open-minded examination of the interaction between these two elements that the scope of environmental impact assessment study is determined.

These two aspects of the scoping study bear further analysis.

### **What is the proposal?**

Wherever possible the proposal should be expressed in outcomes terms. This keeps options open as long as possible. For instance, if the project that is subject to an EIA is a hydroelectric power development, the environmental impact assessment, commencing with scoping, needs to start back with the outcome of ‘electricity production and delivery’. This allows the possibility that, in the course of examining environmental and engineering issues, means of electricity generation other than hydropower might turn out to be more attractive.

Such an approach also ensures that areas of possible environmental (and economic) trade-off around visual and other effects of high tension power transmission lines, are also on the table and at an early enough stage for effective evaluation.

Even if the outcome is narrowed to hydroelectric power generation, an open approach to the proposal in this example ensures that instead of an EIA for a particular dam site, (probably at a specified dam height) the scope includes different dam locations, dam heights and impoundment areas and even different operating regimes such as run-of-the-river, peak demand generation, base load, etc.

On a different scale, an outcomes approach to a proposal to take groundwater for irrigation would help ensure the scope of the EIA covers such things as sources of water other than groundwater (surface water, treated sewage or industrial waste water, etc.), the most efficient irrigation methods, the most effective time of application of irrigation water (night time, light winds, etc.), and even the use of alternative crops that may need less water.

### **What are the site requirements?**

The site or locational needs of the proposal is the second requirement for effective scoping. This is quite straightforward for a mineral deposit or geothermal resource, which has a more-or-less fixed location, although there will often be some site flexibility for processing and off-site aspects of the project. However, for many types of development there is considerable scope for alternative locations.

Accordingly, the desired site characteristics should be set out and used as the basis for scoping. These might include, for instance, such things as proximity to labour, transport corridors and process water, as well as remoteness from residential neighbourhoods, important recreational areas and Maori cultural sites.

The site demographics and social and cultural characteristics will influence the scale and type of social assessment and the most appropriate methodologies.

### **Scoping Methods**

There is a well established body of literature covering scoping methods, although they often appear under different titles and group labels. The commonly accepted scoping methods presented here in summary are:

- checklists;
- matrices; and
- networks.

These are illustrated in Figures 2, 3, 4 and 5. The three methods lend themselves to different scales and complexities of projects and to different levels of experience in environmental impact assessment practice. They can also usually be 'extended' to contribute to further stages in the EIA process.

#### *Checklists*

Checklists are literally what they appear to be. That is, comprehensive lists of the sources

and sites of environmental impacts relating to a particular type of project. They lend themselves to more straightforward proposals or ones that are frequently addressed. To be effective they cannot be incomplete.

Examples of checklists are shown in Figures 2 and 3. The first is an extract from an Oregon State Government Environmental Assessment Guideline for small reservoir projects, a good illustration of an application for a relatively complex but more frequently undertaken project. The second is from the Canterbury Regional Council guidance document on preparing Assessment of Environmental Effects.

Potential applications in New Zealand for checklists for guiding AEE preparation in-

<p>Instructions</p> <p>Answer the following questions by placing an "x" in the appropriate YES/NO space; consider activity, construction, operational, as well as indirect impacts.</p> <p>Use the "explanation" section to clarify points or add information.</p> <p>A. NATURAL BIOLOGICAL ENVIRONMENT</p> <p>1. Might the proposed activity affect any natural feature or water resource adjacent to or near the activity areas? <span style="float: right;">_____ NO    <u>  x  </u> YES</span></p> <p>If YES, specify natural feature affected:</p> <table border="1"> <thead> <tr> <th></th> <th>Direct</th> <th>Indirect</th> <th>Synergistic</th> <th>Short Term</th> <th>Long Term</th> <th>Reversible</th> <th>Irreversible</th> <th>Severe</th> <th>Moderate</th> <th>Insignificant</th> </tr> </thead> <tbody> <tr> <td>(1) Surface water hydrology</td> <td>(x)</td> <td>( )</td> <td>( )</td> <td>( )</td> <td>(x)</td> <td>( )</td> <td>(x)</td> <td>( )</td> <td>( )</td> <td>(x)</td> </tr> <tr> <td>(2) Surface water quality</td> <td>(x)</td> <td>( )</td> <td>( )</td> <td>( )</td> <td>(x)</td> <td>( )</td> <td>(x)</td> <td>(x)</td> <td>( )</td> <td>( )</td> </tr> <tr> <td>(3) Soil/erosion</td> <td>(x)</td> <td>( )</td> <td>( )</td> <td>( )</td> <td>(x)</td> <td>( )</td> <td>(x)</td> <td>(x)</td> <td>( )</td> <td>( )</td> </tr> <tr> <td>(4) Geology</td> <td>(x)</td> <td>( )</td> <td>( )</td> <td>( )</td> <td>(x)</td> <td>( )</td> <td>(x)</td> <td>(x)</td> <td>( )</td> <td>( )</td> </tr> <tr> <td>(5) Climate</td> <td>(x)</td> <td>( )</td> <td>( )</td> <td>( )</td> <td>(x)</td> <td>( )</td> <td>(x)</td> <td>(x)</td> <td>( )</td> <td>( )</td> </tr> </tbody> </table> <p>2. Might the activity affect wildlife or fisheries? <span style="float: right;">_____ NO    <u>  x  </u> YES</span></p> <p>If YES, specify wildlife or fisheries affected:</p> <table border="1"> <tbody> <tr> <td>(1) Wildlife habitat</td> <td>(x)</td> <td>( )</td> <td>( )</td> <td>( )</td> <td>(x)</td> <td>( )</td> <td>(x)</td> <td>(x)</td> <td>( )</td> <td>( )</td> </tr> <tr> <td>(2) Ecology of fisheries</td> <td>(x)</td> <td>( )</td> <td>( )</td> <td>( )</td> <td>(x)</td> <td>( )</td> <td>(x)</td> <td>(x)</td> <td>(x)</td> <td>( )</td> </tr> </tbody> </table> <p>3. Might the activity affect natural vegetation? <span style="float: right;">_____ NO    <u>  x  </u> YES</span></p> <p>If YES, specify vegetation and acreage(s) affected.</p> <p>B. ENVIRONMENTAL HAZARDS</p> <p>1. Might the activity involve the use, storage, release of, or disposal of any potentially hazardous substances? <span style="float: right;"><u>  x  </u> NO    _____ YES</span></p> <p>If YES, specify substance and potential effect.</p> <p>2. Might the activity cause an increase or probability of increase of environmental hazards? <span style="float: right;"><u>  x  </u> NO    _____ YES</span></p> <p>If YES, specify type.</p> <p>3. Might the activity be susceptible to environmental hazard due to its locations? <span style="float: right;"><u>  x  </u> NO    _____ YES</span></p> <p>If YES, specify type.</p> <p>C. RESOURCE CONSERVATION AND USE</p> <p>1. Might the activity affect or eliminate land suitable for agricultural or timber production? <span style="float: right;">_____ NO    <u>  x  </u> YES</span></p>													Direct	Indirect	Synergistic	Short Term	Long Term	Reversible	Irreversible	Severe	Moderate	Insignificant	(1) Surface water hydrology	(x)	( )	( )	( )	(x)	( )	(x)	( )	( )	(x)	(2) Surface water quality	(x)	( )	( )	( )	(x)	( )	(x)	(x)	( )	( )	(3) Soil/erosion	(x)	( )	( )	( )	(x)	( )	(x)	(x)	( )	( )	(4) Geology	(x)	( )	( )	( )	(x)	( )	(x)	(x)	( )	( )	(5) Climate	(x)	( )	( )	( )	(x)	( )	(x)	(x)	( )	( )	(1) Wildlife habitat	(x)	( )	( )	( )	(x)	( )	(x)	(x)	( )	( )	(2) Ecology of fisheries	(x)	( )	( )	( )	(x)	( )	(x)	(x)	(x)	( )
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Figure 2: Sample modified checklist for small reservoir projects in Oregon (Canter 1996)

- (a) Adverse effects of taking water on other water users (3).
- Downstream water permit holders.
  - Upstream water permit holders with a downstream minimum flow site.
  - “Permitted users” (those taking water for domestic use, stockwater or for firefighting).
  - non-consumptive water users, e.g. “instream” fish farms, hydro-electric schemes.
  - Groundwater users (where stream/river flows “recharge groundwater”).
- (b) Adverse effects of taking water on aquatic ecosystems (2,3).
- Raised temperatures (unsuitable for some fish and plants).
  - Less oxygen (unsuitable for most animals).
  - Reduced access to stream-side vegetation (e.g. for whitebait to lay their eggs).
  - Reduced fish passage (e.g. insufficient water to get upstream).
  - Reduced space for plant and animals to live in.
  - Reduced ability to dilute both natural (e.g. silt) and artificial (e.g. herbicides) contaminants.
  - Reduced availability of mahinga kai (traditional Maori food and other resources, e.g. eels, freshwater crayfish, whitebait, flax, puha).
  - Reduced variation in flows (may be unsuitable for some fish and plants), and
- The following adverse effects of the abstraction method.
- Un-screened pump sucking in juvenile fish.
  - Un-screened diversion resulting in fish being stranded in an irrigation race or paddock.
- (c) Adverse effects of taking water on amenity values (1,4).
- Recreational passage and use, e.g. less water for boating, rafting, swimming.
  - The way a river, lake or wetland looks, e.g. more dry riverbed visible.
  - Cultural attributes, e.g. the Mauri (“life-force”) of a waterbody, waahi tapu (sacred or extremely important places) and waahi taonga (special places).
  - Non-Maori spiritual attributes.

*Figure 3: Checklist for surface take water (Canterbury Regional Council 1999)*

clude irrigation groundwater takes, farm dams, waterway modifications, and discharge of effluent onto land.

### **Matrices**

Matrices are a more flexible method allowing scoping of a very wide range of proposals with reasonable certainty of identifying all issues. The Leopold Matrix, the first EIA tool to appear in publication, followed close on the heels of the US NEPA, the first statutory EIA requirement. It remains a model of comprehensiveness. A part of the matrix, which has 8,800 cells, is shown in Figure 4. Smaller matrices have been produced by numerous organisations for application in particular jurisdictions or for different categories of project or types of settings.

INSTRUCTIONS										a. MODIFICATION OF REGIME										B. LAND TRANSFORMATION AND CONSTRUCTION																																							
<div>1. Identify all actions (located across the top of the matrix) that are part of the proposed project.</div> <div>2. Under each of the proposed actions, place a slash at the intersection with each item on the side of the matrix if an impact is possible.</div> <div>3. Having completed the matrix, in the upper left-hand corner of each box with a slash, place a number from 1 to 10 which indicates the MAGNITUDE of the possible impact: 10 represents the greatest magnitude of impact and 1 the least (no zeros). Before each number place + if the impact would be beneficial. In the lower right-hand corner of the box place a number from 1 to 10 which indicates the IMPORTANCE of the possible impact (e.g. regional vs local). 10 represents the greatest importance and 1 the least (no zeros).</div> <div>4. The text which accompanies the matrix should be a discussion of the significant impacts, those columns and rows with large numbers of boxes marked and individual boxes with the larger numbers.</div>																														<div>a. Exotic flora or fauna introduction</div> <div>b. Biological controls</div> <div>c. Modification of habitat</div> <div>d. Alteration of ground cover</div> <div>e. Alteration of ground water hydrology</div> <div>f. Alteration of drainage</div> <div>g. River control and flow modification</div> <div>h. Canalisation</div> <div>i. Irrigation</div> <div>j. Weather modification</div> <div>k. Burning</div> <div>l. Surface or paving</div> <div>m. Noise and vibration</div> <div>n. Urbanisation</div> <div>o. Industrial sites and buildings</div> <div>p. Airports</div> <div>q. Highways and bridges</div> <div>r. Roads and trails</div> <div>s. Railroads</div> <div>t. Cables and lists</div> <div>u. Transmission lines, pipelines and corridors</div> <div>v. Barriers, including fencing</div> <div>w. Channel dredging and straightening</div> <div>x. Channel revertments</div> <div>y. Canals</div> <div>z. Dams and impoundments</div> <div>aa. Piers, seawalls, marinas and sea terminals</div> <div>ab. Offshore structures</div> <div>ac. Recreational structures</div> <div>ad. Blasting and drilling</div> <div>ae. Cut and fill</div> <div>af. Tunnels and underground structures</div>																													
<div>SAMPLE MATRIX</div> <table><tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td></tr><tr><td>f<sub>1</sub></td><td>g<sub>2</sub></td><td>h<sub>3</sub></td><td>i<sub>4</sub></td><td>j<sub>5</sub></td></tr></table>																														a	b	c	d	e	f <sub>1</sub>	g <sub>2</sub>	h <sub>3</sub>	i <sub>4</sub>	j <sub>5</sub>																				
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PROPOSED ACTIONS																																																											
a. Mineral Resources																																																											
b. Construction material																																																											
c. Soil																																																											
d. Land Form																																																											
e. Force fields and background radiation																																																											
f. Unique physical features																																																											
a. Surface																																																											
b. Ocean																																																											
c. Underground																																																											
d. Quality																																																											
e. Temperature																																																											
f. Recharge																																																											
g. Snow, ice and permafrost																																																											
a. Quality gases, particulates																																																											
b. Climate (micro, macro)																																																											
c. Temperature																																																											
a. Floods																																																											
b. Erosion																																																											
c. Deposition (sedimentation, precipitation)																																																											
d. Solution																																																											
e. Sorption (ion exchange, complexing)																																																											
f. Compaction and settling																																																											
g. Stability (slides, slumps)																																																											
h. Stress - strain (earthquakes)																																																											
i. Air movements																																																											

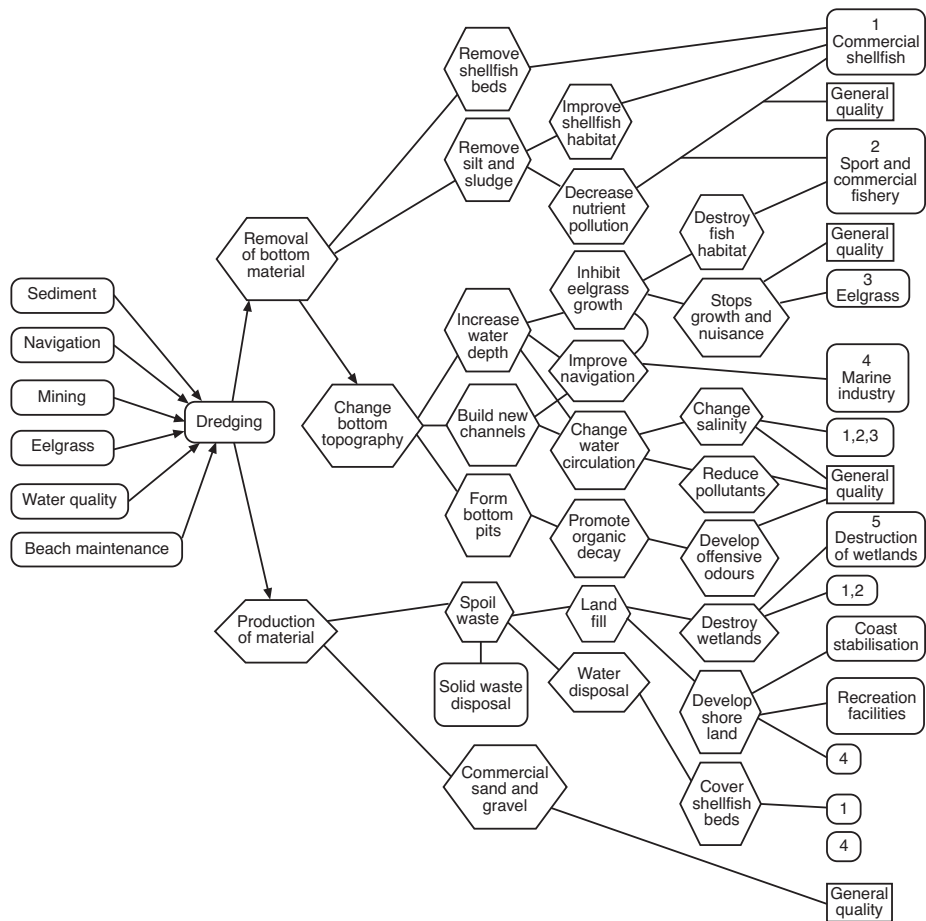


Figure 5: Example of a network (Sorenson, as presented in Canter, 1976)

beyond the need to use these tools. They ignore them at their peril, or more correctly at the expense of their client and businesses, and perhaps the environment.

### Communication and Public Participation

The public is involved in EIA in three key ways. It is a source of knowledge, part of the potentially affected environment, and a participant in the EIA process to be addressed in scoping. It is no surprise, therefore, that four of the five basic steps identified in the Ministry for the Environment guidelines, cited above, address aspects of communication and public participation.

There is a wealth of experience and a large body of professional literature on public involvement of this type. The key scoping question is what model of public participation is going to be most effective in the social assessment study? Figure 6 illustrates

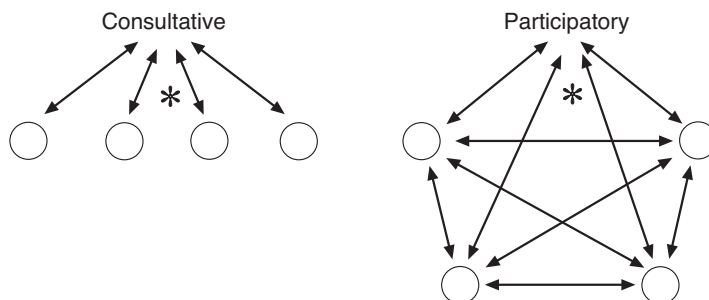


Figure 6: Consultation modes

two widely-used models, Consultative and Participatory. The tools or methods to be used need to be selected with a view to their continued involvement through all stages of the EIA.

Frequently discounted in EIA is the value of different individuals and groups in the community as a source of knowledge about the biophysical characteristics of a location. Scoping, therefore, needs to identify different user groups (or knowledge groups), some of whom may live away from the locality. Environmental NGOs are important contact points with the community.

Communication methods need to take account of different communities, subject content and stages in the EIA. Scoping should address these needs.

### Some Professional Guidance

From almost 25 years in the EIA business, and scoping projects in both the applicant and the auditor's role, the author recommends two aspects of scoping that should always be addressed early. They are stressed sites and studies beyond the project location.

#### *Stressed Sites*

The wine industry well knows the benefits in terms of fruit quality of slightly stressed grape vines. Stress is a key word in EIA scoping, with evidence of stress an important indication of unusual or unique ecological niches.

Soils with extreme characteristics of pH, chemistry and physical properties derived from parent rock with distinctive characteristics will host a restricted and adapted flora and often fauna as well. Combine this with weather or aspect extremes such as low rainfall and/or proximity to salt laden or geothermally gassy air, and some of the most distinctive ecological niches can be found.

These complex sites will frequently reveal rare or endangered species on close examination. Studies by appropriate scientists can be planned accordingly. Social scientists mount similar arguments around communities.



### *Study beyond the project location*

Related to the areas of special ecological character noted above is the issue of the actual area for study in site selection or preferred site survey work. It is at the scoping stage that the areal extent of the study area(s) is or should be agreed. This should always be much larger than the footprint site of the project. It is only common sense that the more intensively an area is studied the more its special character becomes evident. For want of study of the general area the preferred site can quickly become unique.

It is equally sensible that in order to properly assess the significance of a site, it is necessary to do so within the context of its surroundings, not just at an alternative (perhaps distant) location.

The message is straightforward — study a wide area around the site being assessed to be sure about the extent of environmental values that may potentially be at risk.

### **Scoping and the Assessment of Environmental Effects**

Much more real than apocryphal, is the story of the project manager calling in the company solicitors to assist in applying for the resource consents for a new project, and the solicitor on return to his or her office handing over the task of preparing the Assessment of Environmental Effects to a staff solicitor. How much further from a scoped EIA approach to project planning and development can one get?

The emergence through legislation of a prescription for environmental impact assessment under a heading “Assessment of Environmental Effects” has guided practice from the process to the product. The Resource Management Act requirements for “*an assessment of any actual or potential effects that an activity may have on the environment...*” set out in section 88 have, by virtue of the title of the Fourth Schedule (“Assessment of Environmental Effects”) narrowed the scope of the assessment from being a considered action throughout planning and design to a virtual checklist for completion at the conclusion of both.

In New Zealand, the AEE has tended to become a post-design record of a set of decisions, not a process of investigation and enquiry. Frequently it is a document of advocacy. The lack of Environmental Court scrutiny of AEE documents, because of its *de novo* hearing approach, means there is little critical appraisal of AEE quality in the public record. Scoping (and other) inadequacies remain unchallenged.

Surely, much of the concern on both sides of the consent authority counter, about time of receipt of applications, requests for further information and a raft of timeline and cost issues arise, from this misplaced focus. Scoping is at least part of the answer. However, scoping is a term that has been almost universally absent from the Ministry for the Environment and council guidelines for preparation of AEE since the completion of practice guides immediately following the introduction of the Resource Management Act.

### **Scale and Significance, and Closure**

Section 88 of the RMA requires that “*Any assessment ... shall be in such detail as*

*corresponds with the scale and significance of the actual or potential effects that the activity may have on the environment ...*". Scoping clearly has a contribution to make to determining scale and significance.

In the pressured world of commercial development, project developers need to set aside time and money for all the work associated with their venture, and professionals are requested or required to put forward firm costings on resource consent application work including the assessment of environmental effects. The question of "scale and significance" is in close focus and frequently leads to pressure on consent authority staff to give full and final advice on this question.

What is enough? This is a question that has challenged virtually every EIA system in the world. Giving an unqualified assurance that a particular list of matters is the full scope of matters to be assessed, prior to an audit or appraisal, has been a much sought after objective.

Consent authorities cannot be expected, and should not give closure of this sort, to a project assessment brief at the scoping stage unless there is a well-funded and deliberative formal approach such as the Dutch use. The role of the EIA process overall is to ask and answer this question. (Exceptions to this rule would be for small or routine activities in locations that have been thoroughly studied previously.)

What consent authorities often do, and may need encouragement to do more often, is to give checklists that can be used in the scoping process to help identify relevant and priority issues for the project in question.

A rigorous formal scoping is needed and it is, in the end, the job of the applicant.

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# CHAPTER 7

## Comparing Alternatives

Wayne Stewart\*, Joanna Ross\*\*,  
John Vessey\*\*\* and Kathryn Edmonds\*\*\*\*

### Abstract

Determining a preferred site for a new infrastructure project has become increasingly more complex, particularly when the decision-making process involves key stakeholders and the general public. An increasing feature of the decision-making process is the enormous amount of information that must be collected about the effects of various options. While some of this information can be quantified and given monetary value, much of it cannot. The majority of this information can only be collected through consultation. Consultation must therefore be seen as part of the information collection exercise and undertaken early in the decision-making process.

It can be a challenge to collate and summarise all this information in a meaningful way that assists the decision-making process, particularly if there are a large number of options to be considered. This chapter discusses some of the common problems associated with projects having significant stakeholder interest and adverse environmental effects. It reviews a number of commonly used decision-making tools and highlights the advantages and disadvantages of each. Using a method that can be very easily understood by lay people can be an important ingredient to successful decision-making. The chapter concludes that all decision-making tools are just that: tools. Tools, which provide insight into a problem and encourage the use of creative solutions. The final selection must always be made by the decision-makers.

### Introduction

There are some things that will never change, like opposition by local residents to a new infrastructural project to be constructed in their backyard. Often referred to as a NIMBY syndrome (for “not in my backyard”), local residents will oppose all sorts of developments even when there are tangible economic benefits for them and their community. In their view, the wrong site has been selected.

But the proponents (or owners) want the best site for a new project. For years they have demanded rigorous analysis to confirm that the site is economically superior to others. In response, decision-makers have developed tools to help them in their decision-making process. One particular tool that became particularly useful is benefit-cost analysis. Rather than select the site that is the cheapest, benefit-cost analysis provides insight into the relative efficiencies of the various options being considered. The benefit-cost analysis tool is widely used today for comparing project options, including all roading<sup>1</sup> work. These analyses can be very complex, demanding the collection and manipula-

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tion of an enormous amount of detailed information, the modelling of complex systems and the application of economic theories.

If decision-makers were not previously overwhelmed by the need to undertake economic evaluations to convince the project owner of a preferred site, they certainly will be now that key stakeholders and the public must also be involved in the decision-making process. Furthermore, most community values cannot be converted to monetary values and included in an economic analysis. Community concerns often relate to intangible effects, such as community and life style values, cultural and spiritual values, environmental effects and physiological effects.

Decision-makers can no longer give lip service to intangible effects. Where a project is likely to result in significant adverse effects on the environment, the Resource Management Act 1991 requires<sup>2</sup> alternatives to be considered; alternatives that minimise the social, community and environmental effects including impacts on cultural and spiritual values of *iwi*.

An increasing challenge for decision-makers is the need to clearly demonstrate to the key stakeholders, and the general public, that these alternatives have been compared robustly. For key stakeholders to have confidence in the preferred alternative, they need to be involved in, and understand, the decision-making process: it must be transparent, repeatable and defensible. For if it is not, opponents will focus on, and challenge, the perceived problems with the method used rather than focus on the real issues; this being the effect of the project itself.

Furthermore, case law is developing which confirms that decision-makers must be able to defend their preferred option. Therefore any comparison of alternatives must be able to stand up to rigorous scrutiny<sup>3</sup>.

Given the growing complexity of the decision-making process itself and the need for the process to be understood by lay people, it is important that decision-makers use the best tools available. This chapter discusses some of the common problems associated with decision-making on projects having significant stakeholder interest and adverse environmental effects. It reviews a number of simple decision-making tools commonly used, highlighting the advantages and disadvantages of each. The chapter concludes that while some tools are better than others, no one tool can be used to comprehensively solve the problem. Tools provide a framework from which the decision-maker gains insight and creativity to solve the problem. The final decision rests with the decision-makers.

## **The Art of Decision Making**

### *Overview*

It has not been uncommon in the past for the preferred option for a new infrastructure project to be decided purely on economic grounds. Only after the type, scale and location of the project has been decided, have decision-makers gone on to consult with key stakeholders and complete an assessment of environmental effects. This approach creates a number of problems:

- stakeholders (particularly *iwi*) react adversely to the proposal as they feel that they were not given a chance to gain an early influence on the selection of the preferred option;
- stakeholders feel excluded from the process, believing that relevant information used to make the decision is being purposefully withheld; and
- the proponents, or project owner, feel that the adverse reaction from stakeholders is unproductive or even obstructive.

Some decision-makers often see the decision-making process only in terms of technical and economical issues. It is not uncommon, for example, for the assessment of environmental effects to be completed only after a preferred option has already been determined, and then only to legitimise the already selected option. Consultation, if undertaken, is left to the very last. This process alienates key stakeholders from the process and this in turn results in delays in obtaining the necessary consents, or the best overall option not being selected. There are a number of advantages to undertaking the consultation and assessment of environmental effects early.

- Significant adverse effects can be identified early and avoided.
- Mitigation measures can be investigated early during the design process.
- Opponents are less likely to criticise (or even hijack) the project because they no longer feel excluded from the decision-making process.
- It is more likely that not only the negative effects, but also the positive effects are identified.

Incorporating the assessment of environmental effects and the consultation process within the decision-making process is critical to the success of future projects. They are not just activities undertaken in order to legitimise a decision already made.

### *Decision-making Process*

Decisions can only be made when the decision-makers have adequate information about various options. Collecting information from surveys, research, investigations and modelling has become an increasingly important part of the decision-making process. This reduces uncertainties in the selection process by increasing technical knowledge about the effects of each option. By reducing uncertainties, more robust comparisons of options can be made prior to selecting a preferred option. Once adequate information is obtained, all that is needed is a technique for collating and manipulating the information to enable the options to be easily compared.

This is done, in part, by collating the information into a number of relevant decision criteria. Essentially, this is an inventory of issues that have been identified as being relevant to the particular project, and could include travel efficiency, social impacts, ecology, noise, heritage values, cultural values, cost, and so on.

While adequate detailed information is important, Friend and Jessop<sup>4</sup> suggest that effective decision-making also involves:

- establishing policies and values that will guide decisions; and

- extending the decision-making agenda.

### *Establishing policies and values*

The decision-makers establish a goal or objective for each decision criterion, from which all relevant information can be compared. Only by making this comparison can the effects be assessed as being positive or negative, significant or insignificant. Policies and values need to be reviewed for each project because they can vary between projects or between communities. For example, whether it is possible to relocate a small cemetery for a roading realignment will depend entirely on how the community values the cemetery. There are many other similar examples where projects are likely to impact native bush, reserves and community facilities, to name a few.

In setting goals and objectives for each criterion, it is important that they are realistic and actually attainable. It may be necessary to set minimum or maximum threshold levels, which if exceeded require the option to be dismissed from further consideration. For example a benefit-cost (B/C) ratio of over four is presently required before funding is provided by Transfund for roading projects. It is also important to distinguish between criteria that are important and those that are only desirable. The concept of applying weighting or emphasis is further developed later on in the chapter.

### *Extending the decision agenda*

Stakeholders often argue that the decision problem must be extended to include related problems, being either geographically-related problems or problems that could occur in the future. Where such arguments are well-founded, it is necessary to expand the problem or ensure that there is co-ordination between the related problems. A recent example where the decision agenda was extended, was on the four-lane Cambridge to Auckland expressway for Transit New Zealand. Key stakeholders believed that the expressway could have significant impacts on traffic flow distribution within the Hamilton city roading network, and that this would affect plans to develop the city's arterial network. As a consequence, the study was extended to model both the city and the Transit New Zealand network to enable the wider effects to be determined.

Given this wider view of decision-making promoted by Friend and Jessop, the reader can see why it is so important that consultation must be seen as part of the information gathering exercise. It is important to plan consultation both early in the decision-making process prior to developing options and later, after all the information has been collected and summarised.

A successful decision-making process will therefore be well-planned and coordinated. A successful outcome will only be obtained when all key stakeholders are involved throughout the process. Decisions must be based on all relevant issues and have considered the various points of view. The process must be transparent.

### *Challenges with Good Decision-making*

The decision-making process for most significant infrastructure projects is complicated by:

- information about the effects of the project being uncertain;



- the subjective nature of some effects resulting in different stakeholders expressing different opinions about these effects and the emphasis that should be given to them;
- the difficulty of trying to compare the large amount of information that can be collected about the effects; and
- conflicts developing between stakeholders and the proponents of the project.

Information about the effects of various options cannot always be quantified. Information that can be quantified and given monetary value<sup>5</sup> is referred to here as a tangible effect. However, not all information that can be quantified can be given monetary value. The impact of noise is one such example. It can be measured in dBA; but the effects of the noise on adjacent landowners cannot be readily given monetary value. Lastly, some information cannot be quantified. It requires subjective assessments by a specialist in that field, and will often relate to people's needs, emotions, feelings and their spiritual, cultural and community values. Effects that cannot be given monetary value are referred to as being intangible effects. Having a problem that involves intangibles means that it is not possible to use conventional benefit-cost analysis to make comparisons. Instead, a less rigorous multi-criterion decision-making tool is required.

Stakeholders affected by a project will view the effects generated by it differently — both, in terms of whether the effect is significant or not, and what emphasis (or weighting) the effect should be given in the overall decision-making process. This is particularly important given the trend towards decisions being the responsibility of a group of people rather than a single individual. Groups that may have very different interests and agendas make decisions for many public sector projects.

An enormous amount of information about each criterion can be collected. Because the information can be related to time and space, it can be a challenge to summarise it all in a meaningful way for the purpose of making comparisons (for example, the benefits of reduced traffic accidents occur over the length of a highway both now and in future years). Similarly, noise effects adjacent to the highway vary along its length and vary with time (noise usually increases with increasing traffic volume). While techniques such as Net Present Value are available for calculating tangible effects that vary with time, summarising the overall effects of the intangibles is more subjective. When a project involves a large number of criteria and options, the amount of information to be processed becomes large and can be almost impossible to solve without the help of decision-making tools.

Decision-makers are aware that conflicts will occur, either from conflicting goals or objectives or conflicting points of view. Conflict resolution should be recognised as a fundamental part of the decision-making process. Recently, a city council wanted to cut down 100-year-old trees along a road to allow four lanes of traffic. The decision to cut down the trees created conflicts between two parties — the council and road users on the one hand, who wanted the road four-laned; and residents of the tree-lined street on the other, who wanted the trees to remain (and did not want the increase in traffic volumes that they perceived as a result of the four lanes). The conflict divided the community. A facilitator was used to help resolve the conflict, and the group identified an option that had not been previously considered: only one third of the total length of

road needed to be four-laned, not the whole road. Clearly this was an option that would go some way to satisfy the objectives of both parties. The point is that conflict resolution seeks a win-win solution, not a destructive process, and can result in the identification of new options.

### *The need for decision-making tools*

It is clear that many decision problems will be complex, involving a large number of options and decision criteria. Typically, these criteria will involve intangibles as well as tangibles. A decision-making tool is required to break the problem down into more manageable parts and provides insight into the structure of the problem. The tool must help make the process be more transparent. It should be able to apply varying emphasis or importance (i.e. weighting) to the various criteria being considered to reflect the values held by the decision-making team and key stakeholders.

A review of a number of simple yet commonly used decision-making tools is given in the next section, together with discussion about the advantages and disadvantages of each.

## **Decision-making Tools**

### *Overview*

The earliest decision-making tool is the benefit-cost analysis (also referred to as the cost-benefit analysis). Developed after the Second World War, the analysis identifies the alternative that provides the greatest economic efficiency. The method, however, cannot include any intangible criteria (i.e. cannot be given monetary value). Because many decision-making problems involve both tangibles and intangibles, other methods have been developed to assist decision-makers.

One of the first attempts of another method was the planning balance sheet promoted by Lichfield<sup>6</sup> in 1956. Similar to a financial balance sheet, Lichfield attempted to summarise all of the benefits and costs of various options for a project on a single page. He recognised that these costs and benefits would be different for the producers (or proponents of the project) and consumers (or affected parties to the project). A simple example of the planning balance sheet is summarised in Table 1.

Since then a large number of methods<sup>7</sup> have been proposed, the majority of which attempt to deal with the problems of having both tangibles and intangibles. Some of the simpler methods are reviewed in this chapter. They are referred to as decision-making tools because they are exactly that — a tool. They assist the decision-makers in selecting the best option or options; they do not solve the problem. In the literature<sup>8, 9</sup>, these methods are often referred to as multi-criterion or multi-scaling techniques. The main difference between all the techniques is the arithmetic procedures used to scale and combine the information. It is important to remember that each method makes assumptions that, while helpful, cannot always be fully justified. This is why these methods must be seen as tools that assist with the decision-making process rather than making the decision itself.

Effective decision-making tools break the problem down into manageable parts and

Criterion	Option A				Option B			
	Benefits		Costs		Benefits		Costs	
	Capital	Annual	Capital	Annual	Capital	Annual	Capital	Annual
<b>Producers</b>								
Economics	-	\$1 m	\$10.5 m	\$0.2 m	-	\$2 m	\$11.0 m	\$0.2 m
Noise	-	-	-	-	-	-	-	-
Landscape	-	-	-	-	-	-	-	-
Ecology	-	-	-	-	-	-	-	-
<b>Consumers</b>								
Economics	\$140 m	\$0.75 m	-	-	\$140 m	\$0.55m	-	-
Noise	-	-	-	50dBA	-	-	-	75dBA
Landscape	-	-	(-ve) Severe	-	-	-	(-ve) Minor	-
Ecology	-	-	(-ve) Minor	-	-	-	(-ve) Mod.	-

*Table 1: Lichfield's original "planning balance sheet"*

provide insight on how to compare alternatives. In its simplest form, a decision-making tool could be a single page that summarises all the criteria and options, not too dissimilar to the planning balance sheet proposed by Lichfield. Provided that it is not too large, this summary can provide good insight into the problem, enabling simple comparisons to be made between options. Such a summary has often been referred to as an evaluation matrix. But many other names<sup>10</sup> have been used, including decision matrix, project-effect matrix, score matrix and effectiveness matrix.

### *Evaluation Matrix*

The evaluation matrix compares a range of options against a given set of decision criteria. A simple example of such a matrix is shown in Table 2. It shows a hypothetical roading project (see Figure 1 for details), of which there are five possible alignments, A to E, all listed in five columns across the table. The project has a number of impacts or criteria, listed in six rows within the matrix. These include:

- Traffic benefits —these are travel time savings, reduced vehicle operating costs and a reduction in accidents. Traffic benefits vary greatly from \$147.5 m to only \$27.5 m.
- Costs —the cost to construct the new alignment including the cost to purchase property. Costs are very similar for each alignment, ranging from \$11.5 m to \$13.0 m.
- B/C —the benefits divided by the cost (benefit-cost ratio).
- Noise —being the day time noise that adjacent land owners will be subject to once the roading project is completed. Some alignments pass very close to adjacent landowners resulting in noise levels as high as 75 dBA. Noise levels have been assessed to range from 50 dBA to 75 dBA. For simplicity we will assume that the day-time noise levels for all landowners is presently only 40 dBA (i.e. noise levels prior to constructing the project).

Criterion	Option				
	A	B	C	D	E
Traffic benefits	\$147.5 m	\$145.5 m	\$27.5 m	\$50.0 m	\$45.0m
Costs	\$12.5 m	\$13.0 m	\$11.5 m	\$12 m	\$12.5 m
B/C	11.8	11.2	2.4	4.2	3.6
Noise	50 dBA	75 dBA	70 dBA	55 dBA	60 dBA
Landscape	Severe	Minor	Moderate	Insignificant	Insignificant
Ecology	Minor	Moderate	Moderate	Insignificant	Minor

Notes: Effects assessed in using the following terms — Insignificant, minor, moderate, significant, severe.  
Effects can be both positive (+) and negative (-)

Table 2: Evaluation matrix

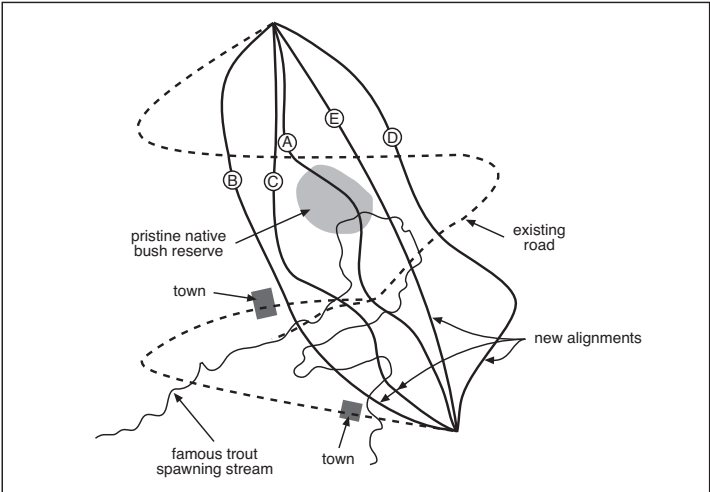


Figure 1: Roothing example

- Landscape —the impact on the natural landscape. Option A will require the destruction of a small, pristine, native bush reserve, the last remaining native bush in the area.
- Ecology —options A, B, C and E all affect a small yet famous trout-spawning stream to a varying degree, options B and C more than A and E.

These five criteria are listed in the first column of Table 2. The matrix summarises all information that is known about each criterion and each alignment option. The example highlights the range of information that can typically be collected for a project of this nature.

Clearly the cost and benefits are easily quantifiable and are included in the table as tangibles. While noise can be quantified, in most cases the effects of noise cannot easily be given monetary value. For this reason the actual calculated noise values (raw data) is included in the matrix. In saying this, it should be noted that noise can be

mitigated by constructing earth mounds, building fences, installing double-glazing and using quiet road surfacing. Ideally the cost of this mitigation should be added to the tangible cost criterion and the noise values should be reduced to those values likely to be experienced after mitigation. This general principle of reflecting the effects of any mitigation measures in the evaluation matrix is an important way of improving the decision-making process.

The evaluation matrix shown in Table 2 also shows intangible criteria that cannot be quantified. Qualified assessments by specialist ecologists and landscape architects are required on the likely impact on each alignment. In this example, room is only available to indicate whether the effect is positive or negative and whether it is insignificant, minor, moderate, significant or severe. Qualified assessments are best presented using words. Ideally, if space permitted, one or two sentences should be added in the matrix to provide distinct information justifying the assessment of the effect. For example, for option A and the landscape matrix cell, we could include the words that this option requires the destruction of pristine native bush to justify the severe adverse impact rating.

Detailed analysis is required to arrive at and justify the summary information for each criterion within the evaluation matrix. The single noise figure of 50 dBA for option A, for example, must be assessed as the overall effect of the total project. Clearly, each option imposes noise effects on a different number of landowners and each to a varying degree. It is not only spatial variation that must be dealt with, as noise will increase with time if traffic growth is expected in future years along the new alignment. Even the subjective assessment for landscape effects is likely to be based on a range of criteria, examples of which are shown in Table 3. It is often necessary to use a decision-making tool to combine all the information related to a single criterion, like landscape effects, for inclusion in the primary evaluation matrix.

A feature of the evaluation matrix is that it provides a clear summary of all the issues, assisting the decision-makers to arrive intuitively at the best option or options. The matrix in Table 2 clearly shows, for example, the tension between options A and D. Option A has very high economic value but also high environmental impact. Option D, on the other hand, has low economic value but also very low environmental impact. As part of choosing between these two options, the decision-makers must assess whether

<ul style="list-style-type: none"> <li>• Visual quality</li> <li>• Modifications to existing landform</li> <li>• Length of alignment</li> <li>• Widening of existing road</li> <li>• Compatibility of new road with existing land use</li> <li>• Intrusion into significant views</li> </ul>
--

*Table 3: Example of landscape impact assessment criterion*

or not to give more emphasis to the economic value of the project or the environmental impacts.

A further feature of the evaluation matrix is its ability to deal with conflicting criteria. The very high economic value of option A, for example, conflicts with the very high environmental impacts. This conflict is clearly seen in the evaluation matrix and enables the decision-makers to make decisions with clear consequences. In other words, if option A was selected due to its very high economic value, immediately the decision-makers are aware that this decision is likely to result in strong opposition from those who value the native bush.

In comparison, the benefit-cost analysis and some other multi-criterion methods are not as good at handling conflicting criteria because they tend to absorb conflicting issues in the aggregation process. The other problem with the benefit-cost analysis is that monetary value must be given to represent the value of the native bush. Even if it was possible to give it monetary value, there would be arguments over what value should be given to it. This remains one of the main criticisms of the benefit-cost analysis method.

Considering the information in the evaluation matrix shown in Table 2, we can draw the following conclusions:

- Option C is clearly the poorest option as it provides a very low benefit-cost ratio and has modest environmental impact;
- Option A or B is the best option if more emphasis is given to the benefit-cost ratio; and
- Option D or E is the best option if more emphasis is given to the environmental effects.

If the evaluation matrix suffers in any way, it is that the reader of the matrix is overwhelmed with information: monetary values, quantitative numbers and qualitative judgments are all arranged together appearing to create more confusion than clarity<sup>11</sup>. However, there are a couple of very useful techniques for reducing the size of the problem. These are discussed in the following sections.

### *Pairwise Analysis*

Another very useful tool is pairwise analysis<sup>12</sup>. It enables the direct comparison of any two options, enabling the better of the two to be identified. It is a robust tool that, while unlikely to solve the evaluation matrix itself, can reduce the size of the problem by eliminating some of the options from further consideration.

Using the example shown in Table 2 as an illustration, consider options D and E. By comparing each of the criterion scores for both options, we find that option D is either superior to or equal to option E for all criteria. Option D has higher B/C ratio and lower or equal environmental effects. Consequently we can confidently reject option E from further analysis.

Pairwise analysis is a very useful method to be used in conjunction with an evaluation

matrix, particularly when there is a large number of options to be compared.

### *Goals Achievement Matrix*

Very similar to the evaluation matrix and based on the planning balance sheet of Lichfield, Hill<sup>13</sup> proposed setting goals for each criterion and then comparing how well each option meets those goals, while also introducing the concept of weighting criteria. His method is referred to as the goals achievement matrix.

The method is best explained using the roading realignment example given in Figure 1 and Table 2. Table 4 summarises a goals achievement matrix for option A. The matrix compares a number of goals (or criteria) for a range of stakeholders. Each goal is given weight or emphasis. Minimum standards (or goals) are set for each goal from which all information will be compared. Minimum standards in this example were:

- B/C ratio of at least 4.0;
- noise levels to remain as close as possible to 40 dBA;
- insignificant impact on the landscape; and
- insignificant impact on the ecology.

To enable comparisons with other methods discussed in this chapter, the goals are given the same weight as those used in these other methods. Like the evaluation matrix, each cell contains a summary of the information known about each option. For ease of computation, it is convenient to convert the intangibles (ecology and landscape assessments) to a standardised score. In this case we have chosen a range of scores from 1 to 5, with 1 for insignificant to 5 for severe.

This information is compared with the minimum standard to provide a ratio (as a percentage) of achievement of each goal. Consider as an example the stakeholder Transfund's benefit-cost ratio goal. A ratio of 295% was calculated, being the actual B/C ratio of 11.8 divided by the target (minimum standard B/C ratio) of 4.0, or  $(11.8/4.0) \times 100$ . It is not uncommon for a number of stakeholders to have similar goals (for example the landowners and the Department of Conservation could also have had a benefit/cost goal in addition to Transfund). In such cases, all calculated ratios for a particular goal are summed to give an overall ratio (%) for each goal. In this case only Transfund has this goal, and so the total ratio is also 295%. This total ratio can then be multiplied by the weighting for that particular goal (55% in the case of the benefit/cost goal) to give an overall score of 1.62. These scores are calculated for each goal and summed to provide a total score for each option. For option A this came to 1.89, as shown in Table 4 below.

A similar goal achievement matrix can be prepared for each option. The results of all options are summarised in Table 5. The method is consistent with other methods, showing that option C is a poor choice. Option A becomes the preferred option, followed by option B.

By calculating ratios using the goals achievement matrix it is assumed that there is a linear relationship between the raw scores and the effects that these scores have. It is

Stakeholder	Goals				
		Benefit/Cost	Noise	Landscape	Ecology
	Weight	55%	15%	15%	15%
	Goal	4.0	40dBA	5	5
Transfund		11.8	-	-	-
Fishers		-	-	-	4
DoC		-	-	1	-
Landowners		-	50dBA	-	-
■ Goal Achieved (Actual Score/Goal) (%)		295%	80%	20%	80%
Weighted Scores (Goal Achieved x Weight)		1.62	0.12	0.03	0.12
<b>Total Score for Option A</b>					<b>1.89</b>

Table 4: Goals achievement matrix for option A

Criterion	Option				
	A	B	C	D	E
Total Score	1.86	1.83	0.60	0.99	0.87
Overall Rank	1	2	5	3	4

Table 5: Summary results for goals achievement matrix

important to recognise that in some cases the relationship will not be linear. For example, the relationship between dBA and the effects of noise is not linear<sup>14</sup>. The difference of 10 dBA from 70 dBA to 80 dBA has a significantly greater effect than an increase from 50 dBA to 60 dBA. While it is not wrong to assume that there is a linear relationship, it is clear that the accuracy of these methods will be improved if any non-linearity is included in the scaling process.

A feature of the goal achievement matrix is its ability to set goals and to provide weight (or emphasis) to various stakeholders. Another feature is that it clearly identifies which stakeholders various goals or criteria affect. While not seen in the Table 2 example, it is likely that several stakeholders will be affected by noise, ecology and landscape impacts.

Otherwise the goals achievement matrix suffers from the same scaling problem as the other methods discussed in this chapter. It is only a tool that helps decision- making.

### *A simple ranking method*

Considered to be one of the most popular methods<sup>15</sup> used when problems include both tangibles and intangibles, this method simply normalises all of the information (both tangible and intangible) in the evaluation matrix. Typically, the information for each criterion is ranked (using an ordinal scale) from best to worst. Once normalised, the ranked scores can be summed (or averaged) to reveal the best overall option. Table 6 illustrates application of the normalising process to the evaluation matrix example in



Table 2. Using this method, Table 6 reveals that:

- Option B and C are the poorest options and can be rejected;
- Option D and E are the best options; and
- Option A is in the middle.

The method results in some similarities to the conclusions drawn using the evaluation matrix in that both identify option C as being poor. However, there are also discrepancies. The evaluation matrix and the goals achievement matrix both identified option B as a preferred option; but the ranking method identifies option B as a poor option.

The simple ranking method has given equal weight or emphasis to the four criteria listed in the Table 2 evaluation matrix. What if more weight was to be given to the economic impacts (B/C results) and less to the three individual environmental impacts? Table 7 shows the same information as the Table 6 ranking matrix, but with the inclusion of weighting: 55% for B/C, and 15% each for the three environmental criteria. In other words, almost identical weight has been given to the B/C as the combined environmental impacts.

Considering the range of options and criteria as a matrix<sub>ji</sub>, having j = n columns and i = m rows, then each cell within the matrix can be given a score:

$$\text{Score}_{ji} = W_i \cdot \text{Rank}_{ji} \quad (1)$$

Criterion	Option				
	A	B	C	D	E
B/C	1	2	5	3	4
Noise	1	5	4	2	3
Landscape	5	3	4	1	1
Ecology	2	4	4	1	2
Total	9	14	17	7	10
Overall Rank	3	4	5	1	2

Table 6: Using simple ranking matrix

Criterion	Weight	Option				
		A	B	C	D	E
B/C	55%	0.55	1.10	2.75	1.65	2.20
Noise	15%	0.15	0.75	0.60	0.30	0.45
Landscape	15%	0.75	0.45	0.60	0.15	0.15
Ecology	15%	0.30	0.60	0.60	0.15	0.30
Total	100%	1.8	2.9	4.6	2.3	3.1
Overall Rank		1	3	5	2	4

Table 7: Using weighted ranking matrix

Where  $\text{Rank}_{ji}$  is the rank for that cell as calculated in Table 6, and  $W_i$  is the weighting for that row (or criterion).

Similar to simple ranking method given in Table 6, the scores<sub>ji</sub> are summed for each option to give an overall total score.

$$\text{Total Score}_j = \sum_{i=1}^m W_i \text{Score}_{ji} \quad (2)$$

Using the weighted ranking method again identifies option C as the poorest. However, the weighted ranking method identifies option A as the preferred option while the simple ranking method identified option D as the preferred option.

One of the features of the ranking method is that it is very simple to use. Furthermore, it is not difficult to include weightings to further refine the process.

The purpose of weightings is to provide the necessary emphasis to each criterion. If it was known, for example, that the value of the pristine native bush affected by option A was ten times the value of the proposed road, then landscape should be given ten times the weighting. While this example makes the idea of setting weighting easy, it must be remembered that we do not know the value of the native bush. Furthermore, if it was known, its value could be simply included in the benefit-cost analysis. So the weightings are a challenge. Because they are the most subjective part of the matrix construction, a range of weightings should be used to test the sensitivity of the preferred options. It is often best to select this range after construction of the matrix so that those determining the weightings can see the impact of the various weighting schemes. It is often helpful to get a group of people<sup>16</sup>, including key stakeholders or the public, to be involved in determining the weightings to be applied.

### Improved Scaling Methods

If the ranking method fails in any way, it is because it does not recognise the differences between scores. For example, the B/C for option A of 11.8 is only 5% greater than option B, and yet the Table 6 ranking scheme stretched these differences to 100%. A number of standardising techniques<sup>17</sup> have been proposed. The most simple involves stretching the row scores from the minimum and maximum values for each criterion within the matrix:

$$\text{Standard Score}_{ji} = \frac{\text{Value}_{ji} - \text{Min}(\text{Value}_i)}{\text{Max}(\text{Value}_i) - \text{Min}(\text{Value}_i)} \quad (3)$$

Where:  $\text{Value}_i$  is the raw value summarised in the Table 2 evaluation matrix,  $\text{Max}(\text{Value}_i)$  is the maximum value of a particular criterion<sub>i</sub> in the Table 2 evaluation matrix (i.e. the maximum relative to all other scores), and  $\text{Min}(\text{Value}_i)$  is the minimum value of a particular criterion<sub>i</sub> in the Table 2 evaluation matrix (i.e. the minimum relative to all other scores).

Equation (3) gives a rating score between 0 and 1 for each criterion. While the scores reflect the relative differences between raw values, we have still introduced a scaling process where the raw data is essentially stretched to fit between 0 and 1. To minimise

the effect of this stretching it is helpful to replace  $\text{Min}(\text{Value}_{ji})$  and  $\text{Max}(\text{Value}_{ji})$  values of the matrix with absolute minimum and maximum values  $\text{ABS}[\text{Min}(\text{Value}_{ji})]$  and  $\text{ABS}[\text{Max}(\text{Value}_{ji})]$ . Equation (3) then becomes:

$$\text{Standard Score}_{ji} = \frac{\text{Value}_i - \text{ABS}[\text{Min}(\text{Value}_i)]}{\text{ABS}[\text{Max}(\text{Value}_i)] - \text{ABS}[\text{Min}(\text{Value}_i)]} \quad (4)$$

Where  $\text{ABS}[\text{Min}(\text{Value}_i)]$  is the absolute minimum value for the particular criterion<sub>i</sub>, and  $\text{ABS}[\text{Max}(\text{Value}_i)]$  is the absolute maximum value for the particular criterion<sub>i</sub>.

Equation (4) will improve the value of the matrix information and hence the decision-making process. To illustrate this, consider a simple example of environmental noise. In practice, day time noise levels are unlikely to be less than 40 dBA or greater than 85 dBA. Consider a project with three options each affected by noise levels ranging from 45 dBA to only 55 dBA. The information is summarised in Table 8 together with the standardised scores calculated using equations 3.3 and 3.4.

It is clear that noise is not a significant issue for any of the three options given in this example, especially as noise can range from 40 dBA to 85 dBA on other projects. Yet equation (3) has stretched the importance of the data, especially for those values that are highest in the matrix (see option C). This stretch makes the decision-making process less precise.

Absolute minimum and maximum scores should be used wherever possible when assessing intangible effects. Specialists should draw on their total experience and attempt to score the impact<sup>18</sup> in terms of absolute scores.

Table 9 illustrates the above-standardised rating method using information from the evaluation matrix given in Table 2. Absolute minimum and maximum values are used. For scaling purposes, the impacts range from insignificant to severe and are given absolute raw scores of 1 to 5. Critical to the success of the Table 9 analysis is the question of direction. For all three environmental impacts, a low raw value is preferred to a higher score. The opposite is true for the B/C values. Hence for the B/C rating scores the following equation must be used:

$$\text{Standard Score}_{ji} = 1.0 - \frac{\text{Value}_{ji} - \text{ABS}[\text{Min}(\text{Value}_{ji})]}{\text{ABS}[\text{Max}(\text{Value}_j)] - \text{ABS}[\text{Min}(\text{Value}_j)]} \quad (5)$$

Similar to previous methods, the standardised scores are summed to provide overall scores.

	Option		
	A	B	C
Raw noise	45	50	55
Equation 3.3	0.00	0.50	1.00
Equation 3.4	0.11	0.22	0.33

Table 8: Using absolute minimum and maximum scores

Criterion	Weight	Option				
		A	B	C	D	E
B/C	55%	(0.00) 0.000	(0.06) 0.038	(1.00) 0.550	(0.81) 0.446	(0.87) 0.479
Noise	15%	(0.22) 0.033	(0.78) 0.117	(0.67) 0.101	(0.33) 0.050	(0.44) 0.067
Landscape	15%	(1.00) 0.150	(0.25) 0.038	(0.50) 0.075	(0.00) 0.000	(0.00) 0.000
Ecology	15%	(0.25) 0.038	(0.50) 0.075	(0.50) 0.075	(0.00) 0.000	(0.25) 0.038
Total	100%	0.22	0.27	0.80	0.50	0.58
Overall Rank		1	2	5	3	4
Note: Figures in brackets are standardised scores using equations 3.4 and 3.5 prior to applying weighting						

Table 9: Using weighted rating matrix

Consistent with previous methods, option C is shown to be very poor. However, uncertainty remains over the preferred option. The above weighted rating method gave option A the best score followed by option B. In terms of first and second place, all three methods have given different results, although it is helpful to note that the first, second and third options are generally much the same.

### An Enhanced Method

In this section, a method is advanced that includes many of the features of previous methods discussed while promoting some enhancements.

The method is based on the evaluation matrix given in Table 2, which in the author's opinion is more suited to many infrastructural problems than the goal achievement matrix. Once the evaluation matrix has been constructed, the following procedures can be followed.

#### Pairwise analysis

Using pairwise analysis, identify all options that can be eliminated from further consideration. The key objective is to reduce the size of the problem to a more manageable size. Pairwise analysis was used earlier to eliminate option E from our example. However, the same technique could be used to also eliminate option C. Referring to Table 2, we see that option C is inferior to option B in all aspects except for landscape, which is slightly more adversely affected.

As part of the pairwise analysis, it may be possible to undertake a subjective assessment on whether the greater adverse effects on the landscape are worth about \$20 million, being the value of the significantly improved economic efficiency offered by option B. Clearly the answer to this question will vary from case to case, but in many instances it may enable the decision-makers to make further elimination.

#### Threshold values

Another useful way of reducing the size of the evaluation matrix, and hence the size of the problem, is eliminating any options that contain scores that are non-negotiable.

Where possible, minimum or maximum acceptable threshold levels should be identified for each criterion. Transfund presently demands a benefit-cost ratio of 4.0 for all roading projects. This minimum threshold could be used in the Figure 1 and Table 2 example to eliminate options C and E from further consideration.

Threshold values can also be identified for intangible criteria. Any projects having noise levels greater than 80 dBA could be eliminated on the basis of being a serious long-term health hazard. Option A could be eliminated on the basis that damage to the pristine native bush is non-negotiable.

By using a step-by-step process involving pairwise analysis and threshold values, we have reduced the Table 2 problem to a comparison of only two options: Option B and D. While deciding between these two options remains a challenge, the decision problem is much simpler to communicate to others involved in the decision-making process. This becomes very important where working parties or other groups are responsible for the decision making.

### *Summarising the Tangibles and Intangibles*

If the Table 9 weighting rating matrix suffers in anyway, it is that the benefit-cost ratio has been scaled and standardised. By scaling this information its purity is reduced. The origin and original scale of the data are lost. While it is necessary to scale and standardise the intangible information so it can be manipulated within the matrix, it is not necessary to standardise the tangibles. For these reasons, the authors propose to keep the tangibles and intangibles separate in the matrix. Using the weighted rating method (Table 9), all the intangibles can be combined (together with appropriate weighting) to give an overall intangible rating. Similarly, all the tangibles can be summed numerically to provide an overall tangible value.

Table 10 provides such a summarised matrix for our Figure 1 and Table 2 example. Only Options B and D are shown, as all other options were eliminated in the previous steps. In the Table 10 example, equal weight has been given to the three environmental criteria. The standardised scores are based on equation 3.4. By summing all three standardised scores for the environmental criteria, we obtain an overall weighted score. Table 10 shows that the overall weighted score of 0.51 for Option B and 0.10 for Option D, means that Option B has an overall moderate impact and Option D has an overall insignificant impact.

To enable a comparison of the two options, the tangibles and intangibles are plotted graphically, as shown in Figure 2.

Clearly, the closer the option is to the origin the better it is. By drawing a line from the origin at varying angles, it is possible to test the effects of applying various emphases either to the tangibles or intangibles.

Ultimately, many problems end up being very similar to that shown in Figure 2. It is a tension between economic efficiency and environmental impacts. Such a problem can, in the end, only be solved through attempting to trade off the increased economic benefits of option B over the increased environmental impacts created by it.

One helpful method of comparing the economic benefits with the environmental ben-

Criterion		Option			
		B		D	
Benefit Cost		B/C Ratio 11.2		B/C Ratio 4.2	
Environmental		Score	Standardised Score	Score	Standardised Score
	Weight				
Noise	33%	75 dBA	(0.78) 0.26	55 dBA	(0.33) 0.11
Landscape	33%	Minor	(0.25) 0.08	Insignificant	(0.00) 0.0
Ecology	33%	Moderate	(0.50) 0.17	Insignificant	(0.00) 0.0
Weighted Total for Environmental		Moderate	0.51	Insignificant	0.1

Standardised Rating Scores for Environmental: Insignificant + 0.0; Minor = 0.25, Moderate = 0.50; Significant = 0.75; Severe = 1.00.

Table 10: Reduced Matrix

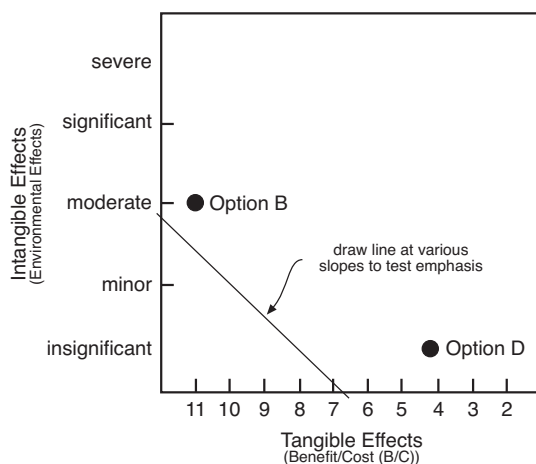


Figure 2: Option Comparison

efits is to consider the incremental value added by each option. The approach, similar to the pairwise analysis completed earlier, is best explained by an example. Table 11 summarises the incremental value of option B compared to option D.

Compared to option D, option B costs only \$1 m more and yet yields \$95.5 m more benefits. This gives an incremental B/C of  $\frac{95.5}{1} = 95.5 = 95.5$ .

The net benefit of option B over option D is  $95.5 - 1 = \$94.5$  m. Option B is clearly superior to option D economically; however the real question becomes whether the differences in environmental impacts between the two options is worth this \$94.5 m.

To help answer this question, it is helpful to go back to the details of the original problem and note that option B has significantly greater noise effects than option D and higher ecological impacts.

Option	Cost (\$M)	Benefit (\$M)	Environmental Impacts
B	13.0	145.5	Moderate
D	12.0	50.0	Insignificant
Increment	1.0	95.5	Minor

*Table 11: Incremental value comparison*

## Conclusions

Determining a preferred site or alignment for a new infrastructure project can be complex, especially when projects have significant stakeholder interest and adverse environmental effects. The decision-making process for many modern projects involves an enormous amount of information about the effects of various options. Some of this information can be quantified and given monetary value, and incorporated within a benefit-cost analysis similar to the method required by Transfund for the selection of preferred roading alignments. However, much of the information is intangible, relating to people's emotions, their environment and their spiritual, community and cultural values. The majority of this intangible information can only be collected through consultation. Consultation must be seen as part of the information collection exercise and must therefore be undertaken early in the decision-making process.

It can be a challenge to collate and summarise all this information in a meaningful way that assists with the decision-making process, particularly if there are a large number of options to be considered. This chapter reviewed some of the common problems associated with decision-making on projects having significant stakeholder interest and adverse environmental effects. It also reviewed a number of commonly used decision-making tools and highlights the advantages and disadvantages of each. Many of these methods involve a level of arithmetic that, while not excessively complex, does nevertheless give the impression to lay people involved in the decision-making process that the tool is a mathematical or statistical process. However, decision-making tools are just tools; providing insight into a problem and encouraging creativity in solving it. No matter how helpful these tools are, the final decision must be made by the decision-makers. It is important, therefore, that a decision-making tool clearly conveys this level of "crudeness" to those involved in the decision-making process.

The chapter outlined a new decision-making tool used on a recent project. One of the features of the method is that it can be helpful for key stakeholders, working party members and the public to understand the decision-making process. This is considered to be an important feature of successful decision-making tools.

A number of general guidelines about decision-making can therefore be concluded:

- It is important to involve all key stakeholders and others affected by the project in the decision-making process.
- Consultation must be seen as part of the information collection process. It must be done early in the process — not after key decisions have been made.

- Key stakeholders must understand the decision-making tools used. If they don't, there is a risk that they will focus on, and criticise, the decision-making tool rather than the real issues, these being the impacts and effects of the various project options. Therefore, use simple decision-making tools, and ensure that decision-makers are aware that it is only a tool to aid decision-making.
- Keep tangibles and intangibles separate from each other in the decision-making process.
- Don't reduce the value that tangible information (\$) provides to the decision-making process by scaling or standardising it using methods that should be reserved for manipulating intangible information.
- Use weighting to test for sensitivity and to permit decision-makers to apply different emphasis to the various criteria.
- Extensive consultation and conflict resolution through workshops should be seen as helpful to the decision-making process, as they create win-win opportunities.

## Notes and References

- 1 Transfund (1998). *Project Evaluation Manual*, Transfund, Wellington.
- 2 Fourth Schedule 1(b) requires as matters that should be included in the assessment of effects on the environment to accompany a resource consent application: "where it is likely that an activity will result in any significant adverse effects on the environment, a description of any possible alternative locations or methods for undertaking the activity". Also see s92(2)(a) and (b), s104(3). For Notices of Requirement to designate land, see s171(1)(b) and s168(3).
- 3 TransPower New Zealand Ltd v Rodney District Council A56/94; Dunbar v TransPower W189/96; Mahuta v Waikato Regional Council A91/98; Te Runanga O Taumarere v The Northland Regional Council A108/95; Mason-Riseborough v Matamata-Piako District Council A143/96.
- 4 Friend, J K and Jessop, W N (1969). *Local Government and Strategic Choice*, Tavistock, London.
- 5 Two types of information can be given monetary value. Some information can easily be given monetary value because it is regularly brought and sold in the market place (e.g. land compensation). Other information can only be given monetary value with difficulty (e.g. injury costs, vehicle-operating costs).
- 6 Lichfield et al (1975), refer to Voogd, H (1983). *Multi-criteria Evaluation for Urban and Regional Planning*, Pion Ltd.
- 7 Refer to Voogd, H (1983). *Multi-criteria Evaluation for Urban and Regional Planning*, Pion Ltd., for an introduction to the subject.



- 8 Voogd, H (1982). "Multi-criteria evaluation with method qualitative and quantitative data", *Environmental and Planning B*, 1982, Vol. 9, pp 221-236.
- 9 Munda, G; Nijkump, P and Rietveld, P (1994). "Qualitative multi-criteria evaluation for environmental management", *Ecological Economics* 10, (1994), pp 97-112.
- 10 Voogd, H (1983). *Multi-criteria Evaluation for Urban and Regional Planning*, Pion Ltd.
- 11 Peters (1973) quoted in Voogd, H (1983). *Multi-criteria Evaluation for Urban and Regional Planning*, Pion Ltd.
- 12 Davidson, R R and Farquhar, P H (1976). "A bibliography on the method of Paired Comparisons", *Biometrics*, Vol 32 (1976), pp 241-252.
- 13 Hill, M (1968). "A goals – achievement matrix for evaluating alternative plans", *Journal of the American Institute of Planners*, Vol-34, 1 (1968), pp 19-29.
- 14 Transit New Zealand (1994). *Guidelines for Road Traffic Noise – SH Improvements*, Draft Working Document, November 1994.
- 15 Voogd, H (1983). *Multi-criteria Evaluation for Urban and Regional Planning*, Pion Ltd.
- 16 Delphi methods can also be useful for determining weightings. Delphi methods provides a structured committee approach. Experts, key stakeholders, working party members or representatives of the public, could all be involved in a Delphi group. Delphi methods have three features over conventional committee decisions: anonymity, iteration (via feedback) and statistical robustness. For an overview of the method refer to Dickey, J W and Watts, T M (1978). *Analytical Techniques in Urban and Regional Planning*, McGraw-Hill.
- 17 Voogd, H (1983). *Multi-criteria Evaluation for Urban and Regional Planning*, Pion Ltd., pp 78 to 94.
- 18 Many guidelines encourage this approach; see *Site of Special Biological Interest (SSBI) Criteria*, published by the Department of Conservation 1991.



## CHAPTER 8

# Council Evaluation of Assessments of Environmental Effects

Leo Fietje\*

### Introduction

The Resource Management Act 1991 (the Act) requires applicants for resource consents to provide an assessment of any actual or potential effects that the activity may have on the environment, and a description of the ways in which any adverse effects may be mitigated. These assessments are commonly referred to as “Assessments of Environmental Effects” or AEEs. The Act requires the detail of AEEs to correspond with the scale and significance of the actual potential effects that the activity may have on the environment. The Act also requires AEEs to be prepared in accordance with a schedule (Fourth Schedule) setting out matters that should be included, and matters that should be considered when the AEE is prepared.

The purpose of the Act is to promote the sustainable management of natural and physical resources. This requires sound decision-making when persons apply for consent to use natural and physical resources. The AEE is fundamental to ensuring decision-makers have access to sound information upon which to base decisions that will achieve the purpose of the Act. The purpose of this chapter is to outline the steps taken by councils in evaluating AEEs to ensure they deliver full and correct information about activities requiring consent, thereby enabling sound decisions to be made.

### Council Roles

One of the significant advantages brought about by the introduction of the Act is not only its single purpose, but also its single framework specified for all applications for resource consent.

Within this framework a number of key decisions are made. These decisions are made by the “consent authority” (councillors, commissioners or senior council staff) who normally also employ officers or consultants (“advisory staff”) to advise them, applicants and other parties on a range of matters related to the consents process. Advisors to consent authorities have a role that is very distinct from that of the consent authority. The consent authority must act in a quasi-judicial capacity and cannot therefore be involved in supplying advice to those for whom they will later be making decisions. Advisors are not bound in this manner and are free to advise all parties to the process. For practical reasons, consent authorities often delegate to advisory staff the authority to make some decisions such as requesting further information from applicants, setting hearings and decisions on non-notification of applications.

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The two distinct roles and the separation between advisor and consent authority means that advisors cannot bind consent authorities when giving advice. While it is obviously highly desirable that the advice given about, for example, the content of an AEE is consistent with that which the consent authority making the decision would wish to see in the AEE, ultimately the separation of roles means that advisors cannot go beyond predicting what the consent authority may decide – they cannot enter the mind of the consent authority. A clear understanding of these separate roles is important for all involved in the process. It also highlights the importance of advisors and consent authorities working closely together. Feedback loops must be complete and well-oiled to ensure that omissions in advice are not repeated. More significantly, however, it also points advisors to the guidelines and criteria they should use when formulating their advice. While applicants are given the Fourth Schedule, consent authorities are directed towards a series of sections in the Act when deciding an application. Advisors to consent authorities would be remiss if they did not also refer to these when giving their advice on matters such as the content of an AEE.

Councils are not obliged to give advice to applicants for resource consent, and neither are they obliged to seek advice when making decisions. Nevertheless, most councils will offer advice to applicants and other parties involved in the consents process and most will seek advice when making decisions. Depending on one's position within the political spectrum there are, however, obvious tensions when advisors working for consent authorities give advice (which is often given freely and paid for by ratepayers), potentially in competition with private sector advisors assisting applicants to prepare their application. While councils are heavily relied on for their advice, most have, of necessity, limited the scope of such advice based on factors such as time, complexity, or type of advice sought. The heavy reliance on councils to provide advice has stunted the development of independent, industry-driven techniques for the evaluation of AEEs – in particular, answering the basic questions of what an AEE should include, and to what level of detail, to correspond with the scale and significance of the effects an activity may have on the environment.

Knowing what to include in an AEE, and to what level of detail, is a key issue for any applicant. Without this information they cannot obtain reliable and competitive quotes for the preparation of the AEE, neither can they know whether development of the AEE will be held up while further information is sought by the consent authority.

## **Use of Information in Assessments of Environmental Effects**

The information in the AEE is used in two key decisions:

- 1 Can the application for consent be considered without the need for public notification?
- 2 Can the application for consent be granted?

The Act sets out criteria<sup>1</sup> for each of these decisions. For the first, the consent author-

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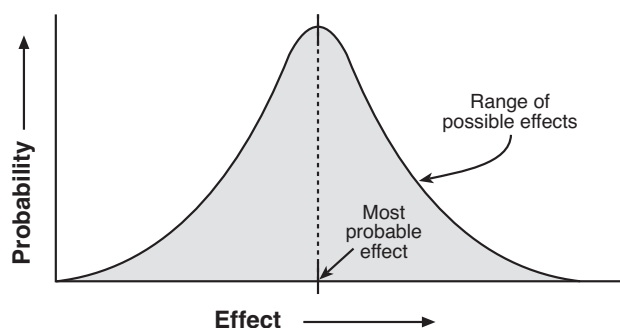
<sup>1</sup> For non-notification, the criteria are set out in S.94 RMA. Criteria for decision are set out in Sections 104-107 RMA and Part II incorporating Sections 5-8 RMA.

ity must be satisfied that all adverse effects on the environment resulting from the activity are minor; that all adversely affected persons have given their approval; and that no special circumstances exist that would otherwise require the application to be notified. This decision requires knowledge of the magnitude of each effect on each part of the environment. If any adverse effect exceeds the “minor” threshold, the effect must either be treated to reduce its magnitude or the application must be notified. It also requires knowledge about any identified adverse effect on any person so the need for their approval can be determined.

For applications meeting the threshold for non-notification, it can normally be assumed that the application will also be granted unless it is contrary to a policy not related to adverse effects. Where adverse effects on the environment, even after treatment, are more than minor and the application has been notified, the magnitude of all effects, both adverse and positive, must be known so they can be looked at together to determine whether the proposal meets the purpose of the Act.

### Implications of Scale

The Act defines the words “effect” and “environment” broadly. Effect, for example, includes cumulative effects as well as effects of low probability, which have high potential impacts. These definitions are identical to those used by the consent authority in making its decisions, hence the AEE will need to include, where appropriate, an analysis of not just the magnitude of an adverse effect, but also its probability. Given the uncertainty associated with most predictive techniques, together with natural variability, estimates of effects are seldom single-point values. Rather, a range of estimates results, shown as a probability distribution curve in Figure 1.



*Figure 1: Probability distribution curve*

Unlike predictions about positive effects, where the most probable effect is the one normally used, for adverse effects it is also necessary to consider those of low probability but high potential impact. Where the magnitude of the adverse effect is significant, a line needs to be drawn somewhere towards the top end of the range of estimates, at a point where the probability of exceedance is so small it is deemed acceptable. This is often referred to as a “worst case scenario”, although such scenarios are rarely “worst case” but somebody’s decision about an acceptable level of non-exceedance (Figure 2).

Conscious decisions about level of acceptable probability of non-exceedance are essential to avoid ridiculous extremes in estimates of adverse effect.

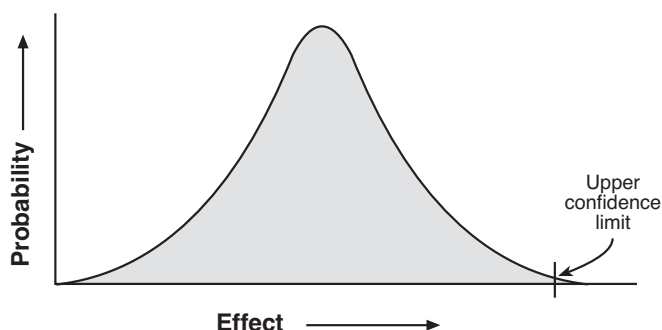


Figure 2: Most probable vs 'worst case scenario' effects

In addition to adverse effects that are of some consequence, there may be those that are perceived to be of concern to some in the community as well as those that could be of concern given the nature of the activity. For both these, the AEE should, as a minimum, explain why an adverse effect is of no consequence or why it does not exist. The Environment Court has made it very clear that those who may be affected by a particular proposal should not themselves have to engage in studies or investigations in order to determine the magnitude of any effect on them. That is clearly the role of the applicant preparing the AEE, but is not always adequately covered.

### Inadequate Assessments of Environmental Effects

Responsibility for preparing AEEs lies with applicants even though they may engage others to assist them. If the AEE is subsequently found to be inadequate, council staff are limited in their ability to correct inadequacies without referring the AEE back to the applicant. This is partly due to AEE ownership – if information supplied by applicant contains inaccuracies, councils can review and, if necessary, even cancel the consent. This cannot be done if the information is supplied by council staff, removing an important element of protection against significant adverse effects resulting from the exercise of consents. A second, more problematic reason, is that councils leave themselves open to criticism from competent consultants who may have missed out on the job of preparing an AEE, and because they knew what was required to prepare an adequate one, only to see such inadequate AEEs repaired by council staff. Inevitably this can only result in an overall lowering of the standard of preparation of AEEs. This problem is accentuated if inadequacies have to be corrected at ratepayers' expense.

### Role of Hearings in the Evaluation Process

The most transparent and best known form of council evaluation of an AEE occurs at a public hearing held to consider an application for resource consent. The consent authority may request and receive, from any person who makes a *report* under Section 42 of the Act, any information or advice that is relevant and reasonably necessary to determine the application. The Act defines *information* as including any *document* or *evi-*

*dence*, which taken together with the words *report* and *advice*, indicates that such information is not solely evidence as would be placed before the Environment Court, but can include information outside the advisor's immediate area of expertise about which they can give evidence. This is significant as it means one person can "front up" to a consent hearing covering a range of matters, bringing in additional expertise only where it is outside their ability to accurately transmit and explain it, rather than simply on the basis that they hold no qualifications in that area. This reduces costs significantly.

While there is no set format for so-called *officer reports*, matters covered by them include legal and planning aspects as well as advice related to effects on the environment. Rather than repeat what the applicant has stated in their application, commentary on the AEE is generally related to reassuring the consent authority that the information they are presented with is complete, and may be relied on when considering their decision. Officer reports normally go beyond commentary on the analysis of effects and may also draw on the officer's own experience in relation to accepted guidelines, previous decisions, or the officer's view on acceptability or otherwise of the adverse effects in relation to the purpose of the Act. Table 1 sets out the order in which an AEE (Discharge Application) may be evaluated for presentation to a consent authority holding a hearing.

Table 1 makes the preparation of an AEE look formidable, but, as in all things related to AEEs, judgement must be exercised at all times. The above does highlight, however, the importance of ensuring that nothing is taken for granted and that, where appropriate, full and detailed explanations, including assumptions both explicit and implicit, must be set out in an AEE so the community, as well as the consent authority, can satisfy themselves about the accuracy or otherwise of any predictions made in the AEE. Failure to do this is the cause of much of the strife associated with the use and abuse of AEEs. As mentioned earlier, a proper and correct understanding of all the effects of an activity on the environment is fundamental to sound decision-making regarding the use of natural and physical resources.

AEE EVALUATION				COMMENTS
PHASE	TOPIC	QUESTIONS ASKED		
SCOPING	Description of Activity	<ul style="list-style-type: none"><li>How well has the applicant described the activity requiring the consent?</li><li>Have all necessary resource consents been applied for?</li><li>Has the applicant defined the boundaries within which the activity takes place, in such a way that these restrictions could be applied as conditions to any consent granted?</li></ul>		
	Description of Environment Affected by Activity	<ul style="list-style-type: none"><li>Has the applicant demonstrated a full understanding and appreciation of the environment within which their activity will take place?</li><li>Do they understand the complexities of inter-relationships, the sensitivity of the environment and the uses currently made of it?</li></ul>		
	Description of Nature and Method of Discharge	<p>Has the applicant given a clear explanation of <b>what</b> is being discharged, <b>how much</b> and <b>how</b> ?</p> <ul style="list-style-type: none"><li>Does <b>what</b> is being discharged depend on treatment systems and if so, how reliable are these and what assumptions are used in estimating this reliability?</li><li>Are these assumptions valid? In particular, does the treatment system rely on regular maintenance and if so, what provision has been made for this to occur for the life of the system?</li><li>Has the applicant given a full list of contaminants discharged, both when things go right and things go wrong?</li><li>Has the applicant attempted to select indicators of contamination and if so, how valid are these?</li></ul>		
			<ul style="list-style-type: none"><li>With respect to <b>how much</b>, again has the concentration and rate for each contaminant been detailed, both when things go right and things go wrong such as extreme weather events?</li><li>Are assumptions used in estimating these valid?</li><li>If the discharge is existing, what measurements have been undertaken to verify details supplied?</li><li>Do these measurements accord with Council records?</li></ul>	

Table 1: Sample (Discharge Consent) AEE evaluation order for presentation to a consent authority



PHASE	TOPIC	QUESTIONS ASKED	COMMENTS
		<ul style="list-style-type: none"> <li>With respect to <b>how</b>, has the applicant detailed the method by which contaminants will be discharged into the environment?</li> <li>Will there be difficulty with dissipation of energy at the point of discharge?</li> <li>Does the energy at point of discharge pose a health or safety hazard?</li> </ul>	While applicants are not obliged and cannot be required to consult, doing so and reporting the results accurately can be very helpful in reassuring the consent authority that all relevant adverse effects on the environment have been analysed and evaluated. For applications not notified, which will of course generally not go before a hearing, results of consultation are very significant when determining who the adversely affected persons are whose approval is required. A prudent applicant will consider consultation an important part of the assessment process.
	Details of Consultation Undertaken with Interested and Affected Parties		
	Actual and Potential Effects of the Activity on the Environment	<ul style="list-style-type: none"> <li>Has the applicant identified all relevant effects on the environment resulting from the activity?</li> <li>What techniques have been used to determine this?</li> <li>Are the techniques valid?</li> <li>Has the applicant included sufficient information about effects perceived by others to be significant, to demonstrate that these are not?</li> </ul>	
<b>ANALYSIS</b>	(for each effect identified through scoping)	<ul style="list-style-type: none"> <li>What technique was used to analyse the effect and is it appropriate? Is it in common usage, i.e. supported by peers and shown to be field-validated?</li> <li>Has appropriate data been used to calculate the effect?</li> <li>Has biased or favourable data been used rather than that which represents reality or extreme events? How valid is the data and can it be field-validated? If values are reliant on assumptions about treatment systems etc., are such assumptions valid?</li> </ul>	

*Table 1: Sample (Discharge Consent) AEE evaluation order for presentation to a consent authority (cont'd)*

PHASE	TOPIC	QUESTIONS ASKED	COMMENTS
	Consideration of Effects on Tangata Whenua	<ul style="list-style-type: none"> <li>Has the applicant given a single estimate of adverse effect or a range? How valid and appropriate is either? What techniques were used to establish the range and is it appropriate? Has the applicant established a "worst case scenario" and is this set at the appropriate confidence limit?</li> <li>Has the applicant consulted with tangata whenua and if so, have the results of such consultation been accurately transmitted?</li> </ul>	The consent authority has obligations under the Act to ensure that a number of matters of potential concern to tangata whenua are recognised and provided for. They are also required to take into account the principles of the Treaty of Waitangi (Te Tiriti O Waitangi) hence will need to be provided with information about these matters. Note that the Environment Court's interpretation of what full and proper consultation entails provides a useful guide.
EVALUATION	For each effect referred to above.	<ul style="list-style-type: none"> <li>Choice of measure for the effect.</li> <li>How has the magnitude of the adverse effect been specified?</li> <li>Is the adverse effect measurable? If so, are the measures used appropriate to allow use of value judgements when evaluating the effect?</li> </ul>	
TREATMENT	For each effect referred to above.	<ul style="list-style-type: none"> <li>Are methods proposed to treat adverse effects appropriate?</li> <li>Are they reliable?</li> <li>Can they be formulated into conditions that are defensible, legal, certain and enforceable?</li> </ul>	
MONITORING		<ul style="list-style-type: none"> <li>Is impact monitoring required.</li> <li>If so can a programme be formulated which gives valid and meaningful results?</li> <li>Should the results of monitoring be used to review conditions?</li> </ul>	

Table 1: Sample (Discharge Consent) AEE evaluation order for presentation to a consent authority (cont'd)

## CHAPTER 9

### Evaluation in the AEE Process: Issues, Processes and Methods

Richard K. Morgan\*

#### Introduction

One of the key principles of environmental impact assessment (of which AEE is but a variant) is that the values of affected parties need to be recognised when the impacts (or effects) are being considered by decision-makers. This is based on the simple notion that those bearing the cost of other people's activities ought to have their views considered and, ideally, have a say in the decision. Until a certain level of information about the possible effects or impacts of a proposed activity has been reached, however, it is not possible to determine whether or not the impacts are socially acceptable. In other words, whether or not any particular group or groups consider the potential impacts on the environment to be significant in terms of the values they hold.

In EIA, then, the term *evaluation* refers to a process in which the social significance of the predicted impacts is explored and potential trade-offs between different objectives, and between different stakeholders, are recognised and investigated, so that a decision can be reached about a proposed activity.

This chapter is intended to stimulate thinking about the evaluation process and how it is practised in New Zealand impact assessment, specifically through the AEE process. Values and significance are considered first: what sources do we use to judge significance of predicted impacts? Following that, a brief overview is provided of the methods used in EIA to evaluate impact assessment information, before turning to the AEE process and considering the typical evaluation strategy adopted in New Zealand. Finally, ways are suggested to try and improve evaluation in the AEE process, and thereby improve the effectiveness of AEE as an environmental management tool. The primary purpose of this chapter is to stimulate thinking about values and significance, and to encourage practitioners to reflect on their own approach to this issue.

#### Values and significance

The US Council for Environmental Quality suggests that we can look to three sources when trying to judge the significance of potential impacts (Canter and Canty, 1993):

- Institutional sources: policies, plans, statutes, etc. These establish the broad framework of what society and communities value (clean water, rare plants, safe streets, etc.).
- Expert sources: experts can be asked for a technical opinion about a potential impact, in the sense of how disruptive it would be to the environmental system in question (for example, how would loss of a major tree species affect the functioning of a forest

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community?), but they would not be asked whether the impact was socially acceptable; and

- The public provide the most immediate source of social significance.

This simple framework provides a useful starting point when thinking about value judgements in AEEs. Potential impacts can be measured against institutional instruments, including plans and environmental standards. The scientific or technical judgement of experts can be included in establishing the significance of the impacts. The incorporation of community values is potentially the most useful, yet it is also the most challenging.

### **Capturing public values**

Historically, there have been two strategies for dealing with public concerns and values in EIA.

#### *Socio-political evaluation*

The essence of this strategy is to leave the evaluation to the post-impact assessment process, typically through public submissions, hearings, and the like. This is the approach generally used in New Zealand; the AEE process is viewed as yielding “factual” information that can then be debated in the value-laden, public decision-making arena. In that way, affected parties can make known their views, and decision-makers can then reach a decision that reflects some rationalisation of the often contradictory opinions voiced during the process.

#### *Techno-social evaluation*

The second strategy is to incorporate evaluation into the formal EIA activity (i.e. that part carried out by the impact assessor) using some form of technical procedure. The second strategy is more typical of the US system, as established by the National Environmental Policy Act (NEPA) 1969 and influenced by subsequent judicial rulings, and procedural clarification from the Council on Environmental Quality. In the US, federal agencies using EIA for major resource developments have to be in a position to defend their implementation of the NEPA provisions, if necessary in a court of law. One key area in this regard is the selection of the best project option from a set of alternative options. Since 1970, a great deal of effort has been put into developing methods and techniques for dealing with large amounts of impact information, some quantitative (but often measured in a variety of units), and some qualitative, and also incorporating the values of stakeholders in the decision-making process.

It is possible to distinguish three broad families of method (see Morgan, 1998, for a fuller description) as follows.

- Monetary evaluation. All impacts are translated into the common currency (literally) of money, which is also a common expression of value to which virtually all members of a community can relate. Environmental/welfare economics can now provide methods for assigning monetary values to intangible aspects, such as visual character, rarity of species, etc. (albeit still the subject of vigorous debate). Impact

information can be brought to a single figure, summarising net benefits or costs in monetary terms.

There are many different methods for monetary evaluation of non-market goods:

- Contingent valuation methods based on a person's willingness to pay, or to accept, money in return for a service or good (for instance, to preserve a vista, or to maintain a bus service).
- Market approaches, such as the dose-response method in which the effect on goods with market prices are used to estimate a value (such as days lost through health impacts), and the repair/replacement cost methods in which the cost of making good the damage caused by an impact are used to put a monetary value on the impact.
- Surrogate market approaches, a group of methods based on the notion that related market goods can be used to assess the value of impacts; they include defensive/avertable expenditure (the classic example being the cost of double-glazing to reduce noise impacts); travel cost method (how much are people prepared to pay to travel to a given attraction or facility); and the hedonic pricing method (such as the reduced value of property in higher crime areas, relative to "safe" areas, giving a monetary value for the diffuse impact of crime on a community).

Useful sources on these and other methods are James (1994), Pearce and Moran (1992) and Department of Environment (1994).

- Techno-scientific evaluation methods [also known as scaling/weighting methods]. This refers to the family of quantitative techniques generated within the EIA arena that can now be seen to be variants of the larger family of approaches known as multi-criteria decision analysis, or multi-criteria decision-making methods (MCDA or MCDM respectively). These techniques typically have three basic elements:
  - scaling: a means for converting impacts, measured in different ways into a common currency (but not dollars), hence "environmental quality units", "environmental utility", etc.;
  - weighting: a process for assigning weights to the environmental parameters, to represent their comparative value to a given person or group; and
  - a decision rule: these methods are frequently associated with the analysis of project alternatives, so the rule is usually required for identifying the "best" alternative; the change in environmental quality unit for a given impact is multiplied by its value weight, then added to similar calculations for all the other impacts; the simplest rule is to select the alternative with the lowest total weighted impact value.

Examples of methods developed in EIA are the Environmental Evaluation System and the Water Resources Assessment Methodology (WRAM), both developed in the US in the 1970s but which, despite their age, still influence more recent methods such as SAGE (see below). In addition, MCDM or MCDA methods have been explored for EIA purposes, including a group of methods based on multi-attribute utility theory (MAUT), a particular branch of decision theory. Further discussion and a

critique of these approaches can be found in Morgan (1998). Most textbooks on EIA will describe the basic approach, and some of the above methods (see, for example, Glasson et al (1999), Canter (1996) and McAllister (1980)).

- **Socio-scientific evaluation methods.** These approaches place greater emphasis on the involvement of affected parties or interest groups in establishing weights, or other aspects of the process. They still seek to be rational, and generally use similar coding and numeric manipulation procedures, but the involvement of people from the affected communities can lead to a greater emphasis on personal reflection, developing dialogues about impacts and significance, recognising preference structures of other groups in a community, and so forth. The idea is to lower the technocratic element, and maximise the social benefits of the process, while retaining the advantages of a structured process, rational comparison of alternatives, and so forth. Example methods include the SAGE approach (Social judgement capturing, Adaptive Goals achievement, Environmental assessment) described in Hyman and Stiffler (1988), which modifies the WRAM approach by greater attention to social values, and the Panel Evaluation Method (Staath, Sowman and Grindley, 1993), which is much more a community-based approach to environmental assessment. Both methods are described and discussed in Morgan (1998).

Approaches such as the Adaptive Environmental Assessment and Management (AEAM) methodology (Holling, 1978), which combines computer modelling and simulation with workshops that bring stakeholders together to explore their own and each other's attitudes to possible strategies for managing environmental or resource systems, could also be included in this category. The technical part of the process is used to stimulate the participants in their discussions: in particular, it encourages people with different value sets to recognise other peoples' values, especially in the face of uncertainty over the future behaviour of the natural systems in question. This approach has been used in Australia for a policy-level environmental assessment (known as a strategic environmental assessment or SEA) by Gilmour and Walkerdien (1994), and it may be a useful strategy in the early stages of investigating and scoping the environmental and social issues raised by a major project.

The technical approaches are complex, elaborate, and not readily understood by members of the public. Most rely on putting numbers on predicted impacts, including those that do not easily lend themselves to quantification. Indeed, monetary approaches reduce all impacts to a single combined measure of magnitude and value; but what of the loss of information about the impacts when this is done? The methods for placing monetary values on intangible environmental characteristics (mood, views, rarity, etc.) are still subject to methodological as well as philosophical debate. The non-monetary methods also reduce impacts to a common unit, and then assign value weights. The derivation of the functions to convert impacts to the new scale, and the derivation of the weights, are both steps that raise concerns and attract criticism. A fundamental problem of all the technical approaches is that they can yield a seemingly simple answer to the question — which option should be adopted? Given the internal problems of the various techniques, that answer is not necessarily a reliable one, but after complex calculations it is tempting for decision-makers to accept it rather than wade through all

the detailed technical information themselves. Finally, of course, most of these methods are usually only realistic for large projects, where the expense is justified by the total cost of the project concerned. When we look at the New Zealand context, with possibly the widest scope of application of impact assessment of any country, the greater proportion of consent applications would not seem to warrant such methods.

Yet, for larger projects, and if used in a considered way as is increasingly the case with the socio-scientific approaches, these methods can provide useful insights into the preference structures of affected groups, and their response to particular project options. If used in a more investigative, exploratory and indicative manner, rather than simply as technocratic decision-making tools, then these methods and techniques can give us greater understanding of the differing attitudes of interested and affected groups in the community.

There may sometimes be a case, perhaps for large or contentious projects, for these approaches to be used after an AEE has been submitted, as part of a pre-hearing process that brings stakeholders together to participate in a formal, technical evaluation procedure that is then used to stimulate discussion and conflict resolution, and help council staff formulate advice to councillors.

### **Evaluation in AEEs**

Recalling the three sources of significance described at the start of this chapter, most AEEs tend to use the institutional and expert sources of significance when reaching conclusions about the importance of potential impacts. Thus, there will be references to relevant policies in a Regional Policy Statement, the specific provisions of the District Plan (transitional, notified or operational), issues mentioned in the Fourth Schedule, matters explicitly listed in sections 6-8 of the RMA, and so forth. Specific rules or standards established by councils will also be used where appropriate. There may also be statements based on expert judgement, in which the significance of an impact is assessed in terms of its importance for the integrity of a particular environmental sector. What is rarely seen are serious attempts to use the third source of significance judgement — the public.

In many ways, this is the most important source as it brings the process down to the level of, and focuses on the issues that concern, the local community. Institutional significance is too coarse to deal with the day-to-day issues that normal people have to worry about, which is why we have a process that, in theory at least, encourages the involvement of those people. It is this level of debate that makes AEE such a powerful tool for resolving conflict over resource use between groups or individuals in a community. A conclusion from the author's observations is that most impact assessors do not try to incorporate public values into their AEEs; rather they rely on the wider consent process to address this issue.

The usual approach to evaluating the public significance of predicted impacts is to use the public submission/hearing phase of the consent process, in the belief that affected parties will use the opportunities to make their views known. The decision-makers in the councils can then balance those views and make a rational decision. Given that the

technical approaches have problems, are complex and often expensive to use, and remembering the high proportion of smaller projects in the New Zealand system, it can be argued that this is a more appropriate strategy for New Zealand impact assessment.

Indeed, it may be the more appropriate strategy, but again, from the author's observation of the consent process in operation, it could be suggested that there are problems with this approach from the point of view of the effective incorporation of values.

The AEE information itself is generally strongly influenced by the values of the consent applicant and/or impact assessor (typically a consultant). It is not unusual to see statements of the type "the effect on visual character of the area is not significant", which are value-based statements of significance, but are in fact a statement of the impact assessor's own values (as opposed to a substantiated and reasoned expert statement). Moreover, there is no mechanism to require the impact assessor to recognise and incorporate the concerns and values of other parties. As a result, the information coming into the public review/hearing process will often be value laden, and heavily filtered.

Is this situation corrected by the council review process? Not really; the review at this stage is largely governed by what the council staff need for their internal decision-making purposes, as well as meeting any specific legal requirements of the RMA. Of course, planning or consent staff must decide whether further information is required, but this tends to be at the level of ensuring issues are addressed in some form or other, or that specific technical information required by the council is provided. The consideration of the quality of the impact information itself is less important: after all, what can they do if the AEE covers the important issues, but not very well? There is, then, normally little likelihood of value-laden AEEs being modified by council review. In this regard, the review process does not generally work to improve the information being made available for the public to use.

Councils are concerned with values when considering the issues raised by the AEE — the RMA itself, together with policies, plans, environmental standards, and other institutional value sources, all used by council staff when considering AEEs. These represent the major, societal- and community-level values and are comparatively stable over time. (They are also the aspects that are usually addressed in AEEs, reflecting the technocratic interdependence of applicants and council staff; staff advise applicants on what to consider in the AEE, and the applicants do so.) However, project impact assessment will often involve impacts on specific groups, and it is the values associated with these that tend not to be handled well by council staff when formulating their reports. Witness the comments in the report of the Parliamentary Commissioner for the Environment (1995) that council staff in the three case studies were usually very effective at handling planning issues, but much less effective in dealing with the actual effects of the proposals.

Public involvement in the AEE process is usually very poor, on the basis of the proportion of an affected community who actually make submissions. There is no sense in which the public review and submission process can yield a representative picture of community values, so instead we have to hope council staff and politicians can some-



how fill in the missing pieces of the values jigsaw puzzle.

The information provided in AEEs will often cause problems for normal people. Technical information, beloved of specialists in councils and the statutory agencies, is not public-friendly, but rarely is a lay version produced, except perhaps for major projects. No-one likes to be considered ignorant in a public forum — technical information must deter many concerned public from getting involved in the public review phase of the AEE process.

Moreover, the public will tend to read AEEs at face value, not seeing the inherent value judgements of the assessors, nor the filtering of material, or the tendency to present the material in a favourable light. Only more committed groups, who hire specialists, or the more educated and sceptical community members, will normally be in a position to question the “factual” information in the assessment. But why should the public even be put in the position of having to assess the validity of the impact information itself — surely the councils should be acting as the gatekeepers, working on behalf of the community as a whole to ensure the best quality information is available for the public to use?

Lastly, those members of the community who do get involved in the whole process generally have little opportunity to explore the different concerns and values represented in the wider community in a rational manner. Issues tend to be discussed in an increasingly adversarial manner as the process moves towards the decision-point, and beyond to the Environment Court. There are, of course, examples of better practices, using pre-hearings to bring people together to discuss issues and seek solutions. Yet even these require a decision to get involved, and the evidence is compelling that the large majority of normal people do not make that decision, unless they are under strong, direct threat from a proposal.

Overall, then, the process does not seem the best if we are to consider complex combinations of impacts, measured in different ways, with different types and levels of significance across the various communities of interest. At present, we get value-laden, filtered impact information, put in front of councils and the public; the public largely ignore it, so the subsequent debate is between a few highly motivated submitters (for or against), council staff and the applicant. This is hardly the ideal way to deal with community-wide values and concerns and reach decisions that will have general community support. Can the socio-political evaluation process be improved, or should more use be made of technical approaches? The answer is definitely ‘yes’ to the first question, and ‘very possibly’ to the latter.

## **AEEs and values: towards better practice**

### *Key problems*

A strong technocratic tendency has developed in AEE practice; applicants deal with council staff, to ensure they provide the information required by law and by council decision-makers. Consultation with the public is often confined to immediate neighbours of a property (as if environmental processes somehow only travel that far and no

further), or to local *iwi*. Heavy use of non-notification increases the sense of a technocratic process, with the wider community excluded from the process at a very early stage, even for those projects that local people do express an interest in.

However, the process cannot just be technocratic: it needs input from the public/community because it deals with living communities, and their existing concerns and values, especially at the local scale. This is a very dynamic context, and the decision-making has to be equally dynamic. When major clashes of opinion and formal objections occur it is usually evidence that the process is not handling concerns, values, or significance very well.

The style of AEE conducted by many applicants/consultants is not, for the most part, conducive to recognising other people's concerns, and the values they attach to aspects of the environment. AEEs that use the Fourth Schedule as a checklist for the contents of the assessment, often combined with grudging consultation (after being prodded by council staff), will not produce impact assessments sensitive to the values of affected groups in the local community. Not surprisingly, minimalist AEEs will tend to be those that experience the stormier ride through the process.

Perhaps the biggest problem, however, is ensuring that when the significance of predicted impacts is evaluated in the AEE, it is not simply a reflection of the personal value-set of the person writing the assessment. From the author's observation of completed AEEs this is widespread, but probably reflects a lack of awareness on the part of the assessor rather than any hidden agenda to distort the information.

### **Suggested improvements**

As is always the case with complex human activity systems, there is no one magic answer to the problems outlined above. What is required is action right across AEE practices, on a number of fronts. Often the action will help other aspects of the AEE process, not just evaluation.

#### *Improve the AEE process itself*

- Many benefits will follow if the general quality of AEE practice is raised — good practice principles for impact assessment call for greater awareness of concerns and values of affected parties, from the earliest stages of the assessment.
- There needs to be greater recognition of, and sensitivity to, important social issues and values throughout the AEE process, and more effort to identify solutions or mitigation for the problems raised in the assessments. In particular, the concept of impact distribution is a useful one, in that it encourages recognition of specific groups disadvantaged by proposals, in impact terms. Other social assessment methods, such as gender analysis, are also useful in this regard.
- Scoping, as described in Chapter 6, is a powerful tool for dealing with the problem of capturing public or community values. The essence of scoping is to focus the assessment on significant issues: that includes issues with which groups or individuals in the community are concerned because of the threat those issues pose for the value sets of the local people. Effective scoping means the agenda for the AEE will, in

large part, reflect the concerns of local people.

### *Better tools for evaluating impact significance*

- At the scoping stage, assessors might consider approaches such as the Valued Environmental Component (VEC) method of Beanlands and Duinker (1984). This method involves consultations with interest groups and statutory authorities to identify a list of environmental components that hold particular value for that group. Hence, recreational anglers might list salmon and trout stocks, and high water quality, as VECs. The subsequent impact assessment is then designed to investigate whether any of the VECs are likely to be affected by the proposal. VECs help focus the scoping, by capturing public values. There are problems associated with the use of VECs as the sole basis for deciding what to include in an AEE; see Morgan (1998) for further discussion.
- Assessors might consider some of the technical tools outlined earlier to examine public reactions to predicted impact. For example, simple monetary evaluation methods might be used to explore the broad picture, while a scaling and weighting technique might be used to explore interest group preferences.
- Assessors should, where practical, use more social tools in their assessments. Predicted impacts can be put before focus groups, *hui*, etc., and discussed, providing a structured and managed context in which dialogue can occur, along with listening and taking the time to see the other side of issues (if not to agree with it), and the swapping of concerns, values and experiences.
- Consultants should examine their background in EIA methods and, if necessary, look to develop new skills, especially in social assessment and technical evaluation methods.

### *The role of the Councils*

- Councils should encourage any AEE information for public consumption to be in non-technical language. If technical information is required, it should also be expressed in terms of the implications for those environmental qualities which people value (health, amenity, etc.). Greater emphasis must be placed on showing the implications of the impact information, not simply providing “factual” information about impacts.
- Staff could exert stricter quality control by clarifying the required standard of AEE information, and providing strong feedback through the reviewing process.
- Councils might explore alternative “delivery” methods for impact information, such as library web sites, local TV slots, etc., in order to reach more people.
- Councils might encourage the use of neutral facilitators of community discussion groups which would then produce “community” evaluation reports for a given AEE. Staff and councillors would attend, but strictly as observers not participants.
- Council might also support neutral community facilitators to help ordinary people to take advantage of the public participation opportunities in the consent process (and

other processes), and to educate them in the art of constructive participation. This would draw more people into the process and start to give a better representation of community values.

- Similarly, a community facilitator could develop and support community conflict resolution activities. Citizen panels might be used for larger projects, to manage the evaluation process, subject, of course, to the agreement of all parties.
- Council staff might develop simple devices to assist in the evaluation of social significance of the predicted impacts; for example, the tabulation of affected parties, and a summary of key views with respect to predicted impacts. They could also use impact distribution reports, environmental justice assessments, and so forth, to encourage more explicit consideration of the range of social values represented in the local community.
- Councils might also consider making greater use of independent commissioners with sufficient skills to be able to determine the merits of an AEE and whether or not the effects of an activity have been sufficiently well identified and assessed to warrant granting a consent. In time, this is bound to lead to raising the quality of AEEs.

## Conclusions

It is unlikely that the AEE process will move markedly away from the post-AEE evaluation of impact significance that is the rule at present. However, there is plenty of latitude for improving current practices so that affected parties can have their values recognised, and their concerns addressed when appropriate, and for improving the chances of people getting involved in post-AEE evaluation through the public involvement processes. There may well be situations when larger development proposals may warrant the use of one or other of the technical evaluation methods, and it is certainly easier to make a case for larger projects than for the large numbers of smaller activities which characterise New Zealand AEEs. The notion of spending more time, and effort, on small, routine consent applications will not strike many applicants or council staff as a sensible suggestion. These applications do not need the complication of social significance slowing down the process. Yet evaluation is still important — even the impacts of small-scale activities can be highly significant for the people affected.

Moreover, the steady accumulation of the impacts of many small actions can produce as much tension in a community as one large proposal. A greater general awareness of local values and concerns, together with the use of simple strategies for canvassing the views of local people even for small proposals, will help communities deal with that tension. We do need to remember that the statutory processes are a means to an end, not the end itself, and guard against the encroachment of a convenient, but value-poor, technocracy. People matter, and a little bit of consideration goes a long way.

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## Chapter 10

### Expectations of the Applicant

David R Rendall \*

#### Introduction

This chapter on applicant's expectations has been prepared to focus particularly on the theme of "Outcomes: Quality, Consistency and Sustainability". It considers the not inconsiderable number of Notices of Requirement (NoR) for designation, resource consent applications and other various approvals in which the author has been involved since 1991 on behalf of Transit New Zealand (Transit). In considering these, the conclusion is reached that the issue of most importance to the applicant is certainty of process in terms of timing, cost, and integrity. The chapter then considers the matter of communication, which is a feature in each of the three issues, but is separated for particular mention as it is a key part of the process to ensure a successful outcome of any application.

The final part of the chapter outlines examples of outcomes that have resulted from Transit's applications. They, by example, make some commentary on the quality, consistency and sustainability of the outcomes being achieved through the RMA process.

#### Assessment of Environmental Effects

The Assessment of Environmental Effects (AEE) is the core of any application for a designation or resource consent. The statutory basis for AEE is set out in section 88 of the RMA in the case of resource consents, and section 168 in the case of Notices of Requirement (NoR). The list of what should and should not be in an AEE is discussed by others and is not repeated here. In essence, the AEE sets out the "fit" of the proposal into the receiving environment. Its objective is to clearly establish the state of the receiving environment and to ascertain the effects the proposal will have on that environment. It then goes on to describe measures proposed to avoid, remedy and/or mitigate those effects. It may, of course, set out many other issues, such as the extent and type of consultation which has occurred. Some would see the AEE as being the primary document upon which any subsequent debate will be considered. While it is created to document the proposal and its effects for subsequent public comment and discussion, much of the debate that occurs later in the planning process, and in particular the hearing, can stray significantly from both the proposal and the AEE.

#### Position of the Applicant

There is a tendency on the part of some to see the applicant as a mercenary developer with the sole objective of obtaining a consent in the quickest, cheapest possible manner such that the resulting consent is loose enough to provide opportunity for further subse-

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quent cost and corner cutting. In practice this is not generally the case.

Transit looks for a straightforward, efficient and fair process. Given the volume and nature of work undertaken in any one district or region, there is no benefit in Transit trying to circumvent due process in order to obtain a one-off approval or consent. While this may be possible in some circumstances, Transit's ability to do work relies not only on the legislation, but on the trust that is established by applying the RMA processes with integrity. The benefits of a one-off "win" on a particular issue that leaves the consent authority upset will be more than counter-balanced by additional effort that will be required in order to progress with future planning applications. Transit's objective is to efficiently make its way through the planning process in a cost effective manner. Transit's expectation, when considering the service it wishes to receive from its contractors undertaking physical works, is that they do "a good job at a fair price, and complete it such that both Transit and the contractor would like to do business in the future". This has alternatively been described as completing the project with a "handshake and a smile". Transit's activities in the planning arena are undertaken in a similar manner. This is not to say that it is inappropriate for the applicant to push back on particular demands or points of view expressed by the consent authority. It does mean that where this is necessary, the debate happens at a professional level, with an understanding that an on-going relationship must exist once the consent has been dealt with.

Given the above discussion, it would be inappropriate to leave this topic without considering the incentives of the consent authority. In practice, this often reflects the incentives of the council planner and/or others preparing the report for a council, or perhaps considering the application under delegated authority from the council. While there are many competent and professional people in this field, it appears that the system they work within creates incentives that cause them to err on the side of caution. In particular:

- A council officer would seldom be rebuked for repeatedly asking for additional information until every possible issue has been sorted out, and the consent then issued. In practice the developer either gives up in frustration or continues to provide the additional information as the consent is required to proceed with the work.
- A consent officer may issue a consent, or recommend a consent be issued on the basis of information that is not 100% complete. This may be because the developer has a good track record of delivering complying work, that the guidelines for accepting or declining the consent are not clear, or the use of some non-standard conditions are considered to provide satisfactory protection for the council. In most cases, the "brave" decision by the consent officer will go unnoticed, and the project will be completed with little or no obvious consequence. Conversely, on occasions where things do go wrong, the consent officer can become the subject of uncomfortable attention, either by his/her peers, or worse by his/her political masters.

### **Certainty of Timing**

For many applicants, time is money. In the case of many private developers, considerable sums of money have been outlaid on purchase of land comprising a significant



proportion of the project cost, but yielding little return until the development is finished.

The cost and time spent preparing an AEE, together with its attendant consultation and investigations, can be considerable. However, once the formal process is commenced by the lodgement of the consent documents, it is important that the process proceeds as expeditiously as possible, and certainly to a time-frame consistent with that set out in the RMA. In the case of Transit's projects, a public expectation develops on the likely time-frame for the process. While Transit itself creates these expectations based on the statutory RMA timelines, unforeseen delays raise the frustration level in a public that may have already been consulted extensively on a project, only to be once again the subject of notification for submissions, followed by hearings. There are two particular issues that appear to have arisen in recent times that unduly extend the time-frames.

The first is the issuing of section 92 notices requesting further information. On a number of recent major projects, Transit has submitted draft NoRs or resource consent applications to councils for comment, particularly related to completeness of information in order to avoid section 92 notices once the statutory "clock" has started ticking. While the RMA sets out the information required for a NoR or resource consent application, invariably there is room for debate as to whether or not all the necessary information has been provided. Receipt of section 92 notices, both once the application is lodged, and after the public submission period is closed, can be particularly annoying, especially when issues are believed to have been previously resolved. More open communication, particularly during the pre-hearing phase, would be beneficial to both parties, and result in the process becoming more efficient. This is dealt with further in the subsequent sections on integrity of process and communication.

The statutory time-frames set out in the RMA are particularly useful. Transit's local experience is that the time-frames are generally met, however for the major projects the limits are normally used to their maximum. This is not unreasonable. The second aspect that unduly extends statutory time-frames, and which appears to be becoming more common, is the practice of hearing committees or commissioners adjourning hearings at their completion, rather than closing them. This of course means that the statutory clock has stopped ticking. It provides a mechanism to allow the hearing to be reconvened prior to the release of the decision should additional information or discussion be required on a particular issue, or perhaps to discuss possible consent conditions. In most of the major projects that Transit has been involved in, the author is not aware of such hearings ever reconvening. Advice that the hearing has been concluded is simply an indicator that the decision is due out shortly. The practice appears to be more prevalent in hearings involving commissioners, and is possibly a reflection of the time pressures on what are, generally, busy people.

In summary, certainty of timing is important, in order to recognise the time-cost of finance, and to meet reasonable public and applicant expectations. In concluding this section, set out below are the key milestone dates achieved on the NoR and resource consent application process for the Wellington Inner City Bypass project. Readers can draw their own conclusions about the reasonableness of this timeline:

Date	Activity
15 April 1996	Notice of Requirement and Resource Consent Applications Lodged
9-19 September 1996	WCC/WRC Commissioners' Hearing
20 November 1996	Recommendation of Commissioners
28 January 1997	Transit NZ Decision
20 February 1997 (approx)	Closing Date for Appeals (4 received)
13 June 1997 — 23 January 1998	Mediation Meetings
3 April 1998	Callover
10 August 1998 — 3 Sept. 1998	Environment Court Hearing (2 appeals resolved prior to hearing)
19 March 1999	Awaiting Environment Court decision. No firm date available.

*Table 1: Wellington inner city bypass: chronology of notice of requirement and resource consent proceedings*

## Cost

Few people, in their private life, would enter into a process or undertaking without a reasonable knowledge of the likely final cost. Those who operate a business would not do so either. With this in mind, the following section covers two particular aspects of cost – the direct cost of the consent process, and the indirect cost due to the cost of complying with conditions imposed as an outcome of the process.

### *Cost of Consent Process*

The use of hearing commissioners, as opposed to councillors, is variable across the country, even on Transit's larger projects. In some areas, it appears to have become an industry in its own right, whereas in other areas the use is more measured. While councillors have a role to play in consent hearings, where technical issues are concerned the use of independent commissioners with the appropriate skills and experience can help expedite the process and lead to decisions less likely to be tested in the Environment Court.

Most councils are willing to provide estimates or budgets for hearing processes, including those undertaken by commissioners. In some cases, councils have been very good with their budget estimates, including a clear distinction between advice provided to the council on process, rather than directly related to a particular application. Sadly, however, these instances are outnumbered by the cases where estimates have been considerably exceeded. In some of these cases, the cost over-runs are simply presented to the applicant as "actual and reasonable" as provided for under section 36 of the RMA. It is incumbent on consent authorities, and in particular where commissioners are briefed to manage hearings, that the cost of the process is considered and the process itself managed in an efficient manner. The cost effectiveness of hearings does need to be closely managed and not simply passed on to the applicant. It is fair for applicants to have an expectation that councils will run all hearings and consent processes in a cost-effective manner, and not simply let the process run itself because the applicant is paying.

### *Cost of Conditions Imposed*

The RMA requires that the Best Practical Option (BPO) for the avoidance, remedy or mitigation of effects is selected. The cost of such measures is one of the issues that needs to be taken into account when developing conditions. Transit is in the position of being able to compare one project against the next and, while recognising that no two projects are identical, there are many similarities. It appears that sometimes a particular condition, or mitigation method developed for a specific situation will tend to be adopted by consent authorities as the alleged BPO on other projects, with little thought as to its cost effectiveness. This is a direct cost to the applicant that gets hidden from view. Such conditions may be onerous and many applicants will not appeal due to the time and cost involved. They simply get on with their development and incur the additional cost of complying with the consent.

It has to be said however, in defence of this practice, that consultants representing applicants do not always present these issues well. Many less-informed applicants simply see such conditions as an outcome of the process, and their consultants may not always appreciate the cost implications of agreeing to more onerous conditions.

### **Integrity of Process**

Included under this heading, and also discussed above, is the matter of imposing conditions for project requirements in excess of that which is necessary to meet the strict requirements of the RMA. It is the author's belief that applicants are usually treated with integrity although they may not, at times, believe that this is the case. The ability for commissioners to be appointed where the council has a particular view on an issue provides an independent forum. Nonetheless, the distinction between advocacy and the semi-judicial regulatory function required can be a little fuzzy at times. The applicant has a right to rely on the integrity of the process, and for the dual council roles of advocacy and regulatory function to remain distinct. This conflict often arises in section 92 requests for further information, and in the debate between what is mitigation of effects, and what is environmental enhancement. All an applicant can desire is transparency of process. While use of commissioners for hearings may reduce the potential for conflict, this is often only appropriate for major hearings, and can result in a costly process for the applicant.

### **Communication**

Open and constructive communication is a reasonable expectation. During consultation it is important that any communication is undertaken in an open and straightforward manner. During consultation, communication is a tool to improve the proposal, identify strengths and weaknesses and to identify potential allies and foes.

During the formal process, there is no reason why open and constructive communication should not continue in order to make the process more efficient. If undertaken in a professional manner, with each party recognising that the other has a particular role to undertake, then a better outcome is likely. There should not be any difficulty with communication during preparation of reports, or drafting of conditions, providing all

parties do their job properly. Requests for clarification on particular issues, informally as appropriate, can resolve issues quickly and efficiently. If a consent is issued with a badly worded condition, then both the consent authority and the applicant lose. The mechanism for reviewing conditions is not straightforward and if based on lack of communication or misunderstanding, the process to put it right can be both time-consuming and expensive for both parties.

In a professional arena such as the consent processes, communication at both formal and informal levels should not only be encouraged, but should be expected, to allow each party to better discharge their obligations.

## **Outcomes**

If asked the question “Are we doing better projects than we used to?”, the answer would probably be “yes”. However, if instead the question was “Are we now getting better value?”, then the answer would be “depends”. Through the AEE and subsequent consent process, applicants are often spending far too much time on relatively detailed issues, whilst ignoring the bigger picture. Where they are focussing at an appropriate level on avoiding, remedying or mitigating effects then they are getting better value. However, when the debate begins to focus on every last detail of a particular project, as is sometimes the case, then the process or the people running the process are being unrealistic.

This is possibly a cynical view, but nonetheless one that gets regularly reinforced by an apparent lack of balance in the process. With the focus on “avoid, remedy or mitigate” every effect of a project, applicants seem to ignore the effects of doing nothing. In the case of Transit projects, the “doing nothing” option often means increasing congestion, pollution or continuing road accidents (including fatalities). This seemingly has little bearing on whether or not a project is successful in the RMA arena. The process should, in a non-legal view, result in an outcome that is broadly sustainable, taking into account the effects of doing nothing and the impacts of the particular proposal. However an inordinate amount of time, energy and cost appears to be applied to the NIMFY<sup>1</sup> syndrome. Parties, which in some cases have little direct interest in the proposal, have the ability to consume resources of both the applicants and the consent authorities (at the applicant’s cost) yet provide little tangible input into the debate. Their potential to subsequently lodge appeals to the Environment Court and further delay the process is considerable. An applicant has the right to expect that such issues are dealt with expeditiously — though under the current legislation, this hope is often in vain.

The final issue is the style of conditions attached to any consent or designation. Wherever possible, an applicant expects those conditions to be performance-based and aimed at avoiding, remedying or mitigating a particular effect. While there may be means of “deemed compliance” using “good practice guidelines” or similar, applicants would much prefer a performance-based means of compliance, with the actual method used to achieve compliance allowed to be of the applicant’s choosing. This ensures that the

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<sup>1</sup> NIMFY is a roading agency’s variation on the more common NIMBY, as it is generally part of the front yard of a property that is required for a road rather than the backyard (NIMFY = Not In My Front Yard).

proposed development can take place in a cost-effective manner, yet still ensure that the effects are controlled to meet the consent authority requirements.

## **Conclusion**

In summary, an applicant has the right to expect that when the completed AEE enters the subsequent RMA arena, consent processes will be undertaken within prescribed time-frames, at reasonable cost and with integrity. Furthermore, it should be expected that open and constructive communication will occur between the parties in order to assist the effective completion of the process, while recognising that each party has a particular role to play.

There are expectations most applicants have that will often not be met within the current legislative framework. One example is that parties with little direct interest in a proposed project will not greatly influence the outcome. Another expectation is that the AEE and subsequent RMA process in seeking “sustainability” will recognise the effects of doing nothing and balance these effects against a proposal to do “something”.

## ***Disclaimer***

The views expressed in this paper are entirely those of the author. They should not be relied upon as representing the views of Transit New Zealand and are expressed without any responsibility on the part of the author and/or Transit New Zealand.



## Postscript

Lindsay Gow\*

The conference that preceded the publication of this book ranged over a very wide set of issues. I guess that says something about the assessment of environmental effects: it is not just one simple thing and it has evolved considerably since Environmental Impact Assessment was first developed in the late 1960s.

The conference presentations took us on a journey through the varied and varying world of AEE and its kin.

Hon. Simon Upton, who was Minister for the Environment at the time, pointed out in opening the conference, that AEE covers both strategic and future issues, and project and proposal assessment. He said that “AEE goes to the heart of the RMA” and that it is “a fundamental part of the consent process”. It is (or should be) also a fundamental part of the policy process.

He said that lack of quality in AEEs will remain as an issue that needs to be addressed. Anecdotal evidence indicates that assessments of environmental effects are being both processed and audited badly. Resource consent applications are increasingly prompting written requests for further information. This underlines the fact that this is one of the more troublesome aspects of the Act. It seems that AEE documents are being badly prepared. It also seems that too many councils are receiving deficient AEE documents and then repeatedly requesting information, or requesting excessive information which is not specifically targeted to the activity for which resource consent is required.

Mr Upton went on to say that much of this practice can be explained by understanding the assumptions that stakeholders bring to the application making and determination process. Applicants tend to believe that:

- their efforts will be doubted throughout processing because they are making an application and are thus “breaking the rules”;
- because the planner dealt with over the counter is not the decision-maker, their advice cannot be relied upon and may be inconsistent with the views and requirements of the processing planner;
- the council will take a lot longer than 20 working days to process the application;
- the Council will duplicate the AEE in any event so that there is little point in preparing a comprehensive AEE only to have to pay for the Council’s AEE as well; and
- in some applications, especially those bringing major economic benefit to the district, the political process is more important than the RMA process.

Councils on the other hand believe that:

- the AEE has been prepared with an inherent bias;

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\* Deputy Chief Executive, Ministry for the Environment

- negative effects will have been omitted;
- negative consultation is not recorded;
- the AEE will not reflect the issues identified within the community; and
- professional advice, because it is obtained by the applicant, may be inherently biased.

Councils may thus accept applications for processing that are information-deficient and are then compromised into preparing or reassessing an application rather than auditing it; multiple handling of applications occurs that can lead to significant additional costs and time delays; applicants who have a proven track record are favoured; there is little incentive for those that prepare applications to have done their homework before approaching the Council; the Council is required to invest its more experienced staff in processing rather than other tasks; complex reporting formats and a lack of appropriate delegation have developed; the confidence of submitters in the Council's neutrality is undermined.

As with most other areas of the Act, the biggest gains are likely to come from practice improvements. The largest steps will be made only when we increase competence and the use of best practice in both the preparation and auditing of AEEs. Clearly, a consent authority cannot swiftly and effectively audit an inadequate AEE. However, the quality of AEEs is unlikely to improve unless a consent processor demands that this happens. When it does, there must be good, practical guidance about what is required by an AEE and the consent processor must be in a position to process the application and its accompanying AEE document accurately and efficiently.

Mr Upton said the real reason we need to get the AEE process right is that it forms the key document for participating in the RMA process and provides the basis for controlling adverse effects. Without AEEs we cannot work towards better environmental results. He made it clear that AEE is not a simple technical process. It involves a set of important concepts like participation, consultation, information, relevance judgement and evaluation. At its heart, it deals with some "knotty problems".

Barry Sadler gave us an international perspective of the past and the future. Since the enactment of the National Environmental Protection Act (NEPA) in the US, environmental assessment is now undertaken in one form or another in 100 countries. It is now truly a global business. Since its advent, it has moved from project to policy (and indeed into strategic policy) and from a domestic to an international scale. It deals with what Barry Sadler calls "the wicked problems". These are often characterised by uncertainty, multiple parties, conflict and, importantly, conflict resolution.

The future looks awesome. Barry Sadler sees a new and even more challenging variant of EIA. He calls it ESA or Environmental Sustainability Assurance. It will deal with the really big issues such as defining critical resource stocks and safeguarding key ecological functions, assessing and managing depletion of natural capital (and keeping the state of sources and sinks within safe margins), and ensuring that losses of natural capital are made good.



In the course of two days, the conference moved back and forth from the very detailed and project-specific world of AEE, through to the new, mega world of ESA. In the course of this flow, some key concepts emerged. Foremost amongst these was the issue of risk. At all levels and all stages, AEE and its variants involve risk identification and assessment.

Steven Thornton discussed risk in some detail. He said that it inevitably involves an understanding and treatment of uncertainty, both environmental uncertainty in the sense of understanding the variable and probabilistic behaviour of natural systems, and the uncertainty associated with a lack of knowledge. Mr Thornton also introduced another key and intrinsic part of AEE. This is the fact that environmental risk management is dominated by values and related ethical claims. AEE is therefore inherently about people, about what they think and want and believe, about what they assert and what values they put on different outcomes, and it is about reconciling this set of subjective matters with the more empirical and objective world of scientific inquiry.

Other key issues that emerged during the conference included the importance of scoping, the relevance of scale and significance, the need for AEE to be “fit for purpose”, the question of and exploration of alternatives, the need for evaluation and monitoring, the relationship to plans and plan quality, the cost of and limits to limitless participation, and the critical issue of outcomes, which has to be a vital starting point for evaluation.

All these issues, and the many contributions made by speakers and participants confirmed that Environmental Assessment is clearly not just one thing. It is not the preserve of one group or discipline. It is both technical and political, it is scientific and involves values and judgements. If there is a list of its main attributes, then they comprise:

- a process based on structured, dispassionate analysis;
- integration of the objective and the subjective, of the bio-physical and the human;
- a utility in making choices and selections based on relevant information and informed consultation;
- a useful, predictive tool based on outcomes;
- a thorough and reliable basis for monitoring and review;
- a valued and useful input into policy, institutional and project design; and
- a basis for organisational and community learning.

In some other parts of the world, EIA as it is called is an add-on to planning and policy-making processes. It is very important to appreciate that this is not the case in New Zealand, where AEE is an intrinsic part of statutory decision-making processes.

Having said that, it is necessary to acknowledge that AEE hasn't yet evolved sufficiently. It is still too much a project-based and somewhat reactive analytical and decision-making aide. But it has a much bigger potential and even destiny ahead of it. It can and must become an intrinsic and distinguishable part of policy analysis. People need to work together to help it achieve this status and, in doing so, provide a platform for participation in Barry Sadler's vision of Environmental Sustainability Assurance.



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# *Assessment of Environmental Effects: Information, Evaluation and Outcomes*

*John Lumsden* **EDITOR**

The process of assessment of environmental effects (AEE) is a fundamental part of a comprehensive, sustainability-based regime for processing resource consents under the Resource Management Act (1991). Although AEE is obligatory, there are few guidelines available to assist practitioners in their preparation. Problems arise because of the poor quality of many AEE's, leading to delays in consent processing, and applicants too often consider an AEE to be a burden rather than a necessary contribution towards quality assurance.

As well as an international perspective on environmental impact assessment by Barry Sadler, whose expertise in this field is internationally recognised, this book contains a wealth of practical advice on many of the important issues surrounding preparation of an adequate AEE. These include discussion of important matters relating to environmental risk, the involvement of Maori in the resource consent process, consultation and the role of public participation, as well as techniques for scoping and comparison of alternatives, and evaluation.

The contents of this book are based on papers presented at a CAE conference on Assessment of Environmental Effects, held in Wellington in 1999. The material has been prepared by people from diverse backgrounds, all with a wealth of practical experience in the many aspects of AEE.

CAE, in publishing this book, furthers its commitment to advancing knowledge and improving practice in fields relevant to New Zealand's economic growth and social progress, consistent with the principles of sustainability.