SUSTAINABLE
FISHERIES

The future of your business

A GUIDE

to environmental management tools for New Zealand fisheries, including an environmental assessment checklist

WWF

SeaFIC

TE OHU KAI MOANA
TREATY OF WAITANGI FISHERIES COMMISSION

Ministry for the **Environment**
Manatū Mō Te Taiao

Sustainable Management Fund

Acknowledgements

CONTENTS

1

THE AUTHORS

New Zealand Seafood Industry Council (SeaFIC)

By adopting the New Zealand Seafood Industry Charter, the New Zealand seafood industry has indicated its clear commitment to being a responsible manager of marine resources and custodian of the marine environment. The New Zealand Seafood Industry Council (SeaFIC) considers *Sustainable Fisheries: The Future of your Business* a key resource to assist the New Zealand fishing industry to meet the obligations embodied in the Charter's principles. For further information or to provide feedback about this guide contact SeaFIC directly.

Te Ohu Kai Moana – the Treaty of Waitangi Fisheries Commission

Te Ohu Kai Moana – the Treaty of Waitangi Fisheries Commission was established after the 1992 Fisheries Settlement to facilitate Maori entry into, and development of, the business and activity of fishing. It took over from the Maori Fisheries Commission established after the interim 1989 Fisheries Settlement.

The Commission holds significant fisheries assets on behalf of all Maori, and is working to allocate those assets to Maori through iwi. In line with its role, the Commission:

- develops strategies to ensure Maori are enhancing their skills to participate effectively in the business and activity of fishing
- responds to government policies that affect the value of the Fisheries Settlement (for example in relation to fisheries and marine management)
- works with other parties with fishing industry interests on issues of common concern.

WWF New Zealand

WWF New Zealand is committed to a sustainable New Zealand fishing industry and has appointed a Fisheries Technical Conservation Officer to work with sectors of the fishing industry wanting to improve their environmental performance. WWF will work alongside fisheries encouraging them to adopt environmental management practices and/or apply for environmental certification (such as that awarded by the Marine Stewardship Council).

When a fishery can demonstrate, through robust scientific evidence, that its environmental management practices reduce the adverse environmental effects of its fishing operations, WWF can use its extensive global network to support the marketing of that fishery's products. *Sustainable Fisheries: The Future of your Business* will assist WWF and New Zealand fisheries in this process, by providing a step by step approach to identifying the most appropriate environmental management practices and means of implementing them.

Contact details

New Zealand
Seafood Industry
Council
Private Bag 24 901
Wellington
Tel: +64 4 385 4005
Fax: +64 4 385 2727
http://www.seafood.co.nz

Te Ohu Kai Moana
(Treaty of Waitangi
Fisheries Commission)
PO Box 3277
Wellington
Tel: +64 4 499 5199
Fax: +64 4 499 5190
http://www.tokm.co.nz

WWF New Zealand

PO Box 6237
Wellington
Tel: +64 4 499 2930
Fax: +64 4 499 2954
http://www.wwf.org.nz

2

INTRODUCTION

The fishing industry within New Zealand and worldwide is under increasing public scrutiny of its environmental performance. By adopting the New Zealand Seafood Industry Charter, the New Zealand seafood industry has made a commitment to managing marine resources responsibly and being a custodian of the marine environment. *Sustainable Fisheries: The Future of your Business* is a guide to help the New Zealand fishing industry identify and better manage the interactions between fisheries and the marine environment.

This resource does not promote one particular environmental performance standard. Rather, it introduces an environmental assessment checklist and management options to enable fishers and fisheries managers to identify issues, determine goals, and monitor their progress towards those goals. This guide does not advocate a particular management option or set of tools, but promotes a range of options and tools from which fishers and fisheries managers can select those that will meet their needs.

This guide is not a "pre-packaged solution" for managing your fishery's interactions with the marine environment. However, it has been developed in partnership with the fishing industry and is based on the experiences of fishers and fisheries managers. We envisage the guide working as a practical tool in the industry. Therefore, we view this guide as a work in progress that will reflect a "learning by doing" approach. Your experiences will be valuable to others, so we encourage you to share them with us to ensure the guide can be updated to better reflect the possible solutions to problems that may be encountered by others.

The authors have an ongoing commitment to this partnership project; we would like to know whether, and to what extent, you found this guide useful, and any suggestions you have for improving this guide so that it better meets your needs. Our contact details are on the author page at the start of the guide. Help us ensure the guide remains a "hands-on tool".

This guide is divided into four sections.

Section 1 introduces the fisheries environmental assessment and examines why you may want to identify and better manage your fishery/marine environment interactions. This section helps you identify your environmental management goals and investigates the spectrum of potential reasons for those goals, from ensuring compliance with legal obligations to gaining a market advantage for your products.

Section 2 will help you evaluate your environmental performance using a specific checklist that focuses on your fishery/marine ecosystem interactions. The checklist looks at your fishery's environmental obligations and key components. The guide explains how to scope each component of your fishery (including commercial fish stocks, non-target catch, habitats and ecosystems), as well as monitoring, compliance and reporting.

Section 3 uses the outcomes from the assessment process in section 2 to help you identify your options, priorities and risks. This section takes you through four decision making steps and assists you to decide where and how to place your efforts most effectively.
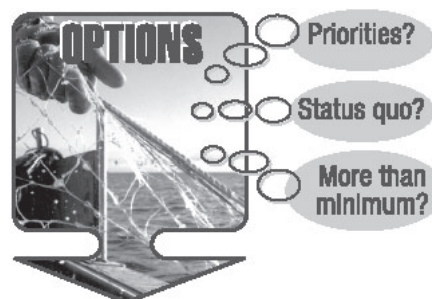
Section 4 introduces a range of environmental management tools relevant to the New Zealand fishing industry. The tools presented range from codes of practice, which address specific operational issues, to certified environmental management systems, which provide a framework for the ongoing management of your operation's environmental impacts. Examples of how these management tools have been applied to achieve environmental management goals within New Zealand fisheries are also presented. The section also discusses the key considerations when implementing and using these tools.

The sections are followed by a conclusion and a list of useful resources.

The project partners and their contact details are at the start of the guide.

1 SET GOALS

1.1 Purpose of an environmental assessment

The fisheries environmental assessment promoted in this guide builds on a structured set of questions to help you clarify and better manage the interactions between your fishery and the marine environment. By evaluating these interactions and highlighting current and future risks to your fishery and business objectives, the assessment can assist you to manage your environmental performance in a manner consistent with your overall objectives.

1.2 Reasons for using an assessment

1.2.1 Use the resources on which your business depends sustainably

A key motivation for undertaking an environmental assessment is to maintain the long term sustainability of a fishery by engaging in best practice environ-mental management. Fisheries management is becoming increasingly concerned with sustainability and mini-mising the adverse environmental impacts of fisheries. In this climate, making an environmental assessment and using environmental best practices can help you minimise the risks to your operation. Maintaining healthy, productive fisheries and operating in ways that do not threaten the sustainability of the environment or the fishery, is vital to the ongoing operation and security of your business.

1.2.2 Gain community support by demonstrating good environmental practices

Improve community relations by interacting with the public. Public opinion (whether based on fact or emotion) can influence your ability to access fisheries resources, so your business may benefit from developing a more positive relationship with the public. The environmental assessment process can provide opportunities for your organisation to engage with the public, for example through an externally transparent process for auditing your performance, publicly disclosing your results, or open discussions to identify concerning issues.

1.2.3 Operate more effectively to gain better value from your efforts and resources

An environmental assessment can help you to direct your business resources more effectively. Incorporating a full assessment of the costs associated with your environmental interactions into an environmental assess-ment will ensure your decisions are consistent with the best interests of your fishery and business. Undertaking an environmental assessment and better environmental management do not necessarily lower business costs. However, a systematic management approach that integrates operational, business and environmental performance costs may help you to reduce costs and improve financial and environmental performance.

1.2.4 Gain market access for your products

Central to the environmental assessment is developing best practice environmental management standards, which can secure your access to new markets. Exporting to markets demanding well managed fish resources may be a market option worth exploring. There is a range of possibilities for accrediting your environmental performance using external audits or certification based schemes. You will need to assess whether there is a market demand for such accreditation. It is likely that whether or not you follow through with formal accreditation, best practice environmental management will more likely secure your access to these markets.
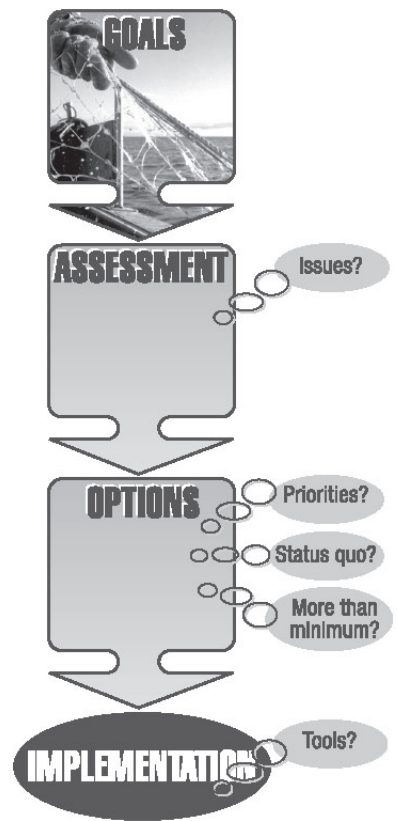
1.2.5 Gain a competitive edge for your products

Certified environmental management schemes can give your fishery a competitive market edge. If you intend to target environmentally conscious export markets, consider engaging in an eco certification process, such as ISO 14001 or Marine Stewardship Council (MSC) certification. Both these processes are undertaken by third party accredited auditors, and the assessment process follows strict rules and guidelines. Engaging in eco-certification may place demands on your environmental performance and management systems, but it can be a worthwhile investment that may result in improved prices for your product.

1.2.6 Comply with legal requirements

An environmental assessment can help you clarify how to give practical effect to your legal obligations. Environmental legislative obligations, including regulatory requirements, affect the processes of managing a fishery, fishing, processing seafood, and operating a business. These obligations may be imposed by central and/or local government. It is not always easy to keep abreast of your obligations and understand what they mean in a practical sense. Carrying out environmental assessments can assist the fishing industry in meeting its legal obligations. The assessments and subsequent actions can provide the industry with information to better influence, or even mitigate against future fishery environmental regulation.

1.3 Initiate an assessment

Any group involved in managing fisheries or producing seafood can initiate an environmental assessment process. For example, a commercial stakeholder organisation may want to initiate an environmental assessment for the fishery for which it is responsible. A seafood company may want to develop a wider reaching assessment covering its entire scope of operations, from catching to processing, transporting and exporting.

1.4 Next steps

After undertaking an environmental assessment you will need to select a management approach that will best meet your needs. However, before making management changes it is important to gain a clear picture of the management system already in place. Section 2 of this guide will help you assess your management system and highlight concerns. Sections 3 and 4 will help you prioritise your environmental management goals and provide you with a range of tools for best achieving them.

6
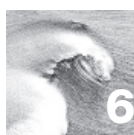
2 ASSESS ENVIRONMENTAL PERFORMANCE

2.1 Design an assessment process

This section will help you make a preliminary assessment of your environmental performance. It aims to help you design an assessment process, and outlines the main questions you need to ask. The assessment involves:

- describing the components of your fishery
- identifying the environmental obligations applicable to your fishery
- identifying any specific management objectives
- assessing the adequacy of information, management targets and measures, and monitoring
- identifying opportunities and barriers to achieving the desired level of performance.

The assessment process is technical in parts and you may find a range of professional input is required for you to get past the evaluation stage. Expert judgement is required in several areas and the best way to determine the amount and type required is to trial the assessment as a simple issue identification exercise. Be aware that the extent to which you make decisions based on the self assessment, for example, to adopt a particular management approach, should depend on the confidence you have in the outcome, which is dependent in part on the level of expertise involved in the assessment.

2.2 Key components of a fishery

In the first instance, build your assessment around the components of the fishery in which you operate. Consider the following.

2.2.1 Commercial fish-stocks

Identify each fishery within your responsibility by method of capture and mix of commercial species taken with respect to the following three categories:

- A single species fishery that takes very little else because the catch method is specific for the target species (for example, the paua, kina and rock lobster fisheries).
- A fishery that targets a single (or perhaps two) species, but which takes a range of other commercial species (for example, the snapper longline, hoki mid water trawl, or the deepwater orange roughy trawl fisheries).
- A fishery that targets a variety of commercial species (for example, the East Coast South Island inshore trawl fishery).

For each fishery, identify all the commercial species that you harvest, including all non target commercial species that are taken incidentally to your operations.

2.2.2 Non-target mortality

For the purpose of this exercise, non-target mortality relates to all non commercial species caught as a result of your fishing activity. They may include:

- non commercial fish species
- marine mammals (such as dolphins, fur seals or sea lions)
- seabirds
- sharks
- benthic flora and fauna (for example, bryozoans).

Identify clearly the non-target catch in your fishery.

2.2.3 Habitats

Identify:

- the areas in which you harvest and the habitats found there (for example soft sediments, hard bottom, seamounts, inshore, midwater or deepwater)
- your fishing methods, the gear you use and the effect they may have on habitats
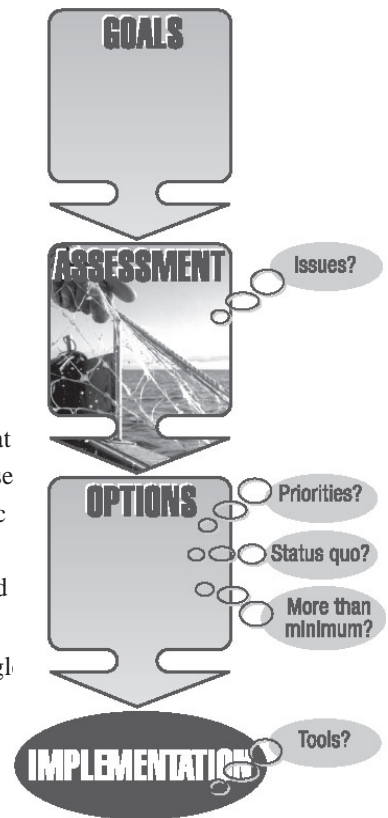
- whether your fishery is expanding into new or previously unfished areas.

Note that there may be an overlap between non-target and habitat effects.

2.2.4 Other ecosystem considerations

Consider any predator/prey issues between the individual components of the fishery (for example, the relationship between kelp, kina, snapper and paua).

2.2.5 Next step

After identifying your fishery's key components, move onto the next step of the self assessment process – identifying the environmental regulations relevant to your fishery.

2.3 Obligations under the Fisheries Act (1996)

Identify how your fishery is affected by the general obligations under the Fisheries Act (1996), and whether there are any specific regulations under which you are also obligated.

2.3.1 Purpose

The purpose of the Fisheries Act (1996) is "*to provide for the utilisation of fisheries resources while ensuring sustainability*". Utilisation means "*conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing*". Ensuring sustainability means "*maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations [and] avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment*".

The Act's primary purpose is to provide for utilisation. However, the requirement to ensure sustainability is an absolute constraint on that provision. Therefore, there is an implicit obligation on you to use the mix of management options that will create the best opportunity to use the resource while still ensuring its sustainability.

Output controls (that is, catch limits) are the main management measure applied under the Fisheries Act to "ensure sustainability" of New Zealand fish stocks.

Therefore, it is important you develop a management system compatible with this approach.

For species managed under the quota management system (QMS), the Total Allowable Catch (TAC) and the Total Allowable Commercial Catch (TACC) in any fishing year are set by the Minister of Fisheries. Species outside the QMS may or may not have catch limits. The Fisheries Act requires the Minister to set a TAC that maintains the fish stock at, or moves it towards, a size at or above a level that can produce the maximum sustainable yield (MSY).

Other sustainability measures include "input controls", such as controls on the size of fish that may be taken, the areas from which fish may be taken, the fishing methods that may apply and fishing seasons.

2.3.2 Environmental principles

The environmental principles in the Fisheries Act require the following to be taken into account in all fisheries management decisions:

- associated or dependent species should be maintained above a level that ensures their long term viability
- biological diversity of the aquatic environment should be maintained
- habitat of particular significance for fisheries management should be protected
- how the environmental principles apply in practice depends on the context of a particular fishery.

2.3.3 Information principles

New Zealand's fisheries management system acknowledges that decisions need to be made without perfect information.

The information principles in the Fisheries Act guide decision makers to make decisions when information is uncertain, unreliable or inadequate. The decision maker must make a decision based on the best available information and be cautious when information is uncertain. The absence of, or uncertainty about, information should not be used to as postpone or fail to take any measure to achieve the Act's purpose.

2.3.4 Strategy for Managing the Environmental Effects of Fishing (SMEEF)

The Ministry of Fisheries is developing a Strategy for Managing the Environmental Effects of Fishing (SMEEF), which will give clear guidance on how environmental obligations under the Fisheries Act may best be met.

The strategy's key objective is to ensure the environmental impacts of fishing are better managed. As part of this strategy, the ministry proposes to develop environmental standards to manage fishing's adverse effects. Participants in various fisheries will have to meet these standards to fulfil their legal obligations. The nature and extent of these standards are not clear.

2.3.5 Management systems, mechanisms and specific measures

While the Fisheries Act sets out the general obligations that apply to all fisheries, the way these obligations are met depends on each fishery's management system and the mechanisms and specific measures adopted. Consider:

- What statutory management frameworks apply to your fishery (for example, QMS and the Adaptive Management Programme)?
- Has your fishery adopted voluntary management mechanisms (for example, a code of practice, decision rules or fisheries plans)?
- What customary management measures apply to your fishery (for example, taiapure, mataitai or rahui)?
- In your fishery, are there more specific measures in place (for example, area closures, such as seamounts), non-target catch limits (such as exist for New Zealand sea lions) or mitigation methods (that is, a requirement to use tori lines)?

2.3.6 Other obligations

As you assess your fishery, identify clearly the other legislative obligations relevant to your fishery. For example, you may be affected by:

- the Marine Mammals Protection Act (1978), which requires you to avoid catching marine mammals, and to report any catch that takes place

- the Marine Reserves Act (1971), which creates no take areas (note that a Marine Reserves Bill is being considered by Parliament)
- the Resource Management Act (1991), which manages activities that may affect fishing (for example, certain types of land based activities)
- the Wildlife Act (1953), which requires you to avoid catching species such as seabirds, turtles or coral, and to report any catch that takes place
- government strategies and associated standards (for example, the SMEEF).

2.4 Environmental assessment checklist

For each component of your fishery the environmental assessment checklist addresses three key issues:

- information availability
- management targets
- measures to achieve management targets.

Issues common to all components of a fishery (monitoring, compliance and reporting, and other stakeholders' activities and values) are also addressed.

Before determining the best approach to address environmental issues, review and evaluate the status of current knowledge and management in your fishery. The clarity and quality of information gathered during the checklist exercise are very important when it comes to deciding how to respond to issues. When carrying out an environmental assessment, it is important to gain appropriate technical and scientific advice from other fisheries and environmental managers (for example, from the Ministry of Fisheries and Department of Conservation) and scientists (for example, from Crown research institutes and universities).

2.4.1 Commercial fish stocks

For each commercial stock (including both target species and non-target species that are used for commercial purposes), consider the following questions.

Commercial fish stocks: Information availability

Questions	Considerations	Response (yes/maybe/ no/not applicable) and explanation
Is the stock information adequate for determining whether stock is being maintained above an agreed reference point?	• Is a quantitative stock assessment used to set catch limits for this stock? • If not, how are catch limits for this stock determined?	
Are current monitoring levels adequate for meeting relevant obligations?	• Is catch and effort monitoring adequate for your purposes? • Are landings, discards and incidental mortalities monitored independently? • What other work is taking place (for example, sampling of the stock's biological characteristics, genetic and stock composition studies, or independent biomass surveys). • Is this other work making a useful contribution to management?	
Is information on other sources of mortality available?	• Potential sources of mortality include: – natural events (for example, climatic events) – illegal take – customary harvest – recreational harvest – downstream effects of other activities (for example, land use and discharges).	
Is the stock assessment adequate to determine the status of this stock?	• Are the stock boundaries for this species well defined? • Are other biological characteristics (for example, growth, natural mortality, migration or recruitment) of this stock understood? • Does the stock assessment explicitly include uncertainty in its estimates? • Is the determination of risk an output of the stock assessment?	
Have habitats of particular significance to the fish stock been identified?	• Habitats could include: – spawning habitats – juvenile habitats – feeding areas – migratory paths.	

Comments

If you answer "maybe" or "no" to any of the above questions, consider:
•   What actions could be taken to improve the information?
•   Why is additional information necessary?
•   How, and by whom, could additional information be gathered?

Commercial fish stocks: Management targets

Questions	Considerations	Response (yes/maybe/no/not applicable) and explanation
Has a management target consistent with the Fisheries Act (1996) been established for this stock?	• How was the management target established? • Is risk (to the stock and to the fishery) considered when setting the management target?	
Is the stock being managed at or above the target level?	• If the stock is above the management target, has the probability it will drop below the target been determined? • If the stock is below the management target, has a plan been established to rebuild the stock to above the target?	
Was catch by other sectors (for example, the recreational sector) considered when the management target was set?	• On what basis was the management target adjusted?	
Has the management target for this stock been set with regard to non-commercial catch or illegal fishing?	• On what basis were these additional catches included?	

Comments

If you answer "maybe" or "no" to any of the above questions, consider:
•   Are any changes required to establish management target or change an existing target?
•   Who needs to establish the target?
•   Who needs to agree to the target?

Commercial fish stocks: Measures to achieve management targets

Questions	Considerations	Response (yes/maybe/no/not applicable) and explanation
What management methods are used to maintain the stock at or above the target level?	• Are output controls used to manage this stock (for example, TACC)? • Are input controls used to manage this stock (for example, size limits or closed fishing seasons)? • If applicable, how are non commercial and illegal catches controlled? • Is risk (to the stock and to the fishery) considered when management controls are set for this stock?	
Is there a well-defined and effective management approach for the stock?	• Is there a procedure (that is, a decision rule) in place to keep the stock at or above the target reference point? • Is the management approach or procedure documented (for example, in a fisheries plan)? • Does the management approach comprehensively address issues relevant to this fishery? • Is the relationship between assessment advice and management decisions clear?	
Are the management tools appropriate for the level of available information?	• Low levels of information might imply more conservative management measures are required, or an adaptive management plan.	
Are the management measures consistent with the Fisheries Act (1996) and other relevant Acts, regulations and international agreements and conventions to which New Zealand is a party?	• Other legislation includes the: – Marine Mammals Protection Act (1978) – Marine Reserves Act (1971) – Resource Management Act (1991) – Agreement on the Conservation of Albatross and Petrels – Convention on the Conservation of Southern Bluefin Tuna.	

Comments

If you answer "maybe" or "no" to any of the above questions, consider:
• What further action is required?
• Who needs to carry out any further action?
• Who needs to agree to any further action?
• Are there any international precedents for similar action in this area?

2.4.2 Non-target mortalities

For each non-target species (for example, seabird, marine mammal, or other fish species including sharks) consider the following questions.

Non-target mortalities: Information availability

Questions	Considerations	Response (yes/maybe/ no/not applicable) and explanation
Is the available information on the impacts of the fishery on non-target species adequate to meet your environmental obligations and objectives?	• What information is available about catch levels of non-target species? • Is catch reporting required by law? • What are the stock boundaries and definitions for the non-target species? • Are growth, mortality and migration of the non-target species well understood? • Is the lifecycle of the non-target species understood? • What are the reproductive processes of the non-target species? • What is the population status of the non-target species or population? • How is the population status determined for this population (for example, is there a quantitative population model)? • What information is available internationally about the non-target species or population?	
Are current monitoring levels adequate for you to meet your obligations?	• Is there catch and effort monitoring? • Are landings, discards and incidental mortalities of non-target species monitored independently? • What other work is taking place (for example, sampling of the population's biological characteristics, independent biomass surveys or genetic and population composition studies)? • Does this other work contribute to inform management adequately?	
Does the available information suggest the species or stock is being maintained at or above a level that ensures its long-term viability?	• What trends can be identified?	

Comments

If you answer "maybe" or "no" to any of the above questions, consider:
•   What actions could be taken to improve the information?
•   Why is additional information necessary?
•   How, and by whom, will additional information be gathered?

Non-target mortalities: Management targets

Questions	Considerations	Response (yes/maybe/no/not applicable) and explanation
Has a formal process been used to establish a management target?	• Has a population management plan been established for this non-target species or population? • Is there an agreed population model that has been used to determine the management target (for example, to rebuild a depressed population or maintain a specific status)? • Has some process other than a population model been followed to set the management target (for example, a general agreement on a target or a target imposed by government)? • Is risk (to the non-target population) considered when the management target is set?	
Is the non-target population being managed at a level that will ensure its long-term viability?	• If the population is at a level that ensures its long-term viability, has the probability that it will drop below that level determined? • If the population is below a level that ensures its long-term viability, has a plan been established to rebuild the population to above the level?	

Comments

If you answer "maybe" or "no" to any of the above questions, consider:
• Are any changes required to establish a target, or change an existing target?
• Who needs to establish the target?
• Who needs to agree to the target?

Non-target mortality: Measures to achieve management targets

Questions	Considerations	Response (yes/maybe/no/not applicable) and explanation

Have specific measures been implemented to control the incidental catch of non-target species or stock?	• What method is used to control the catch of non-target species or stock:
	  – MALFiRMs (Maximum Allowable Levels of Fishing Related Mortality)
	  – voluntary agreements
	  – decision rules
	  – catch limits
	  – a quantitative management procedure that takes into account the risk to the population.	

Does the fishery use fishing gear and practices designed to avoid, remedy or mitigate the capture and/or mortalities of non-target species or stocks?	• Non-target fish include juveniles of all species. • Have codes of practice been developed? • Are codes of practice been implemented consistently? • What mitigation measures are in place? • Are any mitigation measures effective? • Is the effectiveness of the mitigation measures monitored according to scientific standard?	

Comments

If you answer "maybe" or "no" to any of the above questions, consider:
• What further action is required?
• Who needs to carry out any further action?
• Who needs to agree to further action?

2.4.3 Habitats

Previously, you identified the habitats of significance to your fishery (see section 2.2.3).

Now you need to evaluate your current knowledge of their environmental status and your effect on them.

Habitats: Information availability

Questions	Considerations	Response (yes/maybe/ no/not applicable) and explanation
Are there any potential effects of fishing on habitats of particular significance for the management of this fishery? Are these being monitored?	• Habitats could include those that are significant to the commercial fish-stocks (for example, breeding grounds) as well as others that are affected by fishing activity such as benthic communities that are vulnerable to bottom disturbance.	

Comments

If you have answered "maybe" or "no" to the above question, consider:
• What actions could be taken to improve the information?
• Why is additional information necessary?
• How, and by whom, will additional information be gathered?
• Is information available internationally about the effects of certain types of fishing method on habitat types?

Habitats: Management targets

Questions	Considerations	Response (yes/maybe/ no/not applicable) and explanation
Have specific management targets been set to protect habitats that are significant in this fishery?	• A management target could be to maintain community diversity in an area affected by fishing.	

Comments

If you have answered "maybe" or "no" to the above question, consider:
• Are any changes required to establish a target or change an existing target?
• Who needs to establish the target?
• Who needs to agree to the target?

Habitats: Measures to achieve management targets

Questions	Considerations	Response (yes/maybe/ no/not applicable) and explanation
Are management measures in place to protect habitats of particular significance to the lifecycle of the fished stock(s)?	• Measures could include mitigation measures, for example reduced fishing pressure and area closures.	
Are there measures in place to avoid, remedy or mitigate any adverse effects of fishing on vulnerable benthic communities?		

Comments

If you answer "maybe" or "no" to any of the above questions, consider:
• What further action is required?
• Who needs to carry out any further action?
• Who needs to agree to further action?

2.4.4 Other ecosystem considerations

Consider the following questions as they relate to the whole fishery.

Other ecosystem considerations: information availability

Questions	Considerations	Response (yes/maybe/ no/not applicable) and explanation
Are there any known effects of fishing on prey or predator species?	• The study of predator prey systems is not well-developed internationally. • Are effects on prey or predator species being monitored?	
Are natural environmental effects (for example, El Nino or water temperature) on the relevant ecosystem taken into account?	• Variation in natural events could relate to sea surface temperature, currents, climatic variability, algal blooms or extreme events. • Is variation in any natural events being monitored?	
Are you aware of any other activities that affect components of the fishery?	• Is this an inshore fishery that is affected by land use or discharges? • Are these effects being monitored?	
Are there known adverse effects arising from lost fishing gear or the dumping of waste products from your fishery?	• How has this information been gathered? • What further information could be gathered?	

Comments

If you answer "maybe" or "no" to any of the above questions, consider:
• What action could be taken to improve the information?
• Why is additional information necessary?
• How, and by whom, will additional information be gathered?

Other ecosystem considerations: Measures to achieve management targets

Questions	Considerations	Response (yes/maybe/ no/not applicable) and explanation
Are there effective management measures to avoid, remedy or mitigate any adverse ecosystem effects (that is, lost fishing gear and waste from the fishing operation)?	• Fished species or the wider ecosystem might be affected. • Consider that waste could be organic or inorganic.	

Comments

If you have answered "maybe" or "no" to any of the above questions, consider:
• What further action is required?
• Who needs to carry out any further action?
• Who needs to agree to further action?

2.4.5 Fishery-wide considerations

Consider the following questions as they relate to the whole fishery.

Monitoring, compliance and reporting

Questions	Considerations	Response (yes/maybe/no/not applicable) and explanation
Are all participants in the commercial fishery aware of the management measures in place and their responsibilities with respect to those measures?		
Can you demonstrate fishery participants' compliance with regulatory management measures?	• Is information on levels of compliance independently verified and audited?	
Can you demonstrate fishery participants' compliance with non-regulatory management measures?	• Compliance with codes of practice may be demonstrated by observer coverage and validated logbook programmes. • Is information on compliance levels verified and audited independently?	
Are there adequate incentives, disincentives and sanctions in place to encourage compliance and discourage non-compliance?		
Do participants in the fishery assist and co-operate with management authorities in the collection of fishery information?		
Are there regular reports, available to all interested parties, on the performance of the management regime?	• Interested parties include groups representing management agencies (for example, the Ministry of Fisheries and Department of Conservation), customary fishers, kaitiaki, recreational fishers, environmental groups and other commercial fishing interests.	
Is there an adequate dispute resolution process within the fishery?		

Comments

If you answer "maybe" or "no" to any of the above questions, consider:
• What further action is necessary?
• Who needs to agree to further action?
• Who needs to carry out further action?

Other stakeholders' activities and values

Questions	Considerations	Response (yes/maybe/no/not applicable) and explanation
Is there agreement between fishery resource users and other stakeholders that the commercially fished stock(s) are well managed?	• Groups might include iwi, kaitiaki, management agencies, other commercial interests, environmental groups and recreational interests.	
Is there agreement among other groups with interests in the fishery that the effects of fishing on other components of the fishery are well managed?		
Is there adequate opportunity for all interested parties to have input into fisheries management decisions relevant to the fishery?	• Decisions could apply to target stock levels, management measures for the target stock and measures to manage any adverse effects of fishing.	
Are there any measures in place to influence or control the adverse effects of other people's activities on components of the fishery?	• Adverse activities might involve land use effects, discharges and pollution.	

Comments

If you answer "maybe" or "no" to any of the above questions, consider:
• Is it important for you to gain agreement with all interested parties on management of the fishery? If so, why?
• What further action can be taken to:
   – work with other interested parties?
   – influence others' activities?

2.5 Next steps

Complete the fisheries environmental assessment by summarising the key outcomes for your operation. This step is crucial to the success of the next steps, so take sufficient time to complete this task. To summarise the status of current knowledge and management in your fishery, go over the main topics from the assessment (for example, commercial fish stocks and so on) and consider:

• Have you identified a need to improve available information, change management targets, or enhance measures to achieve management targets? Note down the specifics of any issues identified.

• Details noted in the comments sections will help clarify how the issues are relevant to your operation.

• Is engagement with a broader group needed to address the issues? Identify with whom you will need to work.

Undertake this process for all components of the assessment. Ensure you extract any issues highlighted for improvement, as this information will guide you in your environmental management response. Once you have completed the summary move onto the next steps – evaluating your assessment's outcome in a staged process, and formulating your response plan.

3 CONSIDER THE OPTIONS

This section introduces a four step process to help you decide where and how to place your effort most effectively. Not all the environmental issues identified are necessarily relevant to achieving your environmental management goals. A decision making framework can assist you to define where and how to lift environmental performance in order to meet your goals. The decision making framework consists of the following steps:

1   Clarify the goals and review the issues.
2   Set priorities.
3   Consider the range of environmental management tools.
4   Select the actions to achieve the goals.

This decision making framework provides the foundations for you to develop management responses tailored to your specific needs and resources. To start this process, consider:

• After having identified key environmental issues for your operation, how are they relevant to achieving your goals?
• After having identified your priority issues, consider each one. What are the aspects of each issue that make it problematic?
• What are the actions required to address the issue?
• Is the scope of actions within your sphere of influence?
• With whom will you need to work in order to address the issue?
• Are there alternative ways to address the problem that may deliver the required results and be consistent with your goals?
• What are the advantages and disadvantages associated with each approach?

3.1 Clarify the goals and review the issues

After completing the fisheries environmental assessment consider the range of issues identified. How are these issues relevant to your achieving your goals?

Clearly, not all the issues identified will be of strategic relevance to your achieving your goals. Paying too much attention to the wrong issues may prove ineffective and divert you from your strategic direction. A systematic evaluation will save you money and time.

3.2 Set priorities

This is the time to determine what the big issues are for the fishery – the things that will have the greatest impact on the ongoing viability of the fishery and the success of your business operation. It will be useful to consider the following points, and the consequences of addressing or not addressing the issues. Is it most important to:

• Comply with relevant laws and regulations?
• Maintain long-term access to fisheries resources?
• Gain community support?
• Operate more efficiently?
• Secure market access for your product?
• Gain a competitive edge for your product?

Keep in mind the goal you want your operation to move towards and consider the environmental issues identified in your assessment; prioritise your actions.
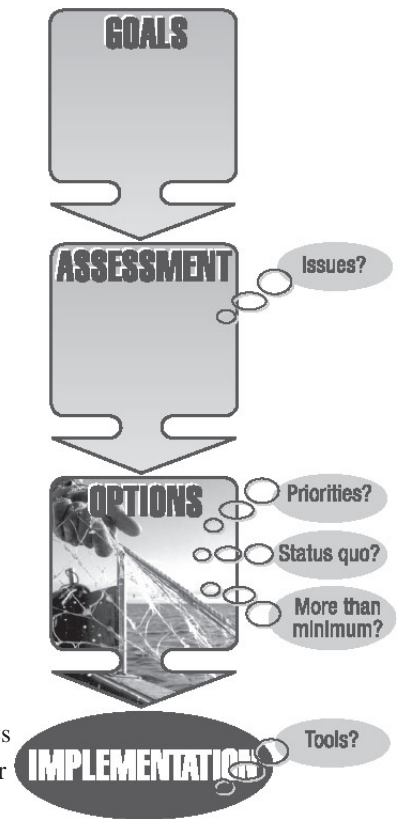
3.3 Consider the range of environmental management tools

When you have identified the priority areas for improvement and thought about the scope of your engagement, remember to tailor your approach and explore a range of management tools that could be applicable to your situation. Do not limit yourself at this stage, but use this as an opportunity for inquiry. There is a range of management tools that will help you lift performance and attain your goals. As has become apparent, some of these tools will be more effective in some situations than others. You need to assess each tool against the needs of your situation.

The range of environmental management tools are discussed in section 4. Find out what they are, how they will fit in to your overall systems, what is involved with each tool, and when and where they apply. Examples of practical cases highlight lessons learned.

3.4 Select the actions to achieve the goals

To assess what is the most appropriate action for achieving your goals, use an assessment tool such as a cost/benefit analysis, a risk analysis or a strengths, weaknesses, opportunities and threats (SWOT) analysis. Your ability to clarify the likely risks and benefits of each option will ensure your actions are in your fishery's best interests and that management responses are tailored to suit your specific needs and resources.

Identifying where costs or benefits arise will often be easier that quantifying those costs or benefits. For example, fishing businesses incur costs from a variety of sources, some are directly attributable to fishery-environmental interactions (for example, cost recovery levies (compliance costs), and others are indirect (for example, the opportunity cost associated with controls placed on fishing activity or access due to adverse environmental interactions). To assess accurately the risks and benefits of your proposed actions requires a clear understanding of the available management tools and their costs. Just as you required specialist knowledge to complete the environmental assessment, you should also expect to engage experts to help assess the management tools.

Remember:

- clarify your goals
- identify the issues
- determine how the issues may affecting goal achievement
- determine the approach that will best resolve the issues without compromising your goals
- identify the role of government processes
- identify with whom you should work
- list the range of management tools available to you
- consider the effectiveness of the management tools
- assess the risks and benefits of various approaches
- use experts to assess the alternatives
- create a management response tailored to your specific needs and resources.

3.4.1 Meet minimum legal requirements or higher standards

Before jumping to a detailed activity plan for any issue, clarify the level of your goal. Do you want to retain the status quo? Do you need to do more to comply with existing regulations? Do you want to go beyond minimum requirements?

3.4.2 Use existing or new processes

Gain clarity early on about how you plan to address any issues within the context of the overall management of your fishery. Do you need to work within existing government processes more effectively (for example, during fisheries sustainability rounds or Ministry of Fisheries and Conservation Services Levy Programme research processes)? Do you need to go beyond existing processes to fulfil your goals? Can you use both approaches effectively?

4 IMPLEMENT ENVIRONMENTAL MANAGEMENT TOOLS

4.1 Introduction

This sections aims to demystify the "how to" of environmental management by introducing several environmental management tools currently used in fisheries management.

The purpose of a management tool is to provide a clear structured approach through which you can manage your fishery-environmental interactions. As demonstrated in the examples presented below, the differences between the types of management tool relate largely to the degree of complexity and formality within the structured process, and how the process is managed.

The management tool that will best suit your requirements will be determined by your goals. For example, if your goal is to:

- Resolve an operational issue, the most effective management tool is likely to be a code of practice through which you can document and clarify best practice measures and obligations.
- Gain public support through demonstrating good environmental practice, you will require a management tool that not only measures your performance, but involves some form of independent involvement and public disclosure.
- Meet market standards to secure market access for products from your fishery, it is likely you will require formal certification. (Certification can demonstrate independently your attainment of standards in support of your claims.)

You may consider it necessary to use a combination of environmental management tools if you have multiple goals across different aspects of your operation. To ensure you obtain best value from your efforts and resources, and to ensure your decisions and actions are consistent with your overall goal, you may choose to have an overarching policy statement with guiding environmental principles. An environmental management plan or a fisheries plan may be used to co ordinate activities at an operational level. It could include a code of practice, a log book programme, or monitoring systems to measure and report performance.

The key message is that the variety of environmental management tools present you with an opportunity to select, tailor and develop management frameworks to suit your requirements.

4.2 Environmental policy

An environmental policy is a statement of intent containing guiding principles. The principles outline your organisation's commitment to the type and extent of its interaction with the environment. You may adopt an environmental policy to fulfil several objectives including:

- Providing an effective way of communicating your organisation's commitment to the environment to people within your organisation, your industry peers and business contacts, the local community and the general public.
- Providing an overarching framework to guide how your organisation approaches management decisions and operational activities concerning the environment. Depending on your commitment, the framework provided by your environmental policy can guide the setting of environmental objectives and targets and be brought to life through plans and codes of practice that guide your activities.

4.2.1 Example: New Zealand Mussel Industry Council's Environmental Policy

The New Zealand Mussel Industry Council's environmental policy is a good example of how a policy statement can serve both industry and public interests. The key industry motivation for developing a policy statement was to provide a clear direction and framework for the industry while informing the wider public of the industry's commitment to their common values.
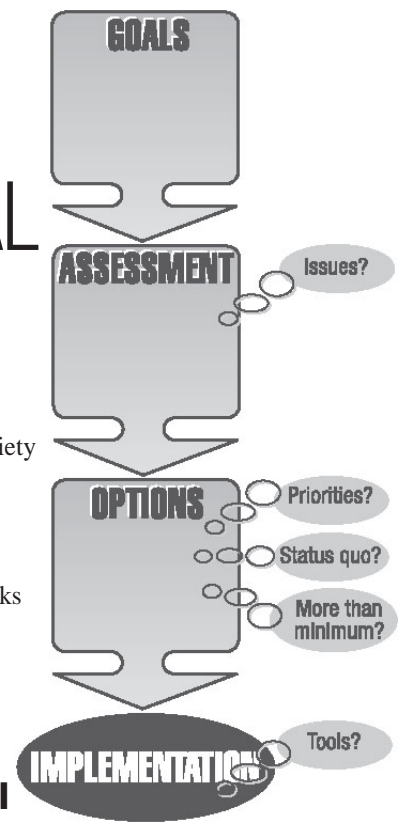
The policy principles broadly encompass environmental, social and economic aspects of importance to the industry. The principles are expanded within the policy to inform the wider public of the key objectives adopted by the industry to give effect to the principles, including, among other things, an industry environmental code of practice, research programmes, and a commitment to community involvement.

A selection of the environmental policy principles are reproduced below. The complete policy can be viewed from the council's website at
http://www.greenshell.com

Ecological values

The Marine Farming Industry recognises the importance of the natural processes and the ecosystems on which it is based. The Industry is committed to developing a better understanding of these processes and ecosystems in order that it may assist in their maintenance and protection.

A number of areas where further scientific information is required in terms of the potential interactions between resource users and the environment have been identified. The Industry is providing funding support for research programmes designed to address a number of these issues.

A copy of the Industry's Research Policy is available on request.

Regulatory Compliance

Marine farming operates in a complex regulatory environment. The Industry is regulated by general company legislation ... and industry specific legislation ....

The Industry is committed to assisting in the rationalisation of legislation and regulatory agency functions. The Industry's aim is to ensure that regulations are environmentally effective and scientifically sound while being cost efficient for both the regulators and the Industry.

Mussel Industry members are not only committed to meeting legislative requirements but also strive to continuously improve the environmental performance of their operations.

Waste Management

Waste management is a key environmental issue facing all industries in New Zealand. The Mussel Industry involves the production, harvesting and processing of a natural product. While the industry

generates solid wastes, particularly mussel shells and organic material, there are minimal chemical wastes.

The Industry is conscious of the quantity of mussel shell by product that it produces. Alternatives to the current practice of landfill disposal are being investigated. The Industry currently promotes and funds research that will provide environmentally sustainable and economically viable waste management practices.

Strict sanitation controls require the use of cleaning chemicals for processing, however, the Industry is committed to the use of cleaning chemicals which have nil or minimal adverse environmental effects.

Through the implementation of this Environmental Policy, the Industry will continue to put the "5R" principles of waste management – reduction, re-use, recycling, recovery and residual management – into practice.

4.2.2 Considerations when developing an environmental policy

When developing an environmental policy consider the following:

- What do you want to achieve?
- Why do you want an environmental policy?
- Define the scope of your policy – set your boundaries. Do you want to address only environmental issues? Do you want your policy statement to reflect a wider sustainable development framework encompassing environmental, social and economic aspects, as adopted within the New Zealand Seafood Industry Charter?
- Revisit the environmental issues identified when you undertook the checklist process.
- Consider whether there are environmental issues not identified in the checklist that are a priority for your organisation (for example, energy use, waste, pollution, climate change or refrigerants).
- There will be several established environmental principles relevant to your activities that you may want to consider, including:
  - the environmental or management principles within the Fisheries Act (1996), other legislation or policies guiding your activities
  - environmental principles adopted by a national commercial stakeholder organisation, or other

national or international organisations to which you may be affiliated

– your customers, markets and suppliers.

- Consider whether you can make progress towards achieving your goals. If your ability to do so is a problem, the language in your policy should reflect this. Overcommitment and failure can result in a loss of credibility.

- Consider who needs to commit to the policy and how their commitment can be achieved. It is important for everyone to understand why the management measures you are undertaking are necessary, what is involved and what it means to them.

- How, and to whom, will you promote the environmental policy?

- Consider your approach to delivering on your commitments, including how, and the time frame in which you intend to do so, and a commitment to continuing improvement. Your environmental policy and organisation will be more credible if you can demonstrate how you will give effect to your policy, and how your performance meets those objectives.

- Review your policy statement within a given time frame to reflect new experiences, understandings, and change.

4.3 Environmental management plans

An environmental management plan sets out your strategy and objectives for managing the environmental effects of your fishery, as identified through the assessment process. It can help you to link, structure and clarify the actions you will take to achieve your goals.

A plan is a key tool for communicating your goals, objectives and actions to a variety of recipients. You may choose to focus your plan at members within your organisation or participants within the fishery who are responsible for its implementation. Alternatively, you may wish to communicate your actions to a wider audience of other fishery stakeholders, the public or government agencies.

A plan may be focused at a strategic or an operational level, or contain elements of both, depending on what is to be achieved and the actions to be taken. There should

be close links between your environmental management goals, and your organisation's broader goals. Consider integrating an environmental management plan into a broader organisational plan, such as a fisheries or business management plan.

A plan can assist you to:

- clarify and distinguish between your short term and long term objectives for the critical environmental aspects of your operation

- ensure your strategies and objectives are consistent with your legal requirements

- highlight the links between your strategies, objectives and actions

- clarify the steps you will take to meet your objectives

- clarify responsibilities, targets and timelines for action

- monitor and review your performance to ensure any changes to actions, objectives or strategies occur coherently.

Fisheries plans aim to deliver the benefits of management planning to fisheries management while providing stakeholders with an opportunity to accept greater responsibility. Within a fisheries plan, stakeholders have the opportunity to define management targets and management strategies for the fishery along with addressing broader environmental management issues. There are no set criteria to determine what should be included within a fisheries plan. An environmental management plan could form part of a wider fishery plan.

The Fisheries Act (1996) provides for the Minister of Fisheries to formally recognise and approve whole or part fisheries plans. The Minister is required to take into account approved plans (or part plans) when deciding on sustainability measures, regulations or fishing controls. However, no fisheries plans have been approved yet under the Fisheries Act (1996), but there are fisheries with business management plans that address a host of management issues, including environmental aspects within the fishery.

4.3.1 Example: Challenger Scallop Enhancement Company's Southern Scallop Fishery Management Plan

Challenger Scallop Enhancement Company's management plan assembles a range of management proposals designed to meet and ensure Challenger's activities comply with their legislative obligations. One of Challenger's overriding motivations for developing the management plan was to ensure its environmental obligations were integrated with the commercial incentives and objectives of the quota owners in the fishery.

The Southern Scallop Fishery Management Plan is structured around the management principles derived from the legislation that provides for, and governs the management of, the fishery. The principles addressed include

- sustainability
- utilisation
- information
- environment
- resource management
- conservation.

The plan sets out the legislative framework and explains how the management principles are applied in the context of the fishery. This includes a broad outline of previous, current and proposed measures that give effect to the principles.

The remainder of the plan outlines the combination of strategic and operational measures developed to address the management principles. For example, in relation to the sustainability principle, the plan explains how sustainability is achieved through the rotational harvest and enhancement regimes within the Tasman/Golden Bay fishery, and through the TAC limits within the Marlborough Sounds. When discussing the other management principles, recognition is given to their role and the measures adopted that underpin the sustainability principle. The plan outlines measures directly and indirectly undertaken and planned to ensure sustainability.

It discusses the rationale for the steps taken and the management recommendations made. Measures undertaken include:

- a compliance regime to manage harvest activities
- an operational harvest plan to manage the scallop and oyster fisheries

- a biomass survey and results for establishing catch limits
- controls to open and close the fishery
- funding mechanisms to support proposed management and operational activities.

The specifics of these measures, including detailed information, contractual arrangements, operational plans, scientific results and assessments, and roles and responsibilities are provided as appendices to the plan.

The comprehensive nature of Challenger's management plan reflects its management commitment. However, such a plan and the issues it addresses are for each organisation to determine.

4.3.2 Considerations when developing an environmental management plan

When developing an environmental management plan consider the following:

- Review the results highlighted from undertaking the work in section 3: be clear why you want a plan, including your goals, benefits and risks.
- Identify your constraints, including the time, resources and support available to you.
- Consider your key goals and objectives. Who are you planning to influence? Whose support will you require to implement the plan? This will guide the process and determine who needs to be involved in not only developing the plan, but implementing it effectively.
- Collate and review the relevant information, documents and expertise on the issues you want to address.
- Before taking action, consider the options available to address the issue. It may be useful to review how others have addressed similar issues.
- Identify who will be responsible for developing and implementing each action. Consider how you will monitor support or compliance with an action. Consider how you will monitor, review and report on the effectiveness of the actions undertaken.
- If you have an environmental policy statement, review whether your planned actions are consistent with your guiding principles.
- Develop a draft plan and consult on it. Consider how you will publicise and circulate the draft plan, meet with stakeholders, and gain and respond to feedback. Provide stakeholders with an opportunity

to view the revised draft. Be clear with whom you wish to consult, but it could include groups such as:

– the Ministry of Fisheries
– the Department of Conservation
– iwi authorities
– participants in other fisheries operating in your area
– fisheries and marine scientists (for example, from the National Institute of Water and Atmospheric Research (NIWA))
– local government
– local communities
– local iwi or hapu
– environmental groups
– recreational groups.

• Consider how you will publicise and circulate the final plan. Again this will be influenced by your goals, and those you need support from or seek to influence. Consider tailoring your release strategy to your target audience. Do not assume that because it is written down that your message will reach its target audience; consider public meetings, pamphlets, or putting your document on a relevant website.

4.4 Codes of practice

A code of practice is an industry agreement containing a set of rules in the form of operating controls and procedures to self regulate an activity. Codes of practice have several advantages. They:

• can be a cost effective alternative to regulation
• are easier to tailor to business requirements
• can result in better staff buy-in
• are a good way to change fishery participants' behaviour
• give industry greater control over the implementation of environmental management actions.

A code is typically focused on a specific issue for an industry sector. Widespread industry acceptance of and support for a code is fundamental to developing a successful and useful self-regulated code.

An effective code identifies problems accurately and provides solutions that are practical and workable. A code is usually voluntary. Therefore, consideration needs to be given to its benefits and costs, and whether sufficient incentives exist to ensure support and compliance. Code proponents use a variety of mechanisms to formalise fishery participant commitment to a code, including:

• public declarations
• civil contracts
• attaching conditions to contractual arrangements involving access to the Annual Catch Entitlement (ACE).

Clearly assessing a code's costs is important for ensuring the industry's future commitment. Costs will be incurred during the code's development, implementation and administration, and will include consultation, education and training, promotion, and monitoring and review of the industry's performance and the code's effectiveness.

As a tool to promote standards and best practice, an annual cycle to monitor, audit, review and improve the code is critical. If external credibility is an objective for your operation, engage outside stakeholders in this process.

Consider using a code of practice to:

• avoid or minimise environmental impacts or risk by adopting agreed practices and procedures
• promote regulatory compliance, an action in a management plan, or principles in an environmental policy statement
• promote standards beyond the minimum legal standards
• demonstrate to the industry and external interests, industry commitment to standards and controls regulating activity.

4.4.1 Example: Southeast Finfish Management Company's Commercial Set Net Fishers' Voluntary Code of Practice

Southeast Finfish Management Company's Commercial Set Net Fishers' Voluntary Code of Practice was developed by the industry in response to the realisation that a significant problem existed in the Canterbury set net area. The aim was to reduce industry interaction with Hector's dolphin. It was clear to the stakeholder group that a code of practice would enable fishers to develop practical mitigation methods before stringent government regulation was imposed on their fishing activities.

Since the code's initial development, its purpose, objectives and guidelines have evolved. The purpose of Southeast's code is to remedy, mitigate or avoid the accidental capture and death of endangered, threatened, at risk and protected marine mammal and seabird species incidental to lawful fishing operations. In particular it provides guidance to commercial fishers in the inshore set net and trawl fisheries of fishery management areas three and five on methods to remedy, mitigate, reduce or avoid incidental catch of Hector's dolphin and seabirds.

The code supports the objectives of Southeast's business plan and is a stand-alone document. Included within the code are:

- introductory and background material that provide fishers with the code's rationale

- a clear purpose

- a commitment from the industry to adopt and implement the code

- detailed information on the species incidentally caught, outlining their distribution and at-risk sites, life history and behaviour, population status and threats

- details of statutory and regulatory obligations relevant to the code and corresponding duties required of fishers, which is supported by a statement of commitment by Southeast's shareholders to comply with those obligations

- the Minister of Fisheries' position and the voluntary commitments entered into by industry to address the Minister's demands, including details of how the company will implement the code and ensure compliance

- best practice operational guidelines to remedy, mitigate or avoid incidental catch of Hector's dolphin and seabirds, covering fishing activity, types of gear, reporting requirements, and guidelines outlining the appropriate actions should an incidental catch occur

- reporting forms, contact details for organisations relevant to the code's administration, and excerpts from relevant legislation.

The commitment to the code by Southeast and its shareholders, and the code's effectiveness in addressing the issues identified, have proved beneficial for other Southeast Finfish initiatives. This was acknowledged by the Minister of Fisheries when approval was granted for

TACC increases under the Adaptive Management Programme, but conditional on continued commitment to the code.

For more details about Southeast's code contact:

Pete Dawson
Southeast Finfish Management Company Ltd
PO Box 43
Lyttleton

4.4.2 Considerations when developing a code of practice

When developing a code of practice consider the following:

- Identify the issue(s) you want to address.

- Identify the parties with an interest in the code and invite them to become involved in its preparation. It is crucial to ensure the code's intended future users:
  - understand the problem
  - understand the benefits of adopting a code
  - agree on the need to address the problem
  - agree on the standards or guidelines to which they will be required to comply.

- When developing the guide consider using any, or all, of the following processes:
  - a multi party working group that is responsible for developing the code
  - workshops or meetings to discuss a draft code
  - a submission process
  - on vessel trials of the code.

- Consider whether a code offers the best solution. Are there alternative approaches (for example, new regulations, civil agreements or a fisheries plan) that are likely to be more effective and offer equal or greater benefits?

- How does the code relate to other management initiatives?

- The code should contain the following elements:
  - an introduction stating the problem and why a code is deemed necessary
  - the code's objectives (what the code is trying to achieve)
  - a statement of commitment by the code's signatories
  - an outline of the measures adopted to ensure compliance with the code
  - any existing statutory, regulatory or policy requirements

– management measures required by the code (for example, gear types, fishing areas, specified fishing practices or recording requirements such as logbooks)

– additional information for implementing the code (for example, forms for reporting by catch or contact details for further information)

– provisions for monitoring, annual auditing and reporting on the code's implementation and performance

– the time frame for review of the code.

• When the code has been completed, provide the parties involved in the process with feedback on how their concerns have been dealt with.

4.5 Environmental management systems

An environmental management system (EMS) provides a systematic framework for you to manage the impact of your operations on the environment. Environmental management systems generally share a generic management framework comprising five main stages:

• *Commitment:* Establish a commitment through the development of an environmental policy.

• *Planning:* Review current operations, identify legal requirements and environmental concerns, establish objectives, evaluate alternatives, set targets and devise a plan for meeting those targets.

• *Implementation:* Follow through with the plan by establishing responsibilities, training, communication, documentation, operating control procedures and an emergency plan to ensure environmental targets are met.

• *Evaluation:* Monitor operations to evaluate whether the targets are being met, and, if not, to take corrective action.

• *Review:* Modify the EMS to optimise its effectiveness. The review stage creates a loop of continuous improvement (see figure 1).

While environmental management systems generally share a common framework, different systems have substantial differences in the required standards and processes that determine management responses. The key differences include:

• The way environmental performance standards are set. Standards may be predetermined (as occurs with Marine Stewardship Council accreditation) or for you to determine (as with ISO 14000).

• The scope of the certification process; what is included or excluded. Similar to standard setting, this can be predetermined or within your control.

• Procedures to ensure a chain of custody.

• Standards for accrediting certifiers.

• Standards for the certification process.

• Certifier accountability, either as part of, or independent to, your operation.

• Certification costs. Costs will reflect the standards required by the systems in place. In addition to development and implementation costs, there will be ongoing management costs for maintaining and implementing management responses.
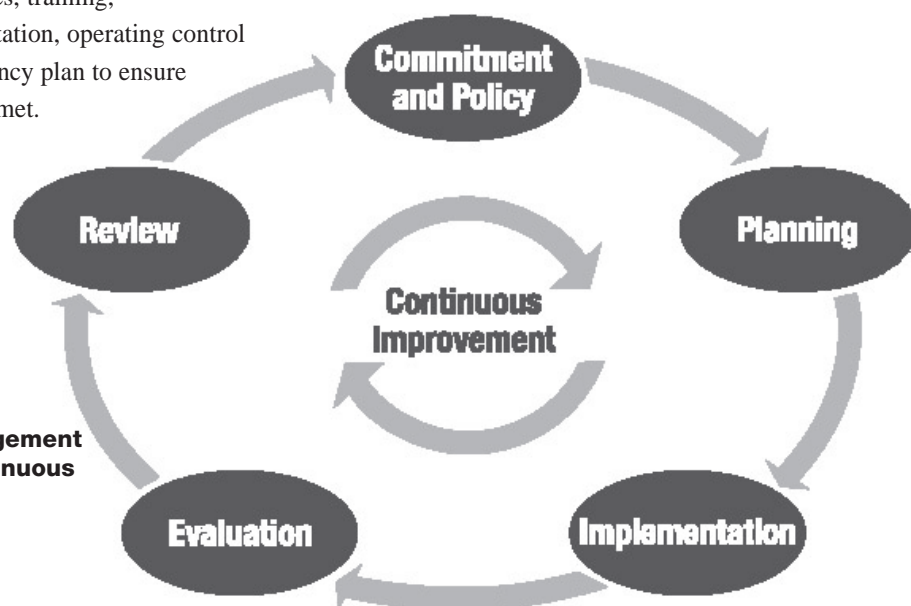
Figure 1:
The environmental management system and cycle of continuous improvement

There are several established environmental management systems being used globally, some have been designed specifically for fisheries. Internationally recognised environmental management systems have an independent certification process (third party) and an environmental label. In addition to indicating that your organisation has an environmental management system, environmental labels, or ecolabels, have been advocated as a way to create consumer demand or a premium for seafood products from well managed fisheries.

Certification programmes usually fall into one of the following three categories:

• *First party scheme:* These are established by organisations based on their own product standards. The standards might be based on criteria related to specific environmental issues. A well known example is the "Dolphin safe label" aimed at giving the consumer certain information. This form of certification is also referred to as self declaration.

• *Second party schemes:* These are established by an industry association for its members. The members develop the certification criteria, often drawing on expertise from external stakeholders and specialists. Verification of compliance is achieved through internal certification procedures within the industry, or by using external certifying companies.

• *Third party schemes:* These schemes are established independently of the organisation to be evaluated. The certifying body may be the initiator of the scheme or an accredited independent organisation. The performance criteria may be set by the scheme initiator or established through a negotiated process among the various interested parties. Third party schemes are generally considered more credible than the other two schemes, because the criteria applied to the schemes and statements of compliance are based on verifiable and impartial certification procedures.

Depending on the type of EMS adopted, an EMS process can meet several objectives including:

• demonstrating compliance with statutory obligations or your environmental policy

• implementing a cycle of continuous measurable improvement of your environmental performance

• identifying and addressing risks from and to your activities

• identifying areas efficiencies can be made and costs reduced

• providing a credible platform to inform stakeholders of your environmental performance

• differentiating your product to gain a competitive advantage in the market by demonstrating its good environmental performance

• keeping abreast of environmental standards demanded by the market.

As indicated by the objectives listed above, an environmental management system is a tool to help you deliver on long term objectives and strategic goals. Adopting an EMS will require a similar long term commitment and the support of your organisation's resources.

4.5.1 International Organisation for Standardisation (ISO 14000)

ISO 14000 is a series of international standards for establishing and maintaining an environmental management system. The ISO 14001 standard was the first standard developed by the International Organization for Standardisation (ISO) to bring consistency and common understanding to the design of environmental management systems in the global marketplace. ISO 14001 is not solely a system for the fisheries and aquaculture sectors, but a generic standard applicable to all sectors and organisations.

The ISO14000 series certification indicates that your organisation has an environmental management system. An independent and externally accredited body reviews and audits the environmental management system against the ISO recognised standard.

The ISO 14001 standard examines only the management process, not the environmental outcomes or the product. Hence, this series does not prescribe environmental performance levels. To claim compliance with ISO 14000, you must establish an environmental policy and set targets and objectives for environmental management performance. Your organisation drives the certification process. The way you develop, implement and review the policy provides the basis for your system's assessment. Key elements are the structures, planning activities, responsibilities, practices, procedures, processes and resources you use to implement your environmental policy. While the ISO 14000 series certification process requires environmental

performance improvements to be made, it provides no information or assurance about the level of environmental impact a certified organisation achieves.

The ISO 14001 standard is a collection of voluntary environmental management standards and guidelines. Even without certification, the ISO 14001 Standard and guidelines can provide useful guidance to designing and improving your management system.

Current standards and guidelines include:

- general guidelines on principles, systems and supporting techniques
- environmental labels and declarations – self declared environmental claims (type II environmental labelling)
- environmental performance evaluation – guidelines
- life cycle assessments – principles and framework, impact assessment and interpretation.

For further information on the ISO 14000 series of standards see *http://www.telarc.co.nz*, *http://www.iso.ch and http://www.iso14000.com*.

4.5.2 Example: Sanford Ltd and ISO 14001

Sanford Ltd operates an environmental management system certified to the ISO 14001 standard. Sanford's EMS is a key mechanism for delivering on the company's commitment to a triple bottom line sustainable development philosophy. The company made a strategic decision to adopt an EMS and a sustainable development philosophy based on a strong business case leading to improved financial returns. The EMS ensures ongoing, active management of those environmental issues relevant to the company's operations. Protection of the environment, improvement in environmental performance and continual improvement of environmental systems are the main objectives of the EMS.

Instrumental to achieving these goals and implementing the EMS effectively is ensuring the buy in of all key people. This includes the support of senior management for the initiatives and that operational staff are equally committed to implement and run the required systems.

Sanford maintains that successful environmental management can have the following benefits:

- helping to protect and enhance the environment in which we live and work

- protecting the resources we rely on to do business
- enhancing Sanford's and New Zealand's environmental images
- reducing costs by managing consumption and minimising wasted resources, such as fuel, water and electricity
- reducing the likelihood of environmental incidents
- encouraging other companies to enter into sustainable management practices
- ensuring the long term viability and sustainability of their company and industry.

The environmental issues managed within the ISO system are all those issues that Sanford has complete ownership and control of across all aspects of its operations, including fishing and aquaculture vessels and on shore processing factories. Environmental issues include:

- energy use
- water use
- waste and recycling (solid and water)
- refrigerants.

In addition, Sanford manages a range of environmental issues outside the ISO 14000 EMS. These issues typically require commitment from stakeholders external to Sanford's operations, for example:

- fisheries management, including catch volumes and compliance
- aquaculture activities
- interactions with the wider marine environment, including seabirds and marine mammals.

Sanford addresses these issues through alternative environmental management tools and fisheries management frameworks including:

- industry sector codes of practice
- environmental assessments and research
- membership with a broad range of industry groups and programmes to advance environmental outcomes
- Marine Stewardship Council certification for the hoki fishery
- investment in research and new technology in both the catching and processing sectors.

For further information on Sanford, see *http://www.sanford.co.nz*

4.5.3 Marine Stewardship Council (MSC) environmental standard

The Marine Stewardship Council (MSC) environmental standard has been developed to promote sustainable and well managed fisheries globally. Fisheries products certified to the MSC standard are recognised and promoted as coming from environmentally responsible fisheries to capitalise on consumer demand. The MSC has been operating as an independent, global, non profit organisation since 1999, following its establishment in 1997 by Unilever, the world's largest buyer of seafood, and WWF, the international conservation organisation.

At the centre of the MSC is a set of principles and criteria for sustainable fishing that are used as a standard in a third party, independent and voluntary certification programme. The MSC principles and criteria for sustainable fishing were developed after an international consultation with stakeholders around the world. The MSC standard is based on the United Nations Food and Agriculture Organisation's Code of Conduct for Responsible Fisheries and was a result of eight workshops and two expert drafting sessions.

- *Principle 1:* A fishery must be conducted in a manner that does not lead to over fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery. The intent of this principle is to ensure the productive capacities of resources are maintained at high levels and are not sacrificed in favour of short term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.

- *Principle 2:* Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends. The intent of this principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.

- *Principle 3:* The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable. The intent of this principle is to ensure there is an institutional and operational framework for implementing principles 1 and 2, appropriate to the size and scale of the fishery.

Independent certifiers ensure the fishery fulfils the requirements of the principles and criteria. When undertaking an assessment, the certifier leads a team with appropriate expertise to develop specific performance criteria and scoring guideposts to relate the specific fishery to the principles and criteria, and then to assess the fishery against them. A set of benchmarks at 100 percent, 80 percent and 60 percent may be developed for each criterion and indicator. Examples of the specific benchmarks for several fisheries, including the New Zealand hoki fishery, are available from the MSC's website (and see section 4.5.4).

Fisheries meeting these standards are eligible for third party certification by independent certifying bodies accredited by the MSC. On a voluntary basis, fishing companies and organisations are expected to contact certifiers in order to have a certification procedure carried out. Fish processing, wholesaling and retailing companies are encouraged to make commitments to purchase fish from only certified fisheries. Unilever, for example, has pledged to buy only MSC certified fish by 2005. By opting to use the MSC logo, producers of fishery products are expected to give consumers the option to buy fishery products that have been derived from sustainable, well managed sources. The MSC offers stakeholders the opportunity to publicly endorse the organisation's mission, by signing a letter of support.

Certification under the MSC is more comprehensive than under any other certification system (see figure 2). As illustrated by the hoki example (in section 4.5.4), management systems, and information and data requirements to comply with MSC are high. As a consequence, certification demands a substantial commitment of resources. The scheme is also relatively new, so there is little information that indicates whether MSC certified products secure a premium price, although initial information suggests that this is the case.

For further information of MSC see
http://www.msc.org

Figure 2: Flow chart of the main steps in the MSC fishery assessment process

```
┌─────────────────────┐
│ Client contacts the │
│ MSC for information  │
│ about the           │
│ certification scheme│
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│ Client evaluates    │
│ details of the      │
│ certification       │
│ scheme              │
└─────────────────────┘
          │
          ▼
      ◇ Client
      decides to proceed
      with assessment
      of fishery ◇
          │
         Yes
          ▼
┌─────────────────────┐
│ Client chooses an   │
│ accredited          │
│ certification body  │
│ from the list       │
│ available on the MSC│
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│ Fees are negotiated │
│ between certification│
│ body and client for │
│ pre-assessment and  │
│ budget for full     │
│ assessment          │
└─────────────────────┘
```

```
┌─────────────────────┐
│ Certification body  │
│ visits fishery and  │
│ prepares a          │
│ confidential        │
│ pre-assessment      │
│ report for the      │
│ client              │
└─────────────────────┘
          │
          ▼
   ◇ Client reviews
   pre-assessment report
   and decides to proceed
   to a full assessment ◇ ──No──► ┌──────────────┐
          │                       │ No further   │
         Yes                      │ action       │
          ▼                       └──────────────┘
┌─────────────────────┐
│ Assessment team     │
│ undertakes full     │
│ assessment of the   │
│ fishery against the │
│ MSC Standard        │
└─────────────────────┘
          │
          ▼
┌──────────────┐    ◇ Certification    ┌──────────────┐
│ Peer review  │──► body reviews        ◄──│ Stakeholders │
│ of           │    assessment results,    │ comment on   │
│ draft report │    peer review            │ draft report │
└──────────────┘    and public comment     └──────────────┘
                    and makes a
                    determination on
                    the fishery ◇
          │
          ▼
┌─────────────────────┐
│ The Determination is│
│ posted on the MSC   │──No objections──► ⬭ Determination of
│ website for 21 days │                     the certification
│ and is subject to   │                     body is final ⬭
│ the MSC Objections  │
│ Procedure           │
└─────────────────────┘
          │
      Objections
          ▼
┌─────────────────────┐
│ The certification   │
│ body hears the      │
│ objection.          │
│ If the objector is  │
│ not satisfied, the  │
│ objection may be    │
│ heard by the MSC    │
│ Objections Panel    │
└─────────────────────┘
```

4.5.4 Example: New Zealand Hoki and Marine Stewardship Council certification

In March 2001, New Zealand Hoki achieved MSC certification. The market opportunities to maximise the value companies get from their hoki quota, particularly in the environmentally conscious European market, was the key motivation for shareholders in the Hoki Fisheries Management Company (HFMC) to apply for certification.

The certification of the New Zealand hoki fishery was carried out by an independent certification agency – SGS Product and Process Certification. The process took just over a year to complete. As part of the certification process a wide range of stakeholder groups were consulted, including government agencies, the fishing industry, environmental groups and other parties with an interest in the New Zealand hoki fishery. The HFMC, along with other interested stakeholders, had the opportunity to comment on the audit report before the certification agency made its decision whether to grant certification. With certification came the requirement for HFMC to resolve several corrective action requests.

An appeal against the certification, lodged by the Royal Forest and Bird Protection Society of New Zealand, was heard by an independent review panel. Although the certification was upheld, the appeal resulted in additional requirements being placed upon the fishery to cover issues that were not addressed by the original corrective action requests. The appeal also resulted in changes to the certification process, giving stakeholders the opportunity to raise concerns prior to certification being granted. The new objections process also enables applicant fisheries to identify key issues, and actions likely to be required of them, prior to certification being granted.

With certification came the requirement for HFMC to resolve several corrective action requests. They related to a range of issues requiring short and long term actions, including:

- developing stock management strategies
- committing to annual stock assessments
- conducting an ecological risk assessment (ERA) to determine the potential impacts of the fishery on the environment, including protected, endangered, threatened or icon species
- undertaking actions highlighted from the ERA

- developing and implementing a fisheries management plan
- implementing a suitable internal audit and corrective action process to verify compliance with HFMC requirements.

Many of the issues identified were being addressed or had been identified by the HFMC for future action before the certification process. Although substantial, demands from the MSC certification process were consistent with the HFMC's strategic direction. As a result, MSC certification has helped to focus and increase shareholder motivation to advance the issues more quickly. From a management perspective MSC has resulted in the HFMC becoming better organised and having a clearer strategic direction and operational plan. Both the MSC and HFMC websites have considerable information on the certification process including auditor's reports and action plans.

For further information on hoki see:
http://www.hokinz.com

4.5.5 Considerations with environmental management systems

When implementing an EMS consider the following:

- Ensure you have a clear understanding of why you want an EMS. What do you want from an EMS? What can it deliver? Evaluate the EMS options available to you.
- Ensure the issues you identified through the checklist process are suitable for an EMS. Are the issues you seek to manage within your control?
- Implementing an EMS is a resource intensive exercise that will place demands on people and systems within the organisation. Be clear what this will mean for your organisation. Your decision to adopt an EMS will need to be supported with a strong business case.
- You will require widespread support across your organisation, at management and operational levels, if you are to implement your EMS effectively. Consider the process you will use to develop your EMS and how this may influence the buy-in and commitment of the people you require to support the EMS.
- Be realistic in your assessment of the time it will take you to develop and implement an EMS, particularly if it will cover a broad range of issues.
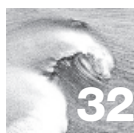
Consider developing and implementing your EMS in stages. You will gain valuable experience in the process.

- Plan, plan, and plan. This is obvious for such an intensive and complex exercise. The specifics of your EMS, its management framework and the issues you include will provide a planning framework from which to work. Issues to address are likely to include:
  - setting your environmental performance objectives and a time-frame for achieving them
  - identifying and documenting all aspects of the issues you want to address
  - identifying people who have responsibility for environmental management, including senior managers
  - stating the obligations and accountability of managers and staff for environmental performance clearly

- providing mechanisms for ensuring compliance
- establishing a process for regularly checking the adequacy of systems and procedures in relation to the environmental policy and management plan
- undertaking regular environmental audits to identify how well you are complying with your policy and meeting your objectives, and areas that require corrective action
- reporting publicly on your environmental performance against your company's policies and environmental performance measures through an annual environmental or triple bottom line report.

- Consider the benefits of integrating your EMS into your existing business management systems.

Conclusion

The New Zealand seafood industry has made a commitment to managing its marine resources responsibly and being a custodian of the marine environment. This guide is intended to assist fisheries managers, participants and stakeholders to improve their management of the environmental effects of their fishery activities. It has been developed in partnership with the fishing industry and is based on the experiences of fishers and fisheries managers.

This resource does not promote one particular environmental performance standard or advocate a particular management option, but suggests an environmental assessment checklist and provides a range of management options to enable fishers and fisheries managers to identify issues, determine goals, and monitor their progress towards those goals.

This guide is a "living document" and will benefit from your input as you and the groups to which you belong use it to guide you through the assessment process. The authors welcome any suggestions for improving the guide. Feedback is welcomed by the authors (see the author page (2) for contact details).

Resources

Conservation Services Levy Programme, Department of Conservation:
> *http://www.csl.org.nz*

Department of Conservation:
> *http://www.doc.govt.nz*

Ecological Risk Assessment Methodology for the New Zealand Hoki Fishery:
> *http://www.hokinz.com/gfx/pdfs/era_methodology.pdf*

Emprove: a free service providing energy management services and resources for business:
> *http://www.emprove.org.nz*

Energy Efficiency and Conservation Authority:
> *http://www.eeca.govt.nz*

Hoki Fishery Management Company: New Zealand's only Marine Stewardship Council certified fishery: website includes the methodology for a comprehensive Ecological Risk Assessment:
> *http://www.hokinz.com*

Ministry for the Environment (2003). *Enterprise3: Your Business and the Triple Bottom Line: Economic, Environmental, Social Performance*. Wellington.
> *http://www.mfe.govt.nz*

Ministry of Fisheries:
> *http://www.fish.govt.nz*

New Zealand Business Council for Sustainable Development:
> *http://www.nzbcsd.org.nz*

Ocean Watch Australia:
> *http://www.oceanwatch.org.au*

Seafood EMS: a website with lots of good information about environmental management systems:
> *http://www.seafoodems.com.au*

United Nations Food and Agriculture Organisation – Fisheries Section:
> *http://www.fao.org/fi/*

Ward, T, D Tarte, E Hegerl and K Short (2002). *Policy Proposals and Operational Guidance for Ecosystem Based Management of Marine Capture Fisheries*.
WWF Australia. Available from WWF New Zealand (04) 499 2930.