

# Technical Paper 1

Methodologies to Value the Benefits and Costs of Alternative  
Uses of the NSW Marine Estate

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The NSW Marine Estate Management Authority (MEMA) is advised by the Marine Estate Expert Knowledge Panel (MEEKP). It was established by the NSW Government in 2013 to advise it about policies, priorities and directions for the NSW marine estate.

The NSW marine estate includes marine waters, estuaries and the coast. It extends seaward out to three nautical miles and from the Queensland border in the north to the Victorian border in the south. The full definition and map can be found at [www.marine.nsw.gov.au](http://www.marine.nsw.gov.au).

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## Disclaimer

This report has been prepared on behalf of the New South Wales (NSW) Marine Estate Expert Knowledge Panel. The views and opinions contained in this report are not necessarily those of the NSW Government. The NSW Government takes no responsibility for the accuracy, currency, reliability and correctness of any information included in the report. Some of the information and opinions contained in this report have been provided by third parties, for which neither the Panel nor the NSW Government take any responsibility.

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## 1. Background

To implement the underlying principles that have been developed for the management of the NSW marine estate outlined in *Managing the Marine Estate: Purpose, Underpinning Principles and Priority Setting* (MEMA 2013), a robust threat and risk based approach has been developed. This involves undertaking a logical sequence of steps, which aim to maximise the benefits that the community as a whole derives from the marine estate. This technical paper outlines a range of methods the Marine Estate Expert Knowledge Panel consider appropriate for the completion of part of step 3. The full set of steps and activities that will need to be undertaken to implement this approach for managing the marine estate is at Appendix 1.

## 2. Introduction

Unlike much of the land and waterways in NSW, which are privately owned, a large part of the marine estate is owned by all NSW citizens. MEMA will, therefore, aim to identify and implement NSW marine estate management controls that maximise current and future benefits for the NSW community.

While there is widespread appreciation of the range of benefits provided by the estate, there is also increasing recognition of emerging threats to those benefits from factors such as population growth, increasing coastal development, and increasing demands for commercial and recreational use.

As a result, managing the estate to meet the collective interests of NSW citizens will often involve making decisions about how the estate will be used. These decisions involve choices between competing uses, so it is critical that we transparently assess the benefits and costs of the alternatives.

NSW citizens already make choices about how they use the marine estate in order to maximise the benefits they receive. Many of these choices are between non-market (or non-priced) benefits, such as biodiversity conservation, and market benefits, such as commercial fishing or housing developments. In managing the estate on behalf of the broader community, the NSW Government must also choose between alternative uses with associated benefits and costs, so that the highest community wellbeing is achieved in aggregate, across the entire estate and all NSW citizens.

An example of where a choice might need to be made between alternative benefits is where land-based coastal development could generate effluent and run-off, which affects marine biodiversity and reduces fishing opportunities and tourism. In this circumstance, the social and economic benefits of the development have to be weighed against the biodiversity and recreational benefits that would be foregone. It could, therefore, be in the overall interests of the community as a whole to consider more efficient controls on development, effluent and run-off management. This would have the effect of changing usage patterns in the estate in favour of activities with less harmful impacts.

While these management controls would impose an extra cost on commercial developments, compensatory benefits would arise in the form of avoided costs that would otherwise be imposed on fishing, conservation and tourism interests. The key question then is: do the extra benefits outweigh the costs and is society better off? If they do, the proposed new management controls would be in the public interest, and *vice versa*.

When MEMA is considering these types of decisions on behalf of the broader community, it will enhance the transparency and efficiency of these decisions if the respective weight it has given to the various benefits and costs is clearly enunciated. To ensure that these decisions maximise community wellbeing, MEMA will compare and make transparent the net benefits of alternative uses of the estate.

An issue that arises in comparing the net benefits of alternative uses, however, is that many of the benefits and costs in question will be of a non-market nature. This includes, for example, many recreational and conservation benefits that are not the subject of commercial market transactions. That is, many of the social and environmental benefits provided by marine ecosystems are crucial, but they do not always have an

obvious market value to enable 'like-for-like' comparisons. To compare these market and non-market net benefits, a common value unit is required, and the generally accepted approach is to use monetary values.

It is acknowledged that there is often reluctance in society to formally monetise environmental and social values. There is evidence, however, that the two are frequently intertwined. Markets do form for some environmental goods, or elements of them. For example, people make donations to support environmental conservation organisations that purchase land for the purpose of establishing nature protection areas, or they pay a premium for animal welfare-friendly or organically produced foods (Bennett 2012).

Valuing environmental outcomes in these types of situations, while difficult and sometimes contentious, may assist with making trade offs in a more considered and transparent way. Dollar values are used, not to 'commodify nature', but rather to help decide whether having more of one good thing is preferable to having more of some other good thing in situations where a choice must be made (Baker and Ruting 2014).

Furthermore, if unpriced benefits are not monetised, several dangers arise. One is that decisions could favour outcomes that do have an obvious 'market' value. Alternatively, community benefits that do not have an obvious value could be arbitrarily assumed to have a very high value and thereby unnecessarily constrain alternative uses. Using the previous example, the benefits NSW citizens might enjoy from less effluent and run-off in the form of additional seafood consumption could be seen in the market prices they are willing to pay for seafood. In contrast, additional recreational benefits, such as beach walking and swimming, would not be readily observable in market activities or prices, and therefore, they might not be given sufficient consideration in decision-making processes.

The valuation methodologies that can be used to place a dollar value on non-market benefits are the particular focus of the remainder of this paper. It is recognised, however, that non-market benefits cannot always be adequately valued and in these instances, judgment will be required.

### 3. The Role of Public Policy in Maximising Community Benefits

Governments often rely on markets and their expression of consumer and producer preferences to shape efficient resource use in an economy. An important exception is in a situation where everyone pursuing their own private interests fails to produce outcomes that maximise broader community wellbeing. This circumstance is often referred to as 'market failure'.

In the context of the marine estate, a common cause of market failure is the absence of private property rights being assigned to users, which can result in users being less responsive to certain adverse consequences of their behaviour and actions. This gives rise to social costs in the form of (i) over-exploitation of the estate's resources, (ii) conflicts between competing uses and users, and (iii) under-investment in value-creation opportunities within the estate.

This is why many NSW Government agencies are responsible for management controls, often in the form of regulation, which are designed to address these market failures and the social costs they create. Private individuals and organisations also often play a critical role in helping to address these issues.

Given the changing nature of pressures on the marine estate, there is an ongoing need to ensure that this portfolio of government and non-government management controls is the most efficient in addressing current and emerging threats and opportunities. Key considerations in this regard are to:

- (i) ensure that the objectives of those management controls continue to clearly focus on key threats

- (ii) ensure that control measures effectively address threats with no other unforeseen impacts, such as ‘crowding out’ the private efforts of individuals, communities and industry in helping to address key threats
- (iii) ensure the measures used are those which impose the least cost on NSW citizens (i.e. costs in the form of forced changes in activities and minimal compliance and administrative costs).

An efficient portfolio of management controls will be one that has been designed to maximise the net benefits (all benefits minus all costs) enjoyed by NSW citizens as a whole. This can be contrasted with the more narrow consideration of impacts (benefits and costs) that control measures might have on particular interest groups or subsets of the community (such as a particular industry or town).

Consequently, an interest group or a localised social and economic impact assessment should not be viewed as a substitute for broader community-based decision making processes, such as social benefit–cost analysis (BCA),<sup>1</sup> which is the main way in which governments evaluate the relative efficiency of new and improved policy and program options.

This is not to say that partial methods that focus on regional and sectoral impacts are not relevant. They can usefully complement social BCA by highlighting, for example, local impacts of statewide policies and programs that warrant special consideration by government and local communities; but in general, the most appropriate approach is comprehensive and broad-scale assessment, not a partial or localised assessment.

## 4. Social Benefit–Cost Analysis (BCA)

While market failure conditions provide a *prima facie* case for government intervention, social BCA provides the quantitative assessment of whether proposed interventions are in fact worthwhile. In a public policy context, the focus of social BCA is on the *incremental change* in net benefits generated by new and improved management controls that aim to achieve higher community benefits, rather than on the total value of the relevant benefits and costs in question.

The key decision rule is that if the stream of benefits over time exceeds the stream of costs, then the new or changed management control will provide net benefits to the citizens of NSW.<sup>2</sup>

In considering the types of benefits provided to the community by the marine estate that are likely to change in response to new management controls, it is useful to consider them on the basis of being either ‘direct-use’, ‘indirect-use’, or ‘non-use’ benefits (see Table 1). It is also usual to refer to them in terms of affecting either ‘producers’ (people or businesses using the estate for commercial purposes) or ‘consumers’ (people purchasing the products of producers, or who access the estate for non-commercial benefits).

Direct-use benefits, such as whale watching and swimming, can be further distinguished as either ‘market’ or ‘non-market’, depending on whether they are subject to commercial market transactions.

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<sup>1</sup> The term ‘social BCA’ refers to a benefit–cost analysis undertaken on behalf of the broader community, which in the context of this paper is all citizens of NSW.

<sup>2</sup> It is usual in BCA to express all benefits and costs in real or constant-price dollars, i.e. discounted, which avoids having to estimate the future course of inflation (Harrison 2010).

**Table 1. Potential total economic value of the NSW Marine Estate**

Direct use benefits	Indirect use benefits	Non use benefits
<u>Market based</u> Commercial fishing Charter boat operations Commercial shipping	Fish stock recruitment Biodiversity maintenance Waste disposal	<i>Option</i> – the value an individual derives from an asset or resource being maintained even if there is little or no likelihood of the individual actually ever using it  <i>Existence</i> – the value an individual derives from knowing that a particular environmental resource exists  <i>Bequest</i> – the value an individual derives from an asset or resource being maintained so that it is available for future generations
<u>Non-market</u> Recreational fishing Walking Surfing		

Because the focus of social BCA is on the incremental change in benefits and costs in response to new or changed management controls, a useful next step is to develop a common understanding of which incremental changes will be defined as benefits and which ones will be defined as costs. It is also necessary to appreciate that benefits to some could be costs to others. For example, the benefit to a recreational fisher of catching more fish could result in a cost to a diver wanting to otherwise observe fish in the water.

Drawing on the previous example of effluent and run-off from land-based development, incremental changes in the benefits and costs of interest would be derived by comparing the existing regime of effluent and run-off controls (the 'base case'), with an alternative scenario of more stringent management controls. The relevant changes in benefits and costs that would be included in a social BCA are outlined in Table 2.

## 5. Non-Market Valuation Methodologies

The value of producer and consumer benefits and costs can be estimated relatively easily for direct-use, market-based benefits and costs from prices generated from normal commercial market transactions. Concrete market information could include, for example, the price a tourist pays a charter boat operator for a fishing tour and the charter boat operator's revenue and expenses.

In contrast, non-market benefits and costs, and indirect-use and non-use benefits, can only be estimated indirectly using special valuation methodologies. These methodologies involve the use of one of the following:

- (i) **Revealed Preference Techniques**, such as the *Travel Cost Method* and *Hedonic Pricing*, which involve observing costs incurred by users in gaining access to benefit creating activities (such as those provided by the marine estate) as a proxy for the value they attach to its consumption or use (e.g. the amount surfers pay to travel to the beach partially reveals the benefits they receive from this activity).

**Table 2. Potential benefits and costs of enhanced management controls<sup>3</sup>**

Benefits of enhanced management controls	Costs of enhanced management controls
<p><u>Direct-use market based benefits*</u></p> <p>Additional producer benefits from any commercial activity that arise from more efficient management controls to address land based effluent and run-off (e.g. improved commercial fishing opportunities)</p>	<p><u>Direct-use market based costs*</u></p> <p>Any reduction in producer benefits from any commercial activity that is caused by more efficient management controls to address land based effluent and run-off (e.g. increased development costs from reduced or more costly access to the marine estate by housing developers)</p>
<p><u>Direct-use non-market benefits<sup>#</sup></u></p> <p>Additional consumer benefits from any non-commercial activity that arise from more efficient management controls to address land based effluent and run-off (e.g. reduced impacts on recreational fishing and swimming benefits)</p>	<p><u>Direct-use non-market costs<sup>#</sup></u></p> <p>Any reduction in consumer benefits to any non-commercial activity that is caused by more efficient management controls to address land based effluent and run-off</p> <p>It is likely that these costs would be zero because reduced levels of effluent are likely to add to, rather than detract from, direct-use, non-market consumer activities</p>
<p><u>Indirect use &amp; non-use benefits<sup>#</sup></u></p> <p>Any additional benefits for those who are not directly using the marine estate that arise from more efficient management controls to address land based effluent and run-off, such as might be attributable to the broader NSW population knowing that the condition of its environmental assets within the marine estate are being appropriately maintained and enhanced</p>	<p><u>Other costs*</u></p> <p>Any additional administrative, compliance or monitoring costs associated with the introduction of more efficient management controls to address land based effluent and run-off</p>
<p><u>Direct-use market based benefits*</u></p> <p>Additional commercial benefits to producers from the management decision, such as improved commercial fishing opportunities</p>	<p><u>Direct-use market based costs*</u></p> <p>Any reduction in commercial benefits to producers from the management decision, such as increased development costs from reduced or more costly access to the marine estate by housing developers</p>



<sup>#</sup>Commercial market transactions provide values for these categories.



\*Market prices do not exist for these categories, however, they can often be estimated indirectly using *non-market valuation* methodologies.

(ii) **Benefit transfer**, which involves applying the value of non-market benefits estimated in one study in an alternative context.

(iii) **Stated Preference Techniques**, such as *Contingent Valuation* and *Choice Modelling*, which involve surveys and asking consumers to express their willingness to pay for the good or service in question.

<sup>3</sup> Adapted from Gillespie & Bennett (2010).

As recently reported by the Productivity Commission (Baker and Ruting 2014), while **Revealed Preference** methods are widely accepted, there are various situations where they are incapable of generating the value estimates needed for policy analysis. For example, their reliance on past direct usage patterns and the actual activities of individuals, makes them (i) less suited to estimating future changes in activities and benefits that might result from a policy change; and (ii) unsuited to estimating the value of non-use benefits. It can also be difficult to find data sets of past behaviours suited to the actual policy change being considered.

**Benefit transfer** involves using the value of non-market benefits that have been estimated in a particular context and applying them in a different context. To be in any way reliable, such value estimates need to have been derived from situations that closely reflect the social, physical and policy environments under current consideration, which is often problematic in practice. Even so, benefit transfer estimates can be useful as stop-gap measures if precise value estimates are not required, or until more adequate studies are completed

**Stated Preference** methods tend not to suffer from the same constraints as revealed preference methods, and can be used to measure a wide variety of benefits. They can also be applied to novel, even hypothetical, situations outside respondents' past experiences. While their validity is often questioned, given the potential for biased responses, this problem can largely be avoided by careful experimental design.

**Contingent Valuation** requires respondents to hypothetically express their willingness-to-pay for non-market benefits (or to avoid non-market costs) that would be generated by a proposed regulatory or program change.

A sample of NSW citizens could, for example, be asked how much they would be willing to pay for a certain improvement in recreational fishing and swimming experiences through water quality improvement (e.g. as a result of more efficient land-based effluent and run-off management controls). These willingness-to-pay responses could then be used to derive an overall dollar value of the benefits likely to be enjoyed by the broader community. Contingent valuation studies require careful design to ensure that the preferences expressed can draw out the respondent's actual preferences and are not biased. Under these conditions, and with a representative sample of respondents, a contingent valuation study can generate results that are representative of the views of the broader community and thereby provide a basis for decision-making.

**Choice Modelling**, while similar to contingent valuation, derives its name from the requirement that respondents reveal their preferences, not just between the *status quo* and another scenario, but between the *status quo* and several alternative possible scenarios involving varying levels of benefits or avoided costs. The name 'choice modelling' therefore relates to respondents needing to make a choice between a number of alternative possible outcomes.

An example would be a question that seeks willingness-to-pay preferences between, say, a 10, 50 and 100 per cent reduction in land-based effluent and run-off in a particular location, which would cause commensurate increases in recreational fishing catches of say 5, 20 and 35 per cent, but also involve increasing levels of land development cost.

A strength of choice modelling is that the expression of preferences is constrained by real resource constraints, and so a more realistic understanding is gained of the actual choices that the broader community would make between competing activities. It follows that choice modelling will often be a preferred technique when considering the preferences of NSW citizens for changes to the use of the marine estate arising from changed management controls.

Some key questions that are likely to arise for MEMA in relation to non-market valuation are:

***(i) How does the non-market valuation process inform the community?***

Non-market valuation informs the community in two ways. One is the obvious contribution of the value data generated in transparently informing the community of the relative weight being given to different benefits and costs in the decision process. Less obvious, but equally important, is the mutual information exchange that occurs during the process of scenario development and eliciting community preferences. That is, the study process itself serves to inform and assist the community to



explore benefits and costs of changes in management controls that might have otherwise been ignored or understated.

***(ii) When are non-market valuation studies necessary?***

Non-market benefits are so significant in relation to the NSW marine estate that non-market valuation studies should be viewed as an accepted norm. However, given the expense and time required to do these studies properly, they should be used selectively and only where the balance of a decision is dependent upon it. That is, studies are useful only when they contribute information that could 'tip the balance' in the decision being made.

***(iii) What valuation method should be used?***

The conceptual case for choice modelling being the preferred method has already been made given its close parallels with the types of decisions with which MEMA will often be involved. However, when and whether to use choice modelling depends very much on the decision that needs to be made and the information required to support it. The most cost-effective method that is adequate to address the problem in question should be selected.

A further important implication of the principle applied in point (ii) above is, because the benefits need only exceed costs to support a policy change, it will frequently be the case that not all non-market benefits and costs will need to be valued. Initial consideration can focus on the key benefits and costs that are likely to change significantly in response to a policy change. A sequential approach can then be applied to the estimation of these key non-market values to the point where benefits exceed costs, or it is obvious that they won't.

It is also important to appreciate that the previously mentioned valuation methodologies provide only *estimates* of benefits and costs and not exact *measurements*. They also involve projections into the future. These benefit and cost estimates therefore *do not provide certainty*, but usefully allow a probabilistic approach to be applied to decision making, whereby expected values can be associated with alternative uses of the estate.

An overriding benefit of these valuation methodologies is that the information generated for decision makers is transparent and based on conceptually sound and widely accepted choice frameworks, rather than a 'black box' decision generator. Nevertheless, judgment will still be required.

Finally, it is strongly recommended that non-market valuation estimates be incorporated into a social BCA of changed management controls. Further, the BCA, the non-market values included in it and the methods by which they were derived, should be made transparent to the citizens of NSW as the owners of the estate. This will encourage positive community engagement and continuous improvement in non-market valuation studies and subsequent policy and program decisions.

For more detailed technical discussion of both market and non-market valuation methodologies, see Viera *et al.* (2009).

### Choice Modelling Example River Red Gum Forests

Choice modelling research was used to estimate the protection values associated with the River Red Gum forests along the Murray River. It involved asking a sample of people to make choices between four different forest management strategies (labelled A to D), which were described in terms of their annual cost and impact on particular environmental and recreational attributes of the forest over the ensuing 20 years. The survey was conducted in three locations: Melbourne (metropolitan out of region), the Murray region and the Gippsland region (regional Victoria out of region).

Option A was the status quo and reflected the anticipated outcomes in 20 years' time under the then current management strategy. Options B, C and D involved participants nominating their willingness to pay \$20, \$50 or \$100 per year for enhanced management regimes that would be designed by experts in the relevant fields. These alternative management regimes were predicted to result in increases in forest area, native wildlife numbers, and the number of recreational facilities, as described in Table A.

**Table A: Attributes and the ranges that may vary over the next 20 years**

Attribute	Description	Option			
		A	B	C	D
Cost	Annual payment (\$/household)	0	20	50	100
Healthy RRGs	Area in hectares ('000)	54	67*	74	84
Threatened parrots	Number of breeding pairs	900	1,200	1,500	1,800
Threatened fish	Percentage of pre European numbers	10	20	40	60
Recreation Facilities	Number of campsites with facilities	6	9	12	18

\* The extent of the River Red Gum forests at the time was 67,000 hectares. Without enhanced management practices, this was expected to decline to about 54,000 hectares in 20 years' time.

The survey found that people who lived out of the region were willing to pay for an increase in River Red Gum, while 'within region' respondents were not. For example, respondents in Gippsland and Melbourne sub samples were willing to pay \$3.29 and \$1.45 (per annum per household) respectively for a 1000 hectare increase in the area of healthy River Red Gum forest. Respondents across all regions were willing to pay for an increase in threatened parrots and fish species. There was a non significant result for recreation facilities due to a conflict of preference between those seeing a positive outcome (e.g. a better camping experience) or a negative outcome (e.g. more camping leading to increased environmental degradation).

By extrapolating these values according to the population in each region, a dollar value for the benefits of each management scenario could be determined. When put together in a benefit-cost analysis with estimates of the opportunity costs of activities forgone, such as grazing and timber harvesting, the net impact on community wellbeing of the alternative management options could then be evaluated.

Source: (Bennett *et al.* 2007)

## 6. Conclusions

The NSW marine estate is a valuable public resource that delivers considerable benefits to NSW citizens. A characteristic of the estate is the limited private property rights assigned to users, which can give rise to adverse social outcomes, such as over-exploitation of the estate's resources, conflicts between competing uses and users, and under-investment in value creation opportunities in the estate.

There are also numerous benefit-generating uses of the estate, some of which could be in conflict with each other. For example, one person might highly value the ability to catch fresh fish, while another person might highly value conserving fish. So, where there are benefits to some there could, at the same time, be costs to others.

In either case, aggregate social wellbeing might be improved by careful management of the estate. This requires weighing up the relevant benefits and costs to society so that informed decision making results in management changes that deliver higher social wellbeing to the NSW community as a whole.

To weigh up benefits and costs and make informed choices, 'like' should be compared with 'like'. This requires an approach that allows vastly differing benefits and costs to be compared to each other. The most common way to do this is to use monetary values.

Obtaining some of these values, such as the value of extra commercial fishing catch, is straightforward. It is less so where benefits are not reflected in commercial market prices, such as the value of swimming at a clean beach. This will often be the situation with the benefits delivered to the community from a publicly owned natural resource such as the marine estate. In these cases, non-market valuation methods can be used to value these benefits.

The three common techniques used to estimate values in these circumstances are revealed preference, stated preference, and benefit transfer methods. There are advantages and disadvantages with each. The core objective is to establish efficient management arrangements and empower the community to make informed choices. The technique that is most appropriate for the circumstances should be selected, however, choice modelling will frequently be preferred in marine estate management.





It is also important to appreciate that the data derived from the application of these techniques are simply estimates. Thus, they are helpful, but not the only inputs to informed decision making. Judgment will still be required, which in a democracy like NSW, is ultimately the prerogative of the elected representatives of society.

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## Appendix 1

### Putting the principles for managing the NSW marine estate into practice – A logical sequence of steps to maximize community benefits (adapted from MEMA 2013, p9)

Step 1	<p><b>HOW THE COMMUNITY BENEFITS FROM THE ESTATE</b></p> 	Identify key economic, social and environmental benefits, and perceived threats and opportunities derived from the estate	<p>Develop ongoing engagement strategy:</p> <ul style="list-style-type: none"> <li>▪ community consultation</li> <li>▪ expert input</li> <li>▪ stakeholder surveys</li> </ul>	<i>Principle 1</i>
Step 2	<p><b>ASSESS THREATS AND RISKS TO BENEFITS</b></p> 	Expert assessment of threats and opportunities to the key economic, social and environmental benefits	<p>Prioritise threats based on their likelihood and consequence and consider relevant scale:</p> <ul style="list-style-type: none"> <li>▪ local</li> <li>▪ regional</li> <li>▪ state-wide</li> </ul>	<i>Principle 2</i>
Step 3	<p><b>ASSESS MANAGEMENT OPTIONS TO MAXIMISE BENEFITS</b></p> 	Identify and assess current and potential management settings in delivering community benefits	<p>Apply values to economic, social and environmental benefits of alternative uses</p> <p>Assess which options deliver maximum community benefit</p>	<i>Principles 1, 3, 4, 5, 6 &amp; 7</i>
Step 4	<p><b>IMPLEMENT PREFERRED MANAGEMENT OPTIONS</b></p> 	Implement options which maximise overall benefits to the NSW community as a whole	<p>Identify the most efficient and cost-effective management options.</p> <p>Design measurable performance indicators</p> <p>Develop strategic monitoring program to measure outcomes relative to the vision</p>	<i>Principles 1, &amp; 8</i>
Step 5	<b>BE ACCOUNTABLE</b>	<p>Monitor, measure and report on performance</p> <p>Review Progress</p>	<p>Report transparently to the community</p> <p>Promote strategic research to inform management and enhance future outcomes</p> <p>Examine performance, including benefit, threat and risk status periodically</p> <p>Review management arrangements for those not achieving adequate performance</p>	<i>Principles 1, 9 &amp; 10</i>