ENVIRONMENTAL PROTECTION IN NATURAL RESOURCE MANAGEMENT

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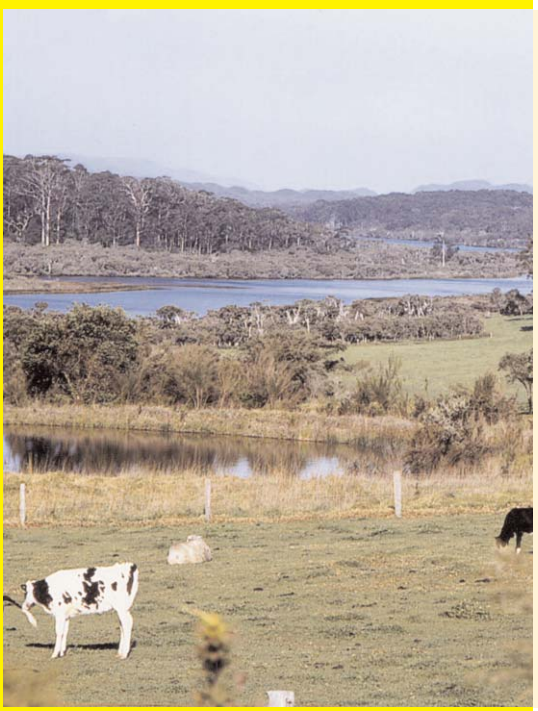
Position Statement No. 8



October 2005

Environmental Protection Authority

Environmental Protection In Natural Resource Management

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ISBN 0 7307 6842 2

FOREWORD

This Position Statement sets out the Environmental Protection Authority's (EPA) views on Natural Resource Management (NRM) and the role of the EPA in NRM with respect to environmental performance evaluation. It also sets out the minimum environmental management procedures for NRM agencies for proper integrated NRM, including public consultation. This approach is based on internationally agreed standards for environmental management and well-established principles for environmental protection. The Position Statement is not intended as an investment framework; rather it attempts to clarify EPA's role and responsibilities.

To date, the EPA has established overarching arrangements with the lead NRM agencies for the EPA to evaluate the environmental performance of WA's NRM sectors to ensure the State's land, air, water and biodiversity resources are being protected. These arrangements will closely dovetail with the EPA's responsibilities with the development of the State of the Environment Report. The EPA has also developed a partnership with the NRM Council and anticipates working with regional NRM groups to assist in the development of future regional NRM strategies so that all of this activity is coordinated.

Practical environmental outcomes will be best achieved if there is a partnership between the EPA and those NRM agencies and associated organizations, such as regional NRM groups, that have an operational responsibility for the management of natural resources.

The EPA recognises the significant contributions of community volunteers and the need to encourage and support these efforts so that NRM objectives can be met.

The EPA received a number of useful comments on the preliminary document and acknowledges with gratitude this assistance.

I commend this Position Statement for your reading.

Walter Cox
Chairman
Environmental Protection Authority
October 2005

Contents

1. INTRODUCTION

In Western Australia (WA), Natural Resource Management (NRM) involves the ecologically sustainable management of the land, water (fresh and marine), air and biodiversity resources of the State for the benefit of existing and future generations, and for the maintenance of the life support capability of the biosphere. NRM plays an important role in protecting and improving the State's environmental assets.

As highlighted in WA's State Sustainability Strategy (Government of Western Australia, 2003), use of natural resources by the State has always been, and continues to be the corner-stone of the economy and a major influence on our social identity. However, available information indicates that many aspects of the environment are in a steady state of decline and the pressures humans place on the environment are continuing to increase. In particular, our land, water and biodiversity resources are under ever-increasing threat from pressures such as salinity, land contamination, erosion, eutrophication and over exploitation.

To ensure the State's natural resource assets are managed sustainably into the future from an environmental point of view, we need to consider how current NRM practice can be improved to prevent further erosion of the State's natural resource base (EPA 2002a).

This Position Statement outlines the EPA's role in NRM with respect to evaluating environmental performance. The Environmental Protection Authority (EPA) has been given the task of environmental performance evaluation of NRM agencies by Government. This task will link closely with WA's State of the Environment Reporting (SOER) Program.

Government has made two statements which provide an understanding of the Government's expectations of the EPA's role in NRM. In June 2001, the Minister for the Environment issued a statement following Government's consideration of the report of the Machinery of Government Taskforce, as follows:

> *This plan* (report) *strengthens the EPA by giving it more flexibility for deploying its own resources and the capacity to hold the resource management agencies accountable for delivering environmental outcomes.*

In June 2002, the Government released its response to the report of the Salinity Taskforce. Included in that response was:

> *The framework (for monitoring) should also recognise and support the relevant arrangements between the Environmental Protection Authority (EPA) and NRM agencies on the EPA's role in auditing the environmental performance of the NRM agencies.*

Part II, Section 16(e) of the *Environmental Protection Act (1986)* (the EP Act) empowers the EPA to undertake this function in relation to NRM as follows:

> *s.16 ….the functions of the Authority are -*

(e) Advise the Minister on environmental matters generally and on any matter which he/she may refer to it for advice, including the environmental protection aspects of any proposal or scheme, and on the evaluation of any information relating thereto.

This Position Statement also sets down the EPA's NRM Framework. Implementing the NRM Framework through a range of NRM activities for each sector will provide the opportunity to link policy and decision making processes to on-ground activities and monitoring and evaluation in a coordinated manner. The key components of the framework include:

- commitment (mission statement & environmental values);
- planning (environmental objectives, environmental targets and/or benchmarks);
- implementation (environmental management program, monitoring, reporting); and
- review (evaluation, recommendations and actions).

The NRM Framework has been developed following extensive consultation with a range of stakeholders. In June 2004, EPA released a Preliminary Position Statement on a which discussed the concept of applying an environmental management systems approach to NRM (i.e. the NRM Framework). Every endeavor has been made to address the matters raised during this consultation within this Position Statement.

The EPA intends for the NRM Framework to be implemented through a whole of Government policy on the environment, developed under Part II, Section 17(d)(3) of the EP Act. The EPA has established arrangements with lead NRM agencies to assist in implementing the NRM Framework to ensure that land, air, water (fresh and marine) and biodiversity resources are protected. Environmental performance evaluation will be undertaken through the SOE Reporting process, the outcomes of which will be reported periodically within Western Australia's SOE Report.

The EPA also intends this NRM Position Statement to be a source of advice and direction to the broader community on NRM with respect to environmental protection. The EPA understands that complementary work is occurring at the regional level with the development of regional NRM strategies.

For instance, the lead NRM agencies are providing technical expertise and much in-kind support to regional NRM groups in developing and implementing their NRM strategies. This includes assisting in the co-ordination of monitoring and evaluation programs to ensure consistency with State and National reporting requirements. The NRM Framework discussed in this paper is broadly consistent with the approach used under the Natural Heritage Trust 2 and National Action Plan.

The aim of the EPA is to ensure that all NRM activity across the State is undertaken in a consistent and coordinated manner, to protect environmental values and to achieve the WA vision for NRM:

"Western Australia's vast landscape and seascape, intricate web of biodiversity and other natural resources are conserved, managed and used sustainably for the common good, and the community is involved in management and planning processes that are transparent and visionary."

Western Australian State Sustainability Strategy (Government of Western Australia, 2003)

2. EPA'S PRINCIPLES FOR ENVIRONMENTAL PROTECTION IN NRM

The principles below should guide the development of environmental management systems to ensure that WA's environment is protected with the overarching goal of no net loss of ecological values and functions.

These principles have been adopted by the EPA in Position Statement No 7, Principles of Environmental Protection (EPA 2004). Many of these principles are also embedded in the EP Act.

A. Environmental, Social and Economic Considerations

(1) Sound environmental practices and procedures should be adopted by everyone as a basis for sustainability for the benefit of all human beings and the environment today, while considering the environmental, social and economic needs of future generations.
(2) This requires the effective consideration of environmental, social and economic factors in government and other sectors' decision-making processes, with the objective of improving community well-being and the benefit to future generations.
(3) The environmental practices and procedures adopted should be cost-effective and in proportion to the significance of the environmental risks and consequences being addressed.

B. Precautionary Principle

(1) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
(2) Decision-making should be guided by:
    (a) a careful evaluation to avoid serious or irreversible damage to the environment wherever possible; and
    (b) an assessment of the risk-weighted consequences of the options.

C. Intergenerational Equity

(1) The present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.
(2) This implies that the present generation has a stewardship role in the maintenance of natural capital and a responsibility to ensure its wise use.

D. Conservation of Biological Diversity and Ecological Integrity

(1) Biological diversity (the variety of all life forms - the different plants, animals and micro-organisms, the genes they contain, and the ecosystems of which they form a part) is considered at three levels:
    - genetic diversity: the variety of genetic information contained in all of the individual plants, animals and micro-organisms that inhabit the earth. Genetic diversity occurs within and between the populations of organisms that comprise individual species as well as among species;

- species diversity: the variety of species on the earth;
- ecosystem diversity: the variety of habitats, biotic communities and ecological processes.

(2) The principles (adapted for use by the EPA in Western Australia from the *National Strategy for the Conservation of Australia's Biological Diversity* (Commonwealth of Australia 1996)):

(a) Biological diversity is best conserved in-situ.

(b) Although all levels of government have clear responsibility, the cooperation of conservation groups, resource users, indigenous peoples, and the community in general is critical to the conservation of biological diversity.

(c) It is vital to anticipate, prevent and attack at source the causes of significant reduction or loss of biological diversity.

(d) Processes for and decisions about the allocation and use of Western Australia's resources should be efficient, equitable and transparent.

(e) Lack of full knowledge should not be an excuse for postponing action to conserve biological diversity.

(f) The conservation of Western Australia's biological diversity is affected by national and international activities and requires actions extending beyond Western Australia's jurisdiction.

(g) Western Australians operating beyond their State's jurisdiction should respect the principles of conservation and ecologically sustainable use of biological diversity and act in accordance with any relevant national or international laws.

(h) Central to the conservation of Western Australia's biological diversity is the establishment of a comprehensive, representative and adequate system of ecologically viable protected areas, integrated with the sympathetic management of all other areas, including agricultural and other resource production systems.

(i) The close, traditional association of Western Australia's indigenous peoples with components of biological diversity should be recognised, as should the desirability of sharing equitably the benefits arising from the innovative use of traditional knowledge of biological diversity.

E. Improved Valuation, Pricing and Incentive Mechanisms

(1) Environmental factors should be included in the valuation of assets, goods and services.

(2) The polluter pays: persons who generate pollution and waste should bear the cost of containment, avoidance or abatement.

(3) Users of goods and services should pay prices based on the full life-cycle costs of providing goods and services ("cradle to grave" concept), including costs relating to the use of natural resources, the benefits of ecosystem services that natural resources provide and the ultimate disposal of any wastes.

(4) Established environmental goals should be pursued in the most cost-effective way by establishing incentive structures, including market mechanisms, which enable persons best placed to maximise benefits or minimise costs to develop solutions and responses to environmental problems.

F. Shared Responsibility

(1) Protection of the environment is a responsibility shared by all levels of Government, industry, business, communities and the people of Western Australia.
(2) The decisions and actions of people in their daily lives, when multiplied at the community level, are responsible for many of our diffuse source environmental impacts. Consequently, positive changes in behaviour at the individual level can cumulatively improve the management of these impacts.

G. Product Stewardship

Producers and users of goods and services have a shared responsibility with Government to manage the environmental impacts throughout the life-cycle of the goods and services, including the ultimate disposal of any wastes.

H. Eco-Efficiency

Producers of goods and services should produce competitively priced goods and services that satisfy human needs and improve quality of life, while progressively reducing ecological degradation and resource intensity throughout the full life-cycle to a level consistent with the sustainability of biodiversity and ecological systems.

I. Waste Hierarchy

Wastes should be managed in accordance with the following order of preference:
1. avoidance;
2. reuse;
3. recycling;
4. recovery of energy;
5. treatment;
6. containment;
7. disposal.

J. Integrated Environmental Management

If approaches to managing impacts on one segment of the environment have potential impacts on another segment, the best overall environmental outcome should be sought at a local, landscape, catchment and/or regional level.

K. Best Practice

When designing policies, systems, procedures or technologies for environmental management, the best practicable measures available at the time should be applied.

L. Continuous Improvement

The implementation by everyone of natural resource management should aim for continuous improvement in environmental performance. This requires that not only are relevant laws and requirements met but also environmental protection should extend beyond compliance.

M. Accountability and Transparency

(1) The aspirations of the people of Western Australia for environmental quality should drive natural resource management.
(2) Members of the public should therefore be given:
    (a) access to reliable and relevant information in appropriate forms to facilitate a good understanding of environmental issues; and
    (b) opportunities to participate in policy and program development.
(3) Environmental decisions should be made in a transparent manner and made public.

N. Enforcement

Enforcement of environmental requirements should be undertaken for the purposes of:
(a) better protecting the environment and its economic and social uses;
(b) ensuring that no commercial advantage is obtained by any person who fails to comply with environmental requirements; and
(c) influencing the attitude and behaviour of persons whose actions may have adverse environmental impacts or who develop, invest in, purchase or use goods and services which may have adverse environmental impacts.

3. NATURAL RESOURCE MANAGEMENT FRAMEWORK

The purpose of having an NRM Framework is to establish a generic approach to NRM in WA from which all NRM agencies can develop comparable processes using environmental management systems (EMS). This should in turn ensure a level of environmental condition that will protect both the integrity and biodiversity of the environment, as well as protecting current and future beneficial human uses from harmful effects, such as pollution, waste discharges and deposits, erosion, acid sulphate soils and disease.

The NRM Framework provides a set of sequential steps in which to commit to, plan for, implement and review NRM in Western Australia (Figure 1). The framework requires that:

- All significant natural resources in Western Australia be defined spatially, on a priority basis;
- Through a thorough consultative process involving the community, environmental values be developed for each significant natural resource;
- For each environmental value, a set of broad environmental objectives be developed that reflect the desired resource condition;

- For each broad environmental objective, specific environmental targets and benchmarks of environmental performance be developed;
- The day-to-day natural resource manager employ an environmental management program for managing each significant natural resource;
- The EPA signs off on environmental values, environmental objectives and targets/benchmarks;
- The resource management agency has the day-to-day management responsibility for the resource; and
- The EPA evaluates the environmental performance of the day-to-day management agency against the environmental objectives and publicly reports to Government.

This approach has been adapted from the key elements of the ISO 14004 EMS model (AS/NZS ISO 14004, 1996) and the National Water Quality Management Strategy Water Quality and Monitoring Guidelines (ANZECC and ARMCANZ, 2000) and provides an overarching structure for addressing NRM issues at a sector or regional scale. The WA Government's State Water Quality Management Strategy Document No.6 (Govt of WA, 2004) sets out the framework for the State's implementation of the National Water Quality Management Strategy for the protection and management of the State's water resources, including marine waters within the State's jurisdiction.

The terminology used in the EPA's NRM Framework differs from ISO 14004 to encompass language that is more relevant to NRM. Similarly, many jurisdictions around Australia use different terminology depending upon the circumstances and their intended purpose of implementing an EMS. The EPA notes that the implementation of the NRM Framework should be flexible and adaptable to local conditions. While consistent terminology across the State is highly desirable, differences in terminology may occur on an "as needs" basis. Key terms and terminology used in this document are defined in the glossary (Appendix 1).

As discussed in section 1, embedded within the NRM framework model are monitoring and evaluation steps. Monitoring and evaluation are concerned with the collection and analysis of data/information to determine whether policy objectives are being met. Monitoring and evaluation informs NRM stakeholders on the difference between the existing environmental conditions and the desired environmental conditions.

The total sum of monitoring and evaluation activities across government and others involved in NRM should ideally inform the State on how it is 'tracking' in terms of environmental performance. It also allows environmental reporting to be set in the context of the current ***condition*** of the environment, ***pressures*** being exerted on the environment, and the effectiveness of actions and management ***responses*** at addressing those pressures. The effectiveness of management actions and responses is assessed by comparing current resource condition and trends with respect to environmental targets/benchmarks. The SOE Reporting program uses the *condition-pressure-response* model to bring all of this information together so that the State's key environmental issues can be reported on.

In July 2002, the Minister for the Environment requested the EPA to coordinate the development of the next SOE Report. The EPA accepted this task. Accordingly, the EPA works with and supports government, and others involved in NRM, to ensure there is consistency in NRM monitoring and evaluation activities across the state.

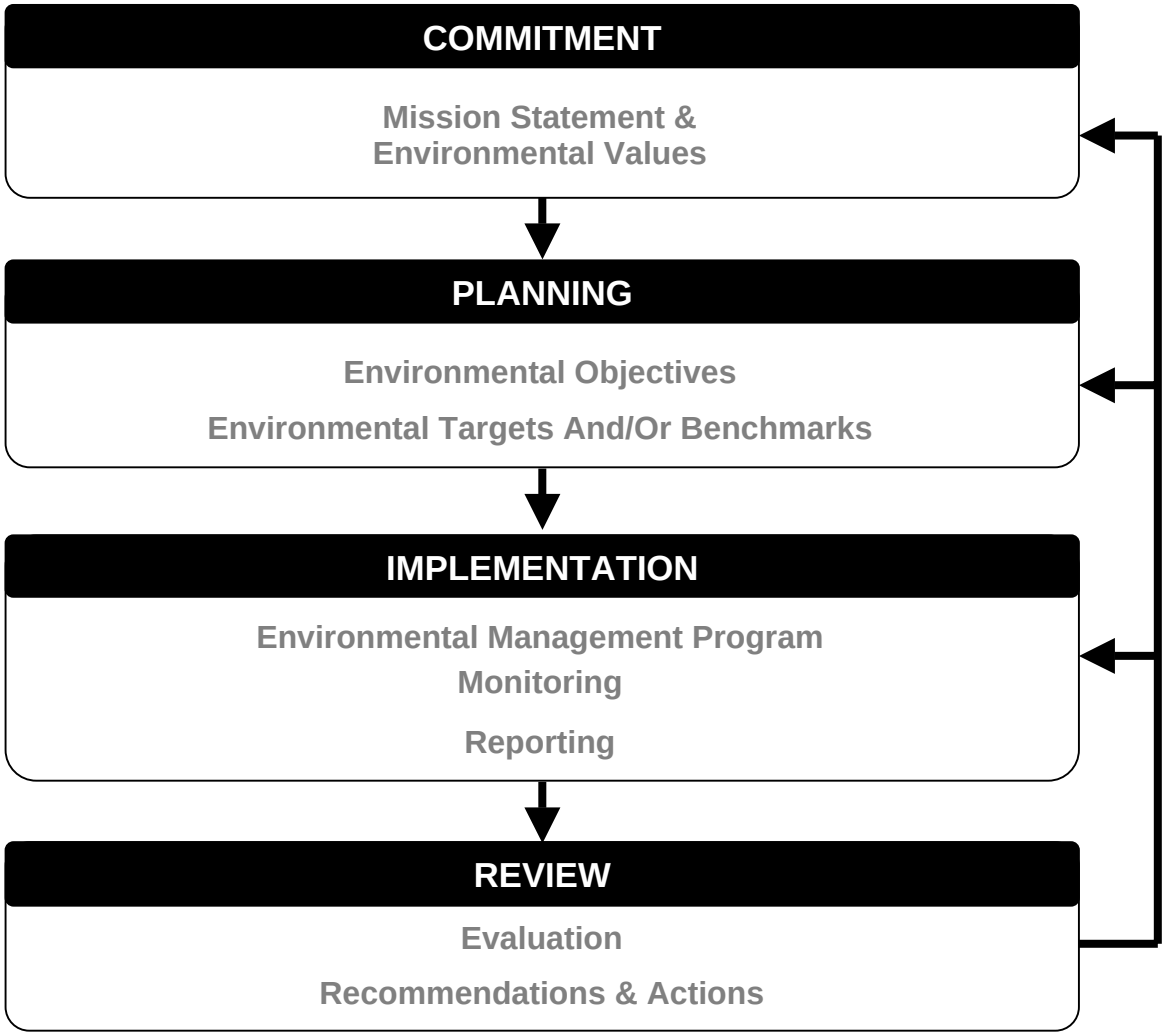
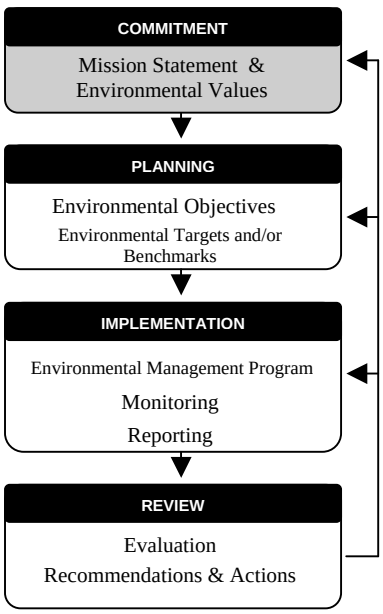


Figure 1. The NRM Framework provides an overarching process for committing to, planning, implementing and reviewing NRM.

3.1 Commitment



The commitment phase of the NRM Framework establishes the overall direction from which all management decisions and actions should be based. Commitment by NRM agencies to protecting the environment is expressed in a mission statement which incorporates all of the environmental values for each significant natural resource asset that needs to be managed and protected.

Develop a mission statement and set environmental values

Developing a mission statement establishes an overarching commitment to the environment for an organisation. It provides the direction for managing and protecting natural resources and outlines the contemporary values broadly held by the community on the importance and place of the environment within society (EPA 2000). These values are termed 'environmental values'.

An environmental value can be defined as particular value or use of the environment that is important for a healthy ecosystem or for public benefit, welfare, safety or health and which requires protection from pollution and inappropriate resource management practices (ANZECC and ARMCANZ, 2000). The definition used in the EP Act is provided in the glossary.

Following extensive consultation, environmental values should be established for each of WA's significant natural resource assests which require management and protection.

Environmental values fall into two groups: ecological values and beneficial uses. Ecological values, such as ecosystem health, relate to the protection of the inherent characteristics and functioning of the natural ecosystem (EPA, 2000). As practically all life ultimately depends on the health of the natural environment, ecological values should be regarded as fundamental (EPA, 2000). Beneficial uses of the environment are utilitarian because they relate to specific human uses, for example recreation, farming, fishing, cultural and spiritual uses.

Because NRM in WA embodies all of the principles of sustainability (see Section 2), NRM should recognize the broadly held environmental values of all stakeholders, including the community. Consequently, the community at large should help to decide and agree to those environmental values that are to be recognised for a particular natural resource asset. This requires broad consultation and input from a range of sources other than a lead NRM agency or group. Stakeholders consulted would include other agencies, local government, industry, the community and the EPA.

As noted earlier, the State Water Quality Management Strategy Document No. 6 (Govt of WA, 2004) sets out the framework being applied in Western Australia to give effect to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality and Water Quality Monitoring and Reporting (Guidelines Nos. 4 & 7: National Water Quality Management Strategy). The State Water Quality Management Strategy Document No. 6 provides the process for developing environmental values, environmental quality objectives, and environmental quality criteria and targets for each of the State's significant water resource assets.

The principles of the State Water Quality Management Strategy Document No. 6 were used to develop environmental values and objectives for Perth's coastal waters, including Cockburn Sound, which is the subject of the State's first State Environmental Policy (SEP). The environmental values that were identified through this process include: ecosystem health; fishing and aquaculture; recreation and aesthetics; and, industrial water supply (EPA, 2000).

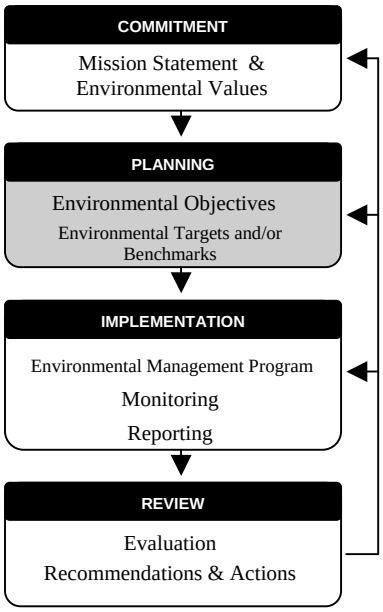
The SEP for Cockburn Sound formally establishes environmental values, spatially defines environmental quality objectives and is supported by schedules that include the numerical and narrative criteria used to evaluate whether the environmental quality objectives are being met.

The State Water Quality Management Strategy Document No. 6 (Govt of WA, 2004) also sets out the roles and responsibilities of the EPA in relation to protection and management of the State's water resources. Under the Strategy, the EPA has the central role in signing-off the environmental values, objectives and the criteria/targets. Mechanisms available to the EPA to give effect to its sign-off are provided. The EPA also evaluates the environmental performance of the day-to-day management agency, where performance is measured and reported publicly against the agreed environmental objectives. The responsibilities of lead agencies and the EPA in relation to the implementation and evaluation of the broader spectrum of NRM matters are described in Section 4 of this Position Statement.

3.2 Planning

In the planning phase of the framework, a tiered approach should be adopted by NRM agencies that sets out the hierarchial link between environmental values, objectives and targets/benchmarks (Figure 2).

Each of the environmental values should be supported by an appropriate set of environmental objectives. These signal the environmental quality or condition needed to protect the environmental values. In turn, for each environmental objective, a set of NRM targets and/or benchmarks should be established to indicate desired levels of each environmental quality or condition against which environmental performance can be assessed. Unlike, the environmental values and objectives, which are largely qualitatively described, targets and benchmarks should be measurable.



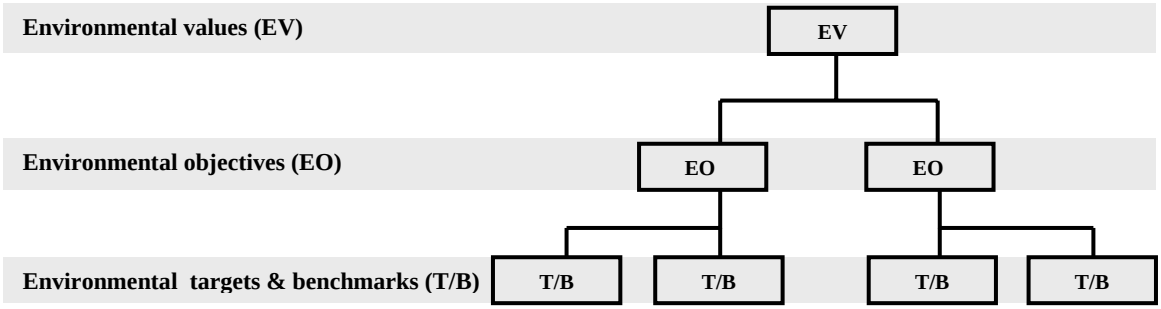


Figure 2. Tiered approach to the planning phase of the NRM Framework, illustrating the linkages between environmental values, objectives and targets/benchmarks.

Identify environmental issues

Clear goal setting by NRM agencies, in terms of developing appropriate environmental objectives to protect the environmental values, requires prior consideration of the current condition of the environment and relevant environmental issues, their respective priority, and an understanding of the feasibility of addressing those issues/threats.

Western Australia's 1998 State of the Environment Report showed that there has been a steady decline in the condition of the environment and an increase in the pressures humans are placing on it. Some of the most pressing of these issues include salinity, loss of biodiversity, eutrophication of inland waters, land contamination and soil erosion. In many instances, the status of these issues is unlikely to have changed. In order to protect environmental values from such threats, NRM agencies must have a clear understanding of how environmental issues affect the natural resource asset.

Decisions about the environment must be well informed and based on the compilation, analysis and integration of the best available scientific and technical information (NLWRA, 2002). Consideration should be given to spatial and temporal scales, irreversibility, source or origin of the threat and in a regional context, whether issues are cumulative. This requires good access to environmental information, as well as an understanding on cause-effect relationships in the environment (e.g. clearing native vegetation can have a strong link to dryland salinity).

Where no or little information is available to assess the likelihood of environmental issues/threats arising, decisions about the environment can still be made, however, it is not the desired situation. A precautionary approach should be taken in these circumstances (Section 2, Principle B).

Prioritize threats to environmental values

Natural resource assets can be open to a great number of environmental threats, the importance of which can vary significantly. Consistent with NRM Principle A(3) in section 2 above, the practices used to manage those threats "should be cost-effective and in proportion to the significance of the environmental risks and consequences being addressed". Consistent with the "user pays" principle, the cost of managing those threats should be met by those deriving benefit from the natural resources.

There are many methodologies available for prioritising environmental issues and threats, ranging from traditional risk assessment methods to using a group of experts to come to some consensus of opinion based upon certain criteria (e.g. the Delphi technique). There is no standard formula for assigning priorities, and is up to those implementing the NRM Framework to determine which is the most appropriate and to document their reasons.

The Department of Fisheries for example, uses an adapted version of traditional risk assessment methodology as an initial screening process to determine the appropriate level of management response for each environmental issue identified for a fishery. Those issues that are found to be of high risk may then require a more detailed analysis.

Set environmental objectives

To protect and maintain environmental values, realistic long-term objectives need to be set to guide appropriate management actions. These objectives are termed 'environmental objectives' and they should be aimed at addressing the priority environmental issues surrounding each of the environmental values.

Importantly, objectives should be expressed in terms of desired environmental outcomes, not processes. Environmental objectives are the goals, which when achieved, would ensure that environmental values are protected. NRM should aim to maintain the condition of the environment at a desired level of protection where the objectives are being met. Where the desired level of protection is not being met, plans should be devised and implemented to achieve the desired objectives within a specified period of time (EPA, 2000).

It is also important for environmental objectives to be consistent with other NRM policies, programs or frameworks that may affect the management of a natural resource as long as those policies, programs or frameworks deliver the desired environmental outcome.

Develop environmental targets and benchmarks to address threats and meet environmental objectives

Environmental targets and benchmarks relate to environmental quality and underpin particular environmental objectives, as illustrated in Figure 2. Unlike the environmental values and objectives however, which are largely qualitatively described, environmental targets and benchmarks should be measurable.

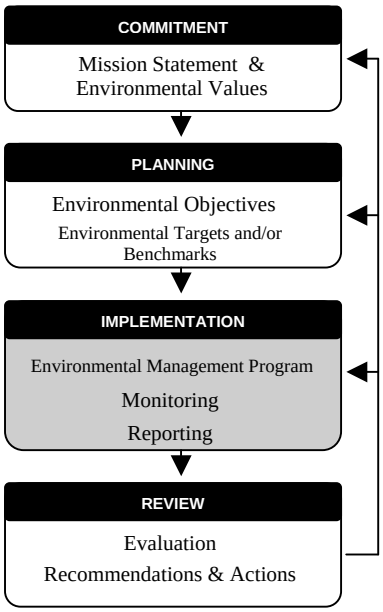
An environmental target is the numerical value or narrative statement that serves as a long-term, short-term or interim time-related management milestone. Targets are used where a desired environmental condition cannot be achieved immediately. Once the time has elapsed, if a target has not been achieved, then revised management actions should be implemented. Alternatively, the target may need to be reviewed if the understanding behind the original target has subsequently improved.

In contrast, benchmarks refer to an (upper and/or lower) environmental threshold (e.g. standard or criteria) that provides a quantitative value that should not be breached. Benchmarks are set on the understanding that environmental values are likely to be unacceptably impacted if the benchmarks are breached. The key to successful management is to maintain environmental quality within the bounds described by the environmental benchmarks, thereby achieving the environmental objectives and ensuring that the environmental values are protected.

3.3 Implementation

For effective implementation, NRM agencies, through operational planning, should identify and develop the necessary resources and tools needed to achieve the environmental objectives and targets/benchmarks. This section provides a brief overview of some of these requirements, including:

- developing and implementing environmental management programs (EMP) and projects to meet the environmental objectives;
- selecting appropriate indicators;
- monitoring trends in the environment; and
- reporting on trends in the environment and, in particular, whether current environmental quality meets the targets and objectives.



Develop and implement programs and projects to meet the environmental objectives

An EMP (or equivalent) is an essential component of this NRM Framework. It links all of the key elements in the framework to the environmental values and objectives to provide the overarching direction from which all subsequent management actions follow. It should identify the environmental values, objectives and targets/benchmarks and then discuss the management procedures and a schedule of activities (strategies) that will be required to achieve those objectives. This includes requirements for monitoring, reporting and evaluation (see below and section 2.4).

Given the likelihood of multiple stakeholders having a role in the implementation of an EMP, it is an important consideration to identify responsibilities and available resources to ensure actions are adequately coordinated. Identifying stakeholders key roles and responsibilities also helps to eliminate confusion during and after the implementation of an EMP.

Monitor environmental condition and trends in the environment resulting from programs and projects

Monitoring should be undertaken to reveal whether management actions are translating to desired environmental outcomes. A monitoring program should give consideration to a range of tasks, including determining where, when and how to monitor trends in the environment. These decisions will largely be governed by the choice of environmental indicators.

Environmental indicators help track trends in the environment by selecting key measures (these may be physical, chemical or biological) that provide useful information about the whole system (ANZECC, 2000). Indicators can be used to describe an environmental factor at some moment, show trends, or track progress towards a given goal (ANZECC, 2000). Environmental indicators should be linked to pre-established environmental targets/benchmarks and be able to detect acceptable and unacceptable levels of disturbance or change in the condition of the environment. Performance indicators should also be developed. These measure whether the management actions and structures are

being achieved so NRM agencies can make changes, where required, to improve or fill gaps in the EMP.

Regional NRM groups are likely to play a key role in monitoring, evaluation and reporting, with significant investment planned in this area. There are potential synergies between regional resource condition reporting and State of the Environment Reporting if the indicators to be monitored can be harmonized.

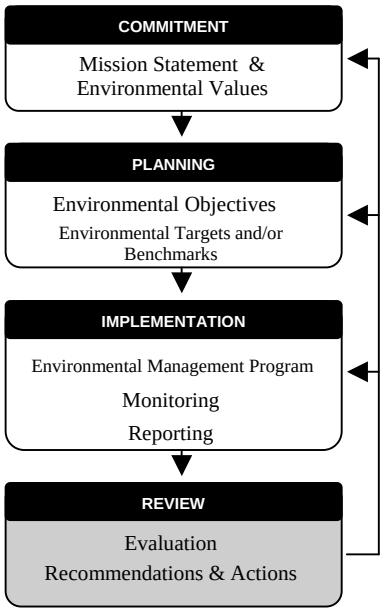
Report

To remain transparent and ensure that the findings on the environmental aspect of NRM are widely accessible, it is important for natural resource managers to have satisfactory protocols in place for reporting on status and "gaps" between desired and actual environmental outcomes. This would include what will be reported, to whom and how often. Reporting would normally be made publicly available.

It is also important that agency and regional reporting is easily translatable to State and National levels, so that the environmental status and gaps in NRM can be compared over a variety of spatial and temporal scales. This would assist the EPA to meet its reporting responsibilities on the WA environment and in particular for developing the State of the Environment Report, which provides an overarching assessment on the condition of the WA environment and the effectiveness of NRM.

3.4 Review

Critical to the success of any environmental management system is undertaking a review of all previous steps. This involves evaluation and making recommendations and identifying appropriate follow-up actions based on the findings, which then completes the system and helps assure its continual improvement. Reviews should be conducted by NRM agencies at appropriate intervals to analyze the effectiveness, efficiency and appropriateness of all previous steps primarily to determine the extent to which desired environmental outcomes have been achieved. These reviews should be publicly available.



Evaluate the effectiveness, efficiency and appropriateness of all previous steps

Evaluation is the systematic assessment of the appropriateness, effectiveness and/or efficiency of a program, or part of a program, with the aim of:

- providing a better information base to assist managers with improving program performance;
- assisting government decision-making and setting priorities, particularly in resource allocation; and

- contributing towards improved accountability to Parliament and the public (ANAO, 1997).

NRM performance evaluation should primarily be based on the extent to which desired environmental outcomes have been achieved. Based upon the results from monitoring, periodic evaluation should assess actual NRM outcomes against stated environmental objectives. This should provide the basis for assessment as to whether environmental values are being protected or maintained.

Ideally, environmental performance evaluation should be carried out by NRM agency staff with specialist expertise in their respective NRM sectors, objectively and impartially and preferably by trained personnel (AS/NZS, ISO 14004:1996). It may also be valuable to seek advice or expertise in dealing with issues that run through many of the environmental aspects of NRM (e.g. maintaining biodiversity), and where a number of jurisdictions may have relevant information to support (or contradict) evaluation findings.

Make recommendations to improve resource condition and environmental management performance

Findings of evaluations should be used to develop recommendations and a follow-up course of actions that would improve areas or sectors where existing activities have been identified as inappropriate, ineffective or inefficient. Recommendations and actions should then be implemented to improve any part of the NRM Framework.

Lead agencies in NRM should review and continually try to improve their environmental management system(s), with the greater objective of improving overall NRM performance. This process of 'adaptive management' will help to ensure that all best management practices are retained, while inefficient practices are modified or enhanced.

4. RESPONSIBILITIES

Like most environmental management cycles, the community, decision makers, managers and scientists all participate at different stages in implementing the NRM Framework. Accordingly, practical outcomes will be best achieved if there is a partnership between the EPA and those NRM agencies and associated organizations that have an operational responsibility for the management of natural resources.

Broadly, the role of the EPA will be to evaluate the actions and outcomes of those lead agencies charged with ensuring that environmental values are being protected. A lead agency (day-to-day natural resource manager) would have to be established/identified for each sector. In the first instance, the lead agency would be that agency with those responsibilities identified in its act.

In some instances there will be more than one agency with statutory responsibility for management of a natural resource. In such cases the lead agency should be the agency best able to coordinate the preparation and implementation of the NRM strategy for that resource.

The EPA will also facilitate compatibility, consistency and reporting across the sectors in terms of the environmental values, objectives and NRM targets/benchmarks in the

management of the State's natural resources. This necessitates the lead agencies workings with the regional NRM groups in the development of regional NRM strategies.

4.1 Setting Environmental Values

Lead agency: The lead agency for the day-to-day management of a natural resource would consult, in an open and transparent manner, with all stakeholders and the community to establish appropriate draft environmental values. The lead agency would then refer to the EPA the set of draft values accompanied by a synopsis of the consultations undertaken with stakeholders and the community. This synopsis would include stakeholder and community concerns regarding the draft values.

EPA: The EPA would publicly advise Government and the relevant NRM agencies on the suitability of the environmental values, unless there are residual concerns, in which case the EPA may consult further before providing its advice.

4.2 Setting Environmental Objectives

Lead agency: Following consultation with the community, stakeholders and scientific experts, the lead agency would submit to the EPA the set of agreed draft objectives accompanied by a synopsis of the consultation undertaken with all involved parties and indicate the timeframe for implementation. This synopsis would include any concerns raised regarding the draft objectives.

EPA: The EPA would publicly advise Government and the relevant NRM agencies on the suitability of the environmental objectives, unless there are residual concerns, in which case the EPA may consult further before providing its advice.

4.3 Setting Environmental Targets and Benchmarks

Lead agency: Following consultation with the community, stakeholders and scientific experts, the lead agency would submit to the EPA the set of agreed draft environmental targets accompanied by a synopsis of the consultation undertaken with all involved parties and indicate the timeframe for implementation. This synopsis would include any concerns raised regarding the draft environmental targets.

EPA: The EPA would publicly advise Government and the relevant NRM agencies on the suitability of the environmental targets and/or benchmarks, unless there are residual concerns, in which case the EPA may consult further before providing its advice.
Note that the EPA recognize that developing environmental targets and benchmarks is complex, requiring considerable scientific input. Implementing this part of the framework will vary on a case-by-case basis and between NRM activities.

4.4 Implementation

Lead agency: The lead agency would establish an environmental management program to ensure the natural resource is properly managed. Part of the implementation program would include measurement of agreed key environmental indicators (monitoring) and reporting against environmental benchmarks.

4.5 Evaluation

Lead Agency: The lead agency is responsible for reporting on indicators of environmental condition, agreed to between the lead agency and the EPA.

EPA: The EPA will evaluate the environmental performance of NRM against the agreed indicators. This will be done through the State of the Environment Reporting process. Accordingly, the EPA would need to be assured that the appropriate measures (indicators) are in place so that actual environmental outcomes can be evaluated. The EPA also needs to know that the lead agency has satisfactory protocols in place for reporting the outcomes of its environmental management and identifying and addressing "gaps" between desired and actual outcomes.

4.6 Recommendations and Actions

Lead Agency: The lead agency will make draft recommendations and develop a course of action that will lead to better environmental outcomes and improved NRM. Following review by the EPA, the lead agency is then responsible for implementing the recommendations and actions.

EPA: The EPA would advise Government and/or NRM agencies on the suitability of the recommendations and actions, unless there are residual concerns, in which case the EPA may consult further before providing its advice.

5. IMPLEMENTATION OF THE NATURAL RESOURCE MANAGEMENT FRAMEWORK

The EPA intends to implement the NRM Framework progressively over the coming years within each of the NRM sectors.

The EPA recognises that for this to be undertaken efficiently and effectively, the EPA must work in partnership with, and have the support of government agencies. The EPA also recognises that the process of implementing the NRM Framework must take into account and where appropriate be inclusive of existing NRM policies, programs and projects.

EPA is looking to use Part II, Section 17(3)(d) of the EP Act (1986) as a tool to implement the NRM Framework. This part of the act empowers the EPA to coordinate the development of Government policy positions on particular aspects of the environment as follows:

s.17(3) …the Authority, if it considers it appropriate or is requested to do so by the Minister, may -

(d) consider and make proposals as to the policy to be followed in the State with regard to environmental matters.

This tool would allow overarching environmental policies to be established via the setting of environmental values, objectives and targets/benchmarks for the State's natural resource sectors. The EPA would develop the first stages of these policies as advice to the

Minister for the Environment. Government could then adopt the position as Government policy.

Such policies can deliver a definitive, whole-of-Government position to guide government agencies, industry and community within existing statutory frameworks. This is advantageous for dealing with major environmental issues that cross regional, governmental and/or jurisdictional boundaries and which require a coordinated and integrated response.

As an example, in December 2003, Cabinet endorsed a framework to implement the environmental component of the water sector in NRM. This component is linked to the National Water Quality Management Strategy and the State Water Quality Management Strategy. The Minister for the Environment recently asked the EPA to co-ordinate the implementation of this framework in WA. Accordingly, this task will be an EPA priority for NRM.

The EPA will undertake environmental performance evaluation of such policies, set under Section 17(3)(d), through the State of the Environment Reporting process. This will be done in the context of assessing the environmental outcomes of NRM to determine whether environmental values are being protected and environmental objectives achieved. EPA will report on the outcomes of environmental performance evaluation as part of the State of the Environment Report.

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APPENDIX 1

Glossary

Appropriateness: The extent to which planned outcomes match community needs and government priorities.

Baseline: A starting or reference point, such as collecting baseline data where no data has been collected previously.

Benchmark: A starting or reference point, such as collecting baseline data where no data has been collected previously.

Biodiversity: The variety and variability among living organisms and the ecological complexes in which they occur. Diversity can be defined as the number of different items and their relative frequencies. For biological diversity, these items are organized at many levels, ranging from complete ecosystems to the biochemical structures that are the molecular basis of heredity. Thus, the term encompasses different ecosystems, species, and genes.

Ecosystem: The interacting system of a biological community and its non-living environmental surroundings.

Ecosystem Health Condition: A systematic approach to the preventive, diagnostic, and prognostic aspects of ecosystem management, and to the understanding of relationships between ecosystem health and human health. It seeks to understand and optimize the intrinsic capacity of an ecosystem for self-renewal, while meeting reasonable human goals. It encompasses the role of societal values, attitudes and goals in shaping our conception of health at human and ecosystem scales.

Effectiveness: The extent to which planned outcomes are achieved.

Efficiency: The extent to which inputs are minimised for a given level of outputs, or outputs are maximised for the given level of inputs.

Environmental Impact: The effect that a man-caused or natural activity has on living organisms and their non-living (abiotic) environment that can either be adverse or beneficial.

Environmental Indicator: Measures of physical, chemical, biological or socio-economic factors that best represent the key elements of complex ecosystems or environmental matter. An environmental indicator is a measurable parameter that can be used to identify changes in the state or condition of the environment.

Environmental Management System: Part of an overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.

Environmental Monitoring:. The systematic act of collecting and analysing environmental data to provide ongoing information about the health or condition of the environment.

Environmental Objective: Is an environmental goal or vision, arising from the need to protect or enhance environmental values, and which is quantified where practicable.

Environmental Policy: A formalised course of action adopted to protect or enhance the quality of the environment.

Environmental Target: The numerical value or narrative statement that serves as a long or short-term time related benchmark.

Environmental Value: Is a *beneficial use* of the environment or an *ecosystem health condition*. A *beneficial use* means use of the environment, or any portion thereof, which is:

(a) conducive to public health or aesthetic enjoyment and which requires the protection from the effects of emissions or environmental harm; or

(b) identified and declared within the Environmental Protection Act (1986) to be a beneficial use to be protected under an approved policy.

An *ecosystem health condition* means a condition of the ecosystem that is:

(a) relevant to the maintenance of ecological structure, ecological function or ecological process and which requires the protection from the effects of emissions or of environmental harm; or

(b) identified and declared to be a beneficial use to be protected under an approved policy.

Evaluation: The systematic assessment of the appropriateness, effectiveness and/or efficiency of a program, or part of a program.

Feasibility: The known ability to influence an environmental outcome through intervention.

Framework: Essential supporting structure/system; or a simple outline or description of a process.

Natural Resource Asset: An item of value and can occur in three forms: (a) as a discrete physical, biological or human-made entity; (b) as a location or site with single or multiple values; or (c) as non-tangible qualities with values, such as skills that a community group can apply to managing salinity.

Natural Resource Management: Ecologically sustainable management of the land, water (fresh and marine), air and biodiversity resources of the State for the benefit of existing and future generations, and for the maintenance of the life support capability of the biosphere.

Natural Resource Management Sector: A particular body of people or organisations who are responsible for a specific aspect of natural resource management, for example agriculture, energy, water, fisheries, etc.

On-ground Activity: Activities or actions that physically alter the environment.

Outcome: A result caused by previous events.

Output: Amount produced.

Protocol: A series of formal steps to undertake a procedure.

Rehabilitate: The return of a degraded ecosystem to an undegraded condition but which may also be different from its original condition

Resource Condition: State of physical, chemical or biological welfare in comparison to an agreed standard.

Stakeholder: Any organization, governmental entity, or individual that has interest in particular activities.

Sustainability: Meeting the needs of current and future generations through an integration of environmental protection, social advancement and economic prosperity.

Threat: The likely severity of a potential impact on the environmental value(s) of a natural resource asset from either a naturally occurring phenomenon or human activity.

Threshold: The allowable level of change to the environment caused by human activities before some form of management action is triggered.