



RECOMMENDATIONS

STATE-WIDE STANDARD AND TARGETS

September 2005



RECOMMENDATIONS

STATE-WIDE STANDARD AND TARGETS

Inquiries

Inquiries about this report should be directed to:

Liz Livingstone

Phone (02) 8227 4300

E-mail liz.livingstone@nrc.nsw.gov.au

Postal address GPO Box 4206, Sydney NSW 2001

List of acronyms

ANZLIC	The Australia and New Zealand Land Information Council
CAP	Catchment Action Plan
CMA	Catchment Management Authority
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage
DIPNR	Department of Infrastructure Planning and Natural Resources
DNR	Department of Natural Resources
DLWC	Department of Land and Water Conservation (now DNR)
DPI	Department of Primary Industries
ISO	International Organisation for Standardisation
M and E	Monitoring and Evaluation
MDBC	Murray-Darling Basin Commission
NLWRA	National Land and Water Resources Audit
NRC	Natural Resources Commission
NRM	Natural resource management
NSW	New South Wales
SoE	State of the Environment

This work is copyright. The *Copyright Act 1968* permits fair dealing for study, research, news reporting, criticism and review. Selected passages, table or diagrams may be reproduced for such purposes provided acknowledgement of the source is included.

Document No. DO5/4894

ISBN: 1 921050 04 7

Table of Contents

1	Introduction	3
1.1	Importance of state-wide standards and targets	3
1.2	Overview of recommended standard and targets	5
1.3	Structure of this report	7
2	State-wide standard	9
2.1	Scope and structure of the standard	11
2.2	How does the standard relate to targets and other instruments?	15
2.3	Why not minimum benchmarks or best management practices?	16
2.4	Auditing compliance with the standard	17
3	State-wide targets	18
3.1	Purpose of state-wide targets	18
3.2	State-wide resource condition targets	21
4	NRC's audit process	28
4.1	Audit process	28
4.2	Potential to meet multiple reporting requirements with single audit	30
5	Monitoring and evaluation to support state-wide targets	32
5.1	Purpose of state-wide monitoring and evaluation	33
5.2	Recommended arrangements for evaluating progress towards state-wide targets	36
5.3	Resources for ongoing development of state-wide monitoring and evaluation	43
6	Other actions required for effective implementation of the standard and targets	46
6.1	Extend requirement to apply the standard and targets	46
6.2	Develop consistent policy and programs	47
6.3	Establish links between the standard and targets and planning processes	48
Attachments		
1.	Standard for quality natural resource management	50
2.	Supporting information for state-wide targets	66
3.	Draft audit program	98
4.	Terms of reference for monitoring and evaluation review	100
5.	Existing monitoring and evaluation that supports state-wide targets	102
6.	Transitional arrangements for monitoring and evaluation in NSW	112
7.	Cost of monitoring state-wide indicators	128
8.	Process used to develop the state-wide standard and targets	140

1 Introduction

The Natural Resources Commission (NRC) has been tasked with recommending state-wide standards and targets for natural resources to the NSW Government. Over the past year, it has conducted an extensive consultation process (see Table 1.1) to develop its recommendations, including releasing draft standards and targets in November 2004. In May 2005, the government also asked the NRC to recommend arrangements for monitoring and evaluation (M and E) to support the recommended state-wide targets.

The NRC has now finalised a recommended standard and a set of targets that build on the existing frameworks for natural resource management (NRM) in NSW, and are widely recognised by stakeholders as a logical next step in the continuous improvement of NRM practices. The recommended standard, targets and M and E arrangements also provide an effective means of addressing the inherent complexities of NRM in a systematic and rigorous way.

The purpose of this report is to present and explain the NRC's recommendations.

Table 1.1: Key steps in the NRC's process for developing standard and targets*

Activity	Timing
Consult with key stakeholders	Jun – Sep 2004
Pilot process with 5 Catchment Management Authorities (CMAs) and regional stakeholders to develop draft standards and targets	Sep – Dec 2004
Release framework paper	Oct 2004
Release consultation paper	Nov 2004
Receive submissions on consultation paper	Feb 2005
Run workshops with non-pilot CMAs and regional stakeholders on draft standards and targets	Feb – Mar 2005
Consult with more than 100 scientists and technical experts	Dec 2004 – Mar 2005
Advice from inter-agency indicator working group	Feb – Apr 2005
Hold seminars and meetings with other stakeholder groups	Oct 2004 – Mar 2005
First report to NSW Government on recommended standard and targets	May 2005
Review monitoring and evaluation arrangements and refine some targets	May – Aug 2005
Final recommendations to NSW Government on standard and targets	Sept 2005

* More detail on the NRC's consultation process is provided in Attachment 8.

1.1 Importance of state-wide standard and targets

The State-wide standards and targets are part of a new institutional model for delivering NRM in NSW. This model follows more than 10 years of reforms in NRM at both the national and state level, and includes the devolution of significant planning and investment responsibilities to 13 newly established regional Catchment Management Authorities (CMAs). It flows from agreements between the Australian and NSW Governments, which have jointly committed \$436 million for investment by CMAs over the period 2004 to 2007.

Within the new model, the role of state-wide standards and targets is to help ensure that this initial investment (and expected future investment) results in the achievement of natural resource outcomes that are in the environmental, economic and social/cultural interests of the state. It is also to help make CMAs and other natural resource managers accountable for achieving these outcomes, while allowing for the regional flexibility and innovation that is critical to the success of the model.

The adoption of state-wide standards and targets presents an important opportunity to focus NRM investment on our most important natural assets, and the critical opportunities and threats they face. Both the Australian State of the Environment Report 2001¹ and the NSW State of the Environment Report 2003² concluded that our natural systems are in decline, due to excessive human alteration of ecosystems, and a lack of recognition of the processes that need to be maintained so that essential ecosystem services continue to be delivered.³ The decline of these systems threatens to undermine the resource base on which the state's people and economy depend. For example, recent assessments have found that:

- 97% of all rivers in NSW have been modified, resulting in degradation such as elevated levels of nutrients and suspended sediments, altered hydrologic regimes and modified aquatic habitats⁴
- nearly 60% of native vegetation cover has been cleared in the central and eastern parts of NSW, and the condition of remaining vegetation is threatened by weeds, pests, changed fire regimes and pressures from urban and agricultural development⁵
- the estimated average rate of sheet and rill erosion is five times the estimated rate of soil formation and almost three times the natural rate of erosion.⁶

But managing natural resources and addressing these declines is a complex task. One of the major challenges of NRM is balancing competing values. Ultimately, NRM aims to achieve a balance between the maintenance, restoration and protection of landscapes and the use of these landscapes to support people's needs and aspirations – recognising that this use may result in degradation of some environmental assets. This means NRM must be informed by science, as well as the values of the communities involved and the policy decisions that are made on how natural resources will be used.

For example, establishing and supporting the population growth of cities like Sydney results in the loss of many natural values that cannot be recovered. These altered landscapes remain dependent on natural resources, such as clean water, but it is generally accepted that these resources will persist in a modified rather than a natural form to allow for the development needed to support the cities' own concentrated populations and the services they provide to wider populations. At the same time, the value of protecting natural assets, especially those that are in pristine condition, is widely recognised. In many cases, it is also desirable to restore

¹ Australian State of the Environment Committee (2001) *Australia State of the Environment Report 2001*, Department of Environment and Heritage, Canberra.

² DEC (2003) *New South Wales State of the Environment Report 2003*, Department of Environment and Conservation, Sydney.

³ Ibid, p. 7.

⁴ NLWRA (2002) *Australian Catchment, River and Estuary Assessment 2002 Volume 1*, National Land and Water Resources Audit, Canberra, p. 81.

⁵ DEC (2003) *New South Wales State of the Environment Report 2003*, Department of Environment and Conservation, Sydney, p. 177.

⁶ Ibid, p. 98.

landscapes or, as a starting point, slow their decline where it is recognised that past use has not been sustainable and has resulted in unacceptable costs to both current and future populations.

NRM involves actively managing the landscape so that it can continue to serve and sustain different communities in ways that are consistent with these communities' values. In some cases, these values are best identified at a state level because the costs and benefits are important at this scale. However, in many cases, they are best identified by the local communities most directly affected by any decision made. If these values and the associated trade-offs are not identified at these different scales, it is difficult for natural resource managers, including CMAs, to deliver NRM that meets both local and state-wide aspirations.

Another major challenge of NRM stems from the complexity and interdependency of the natural systems involved. Human intervention can have unintended adverse consequences on these systems. Similarly, efforts to restore natural systems can be overwhelmed by unpredictable climatic events, such as drought or flood, and may not have perceptible impacts for many years. In addition, natural processes operate at different scales. For example, the erodibility of soils may vary from paddock to paddock, whereas groundwater recharge and discharge sites affecting dryland salinity may be hundreds of kilometres apart. Land managers and institutions engaged in NRM also operate at different scales, and these often don't correspond with the most appropriate scale for effective management of natural resources.

The state-wide standards and targets supported by state-wide M and E will provide a framework for identifying state and regional values for natural resources at the most appropriate scales, and for approaching the complexities of NRM in a systematic and rigorous way.

1.2 Overview of recommended standard and targets

The 13 CMAs are building on 21 Catchment Blueprints developed in 2002 by advisory Catchment Management Boards. Together with the national framework for standards and targets,⁷ the reforms resulting from recommendations of the Wentworth Group of Scientists⁸ and various other regional plans, these Blueprints provide a platform for the continued evolution of NRM in NSW. To date, the focus of efforts to implement the national framework has been on developing 'SMART'⁹ regional targets and delivering against these targets, with little emphasis on developing standards. The existing Blueprints reflect this focus.

To build on this past work, the NRC recommends that the NSW Government adopt:

- one *Standard for Quality Natural Resource Management*
- one overarching goal for NRM
- thirteen state-wide targets for the key natural resource assets of biodiversity, water, land and community.

The standard is designed to promote high-quality management of natural resources in NSW by ensuring the process is robust and rigorous. Requiring CMAs to comply with the standard (and auditing this compliance) will provide assurance to the government that investment in NRM is

⁷ NRM Ministerial Council (2003) *National Framework for Natural Resource Management Standards and Targets*, revised 8 April 2003. Available at <http://www.nrm.gov.au/monitoring>.

⁸ Wentworth Group of Concerned Scientists (2003) *Report to Premier Carr, A New Model for Landscape Conservation in New South Wales*, February 2003. Available at <http://www.clw.csiro.au/new>.

⁹ Specific, Measurable, Achievable, Realistic and Timebound.

efficient and effective, consistent with community values, and promotes the achievement of the recommended state-wide targets. Properly applied, the standard will ensure sensible and integrated NRM outcomes at all scales through the use of best available information, meaningful community engagement, strong partnerships, effective risk management, and M and E systems that inform adaptive management and can be used to drive continuous improvement.

The aspirational goal is a long-term vision for healthy, functional landscapes in NSW that support the environmental, economic and social/cultural values of the community. It is designed to provide a 'big picture' view of what the long-term outcome of NRM in NSW should be, and of what achieving the targets should deliver. The goal is relevant to all areas of the state, regardless of the particular type of landscape or natural systems they include.

Six of the recommended state-wide targets focus on the fundamental functions of the key natural resource assets of land, water and biodiversity. They describe the macro-environmental parameters that should be monitored to gauge the overall health of NSW landscapes, and be the focus of policy decisions aimed at ensuring their capacity to continue to support the aspirations of the NSW population. A seventh target focuses on the contribution of NRM to maintaining or improving economic sustainability and social well-being. This recognises the fundamental importance of balancing natural resource outcomes with economic and social factors and reflects the NSW Government's policy approach to NRM.

A further six targets have been developed where it has been possible to identify specific state priorities and values, or where an approach or method for delivering improvements can be defined in a target that applies state-wide. For example, targets for wetlands and threatened species have been developed because clearly defined priorities exist for these assets in specific agreements and under legislation. A target for managing land within its capability has been developed because this approach has been identified as an effective means of achieving desirable outcomes for land, and there are tools available to apply it state-wide. A target for community capacity recognises that people are the critical success factor in NRM. It reflects the fact that community capacity for planning and implementing NRM is necessary to achieve natural resource outcomes.

The state-wide targets are expressed broadly, to ensure they are applicable to the whole state. Some stakeholders suggested that targets be developed for a wider range of (and some very specific) issues, for example targets for the coastal zone. The NRC believes that the focus at the state level should be on overall health of the landscape and any clear state priorities that might not otherwise be considered at a regional level. The NRC expects that CMAs will translate the state-wide targets into more specific, locally relevant targets where these are the best tool for defining their explicit priorities under the umbrella of the state-wide targets. Applying the standard will help bring rigour to this process, and ensure that the targets or other instruments developed are underpinned by the best available information including science, local knowledge, community values and state priorities. Further additional targets could also be developed at the state level when new policies or agreements are in place that define other state priorities for regional outcomes, or where methods for NRM are developed that are useful state-wide and are best implemented through a target.

Aboriginal values and interests in NRM have not been addressed separately in the standard or targets, but are integrated within them. This ensures that Aboriginal communities' traditional and contemporary associations with the landscape are considered as an integral part of NRM, rather than as an 'add on'. Application of the standard should lead to meaningful engagement and partnerships with Aboriginal communities, proper appreciation of Aboriginal cultural

practices and obligations to country, and the appropriate respect and use of Aboriginal knowledge. The way in which the targets incorporate specific consideration of Aboriginal values of natural resources is discussed in the detailed explanation of each target provided in Attachment 2.

The NRC will audit the implementation and effectiveness of Catchment Action Plans (CAPs) developed by CMAs for compliance with the standard and promotion of the targets. This will help to lock in an adaptive management approach to NRM in NSW. The elements of adaptive management are included in the standard and are designed to support achievement of regional and state-wide targets. The NRC's audit process will provide a means of assessing how effectively the standard is being applied, whether it is successfully helping to achieve the targets, and whether the standard and targets themselves can be improved.

Together, the recommended standard and targets and audit process will contribute to institutional stability and continuity after a long period of change and restructuring. This is important for achieving landscape changes that reflect communities' values, occur over long timeframes, are affected by lots of factors beyond natural resource managers' control, and are difficult to measure in the short-term. Because of these complexities in NRM, critical reviews of institutional arrangements and their effectiveness tend to focus on the quality of the processes in place, particularly M and E systems. Having quality systems in place from the outset – systems that are delivered by application of the standard and driven by the targets – will help to avoid destabilisation of the new institutional model, and establish a basis for continuous improvement in NRM.

Implementing the recommended arrangements for M and E of progress towards state-wide targets will establish the foundations for a high quality, comprehensive and cost-effective approach to assessing the status and trends of the state's natural resource assets. Historically, this information has not been available yet it is critical for assessing progress and as a basis for informing sound macro-environmental policy settings and decisions on government investment in NRM.

The following policy issues should also be considered when final decisions are made on adopting targets:

- coordinating and streamlining natural resource reporting and auditing processes
- extending the requirement to comply with the state-wide standard and promote the state-wide targets from CMAs to NSW government agencies and other organisations engaged in NRM
- developing an NRM policy that indicates the policy, program and/or investment changes needed to achieve the targets, identifies other priorities and determines the methodology for distributing resources between regions to ensure the state-wide targets are achieved
- establishing links between the new NRM framework and government planning processes such as Regional Environment Plans and Local Environment Plans.

1.3 Structure of this report

The following chapters discuss the NRC's recommended standard, targets and M and E arrangements in more detail, including explaining their purpose and application, and how they and the proposed audit process fit together to drive a process of adaptive management that leads to continuous improvement in NRM:

- Chapter 2 discusses the content and form of the recommended standard, and how it is applicable to natural resource managers at all scales and in diverse environmental, economic and social/cultural conditions
- Chapter 3 sets out the recommended aspirational goal and state-wide targets, and describes their intent and applicability at the regional level
- Chapter 4 explains how the NRC intends to audit compliance with the standard and promotion of targets through the development and implementation of CAPs
- Chapter 5 describes the recommended arrangements for implementing an M and E program that supports the assessment of progress towards the state-wide targets
- Chapter 6 outlines important issues that the NRC believes should be considered by the NSW Government for effective implementation of the state-wide standard and targets.

Further detailed information is provided in attachments. Attachment 1 contains the full text of the recommended standard. Attachment 2 sets out detailed information that supports the application of each recommended state-wide target. Attachments 4 to 7 outline the M and E programs required and their costs. Additional attachments provide more information on the NRC's process for developing the standard and targets and the NRC's proposed audit program.

Further background information can also be found in the NRC's previously released papers on standards and targets, including:

- *A Framework for State-wide Standards and Targets*, October 2004, PSTR0001
- *Draft State-wide Standards and Targets*, November 2004, PSTR0007.

These documents are available from the NRC's website, www.nrc.nsw.gov.au.

2 State-wide standard

The NRC recommends one state-wide standard which, together with the state-wide targets and audit process, will help create a framework for quality NRM in NSW and for decisions that maximise the benefits achieved by investment in NRM. The recommended standard – which is provided in full in Attachment 1 – is a 17-page document that sets out seven auditable outcomes of good NRM process:

1. **Collection and use of knowledge** – use of the best available knowledge to inform decisions in a structured and transparent manner
2. **Determination of scale** – management of natural resource issues at the optimal spatial, temporal and institutional scale to maximise effective contribution to broader goals, deliver integrated outcomes and prevent or minimise adverse consequences
3. **Opportunities for collaboration** – collaboration with other parties to maximise gains, share or minimise costs of delivering multiple benefits is explored and pursued wherever possible
4. **Community engagement** – implementation of strategies sufficient to meaningfully engage the participation of the community in the planning, implementation and review of natural resource management strategies and the achievement of identified goals and targets
5. **Risk management** – consideration and management of all identifiable risks and impacts to maximise efficiency and effectiveness, ensure success and avoid, minimise or control adverse impacts
6. **Monitoring and evaluation** – quantification and demonstration of progress towards goals and targets by means of regular monitoring, measuring, evaluation and reporting of organisational and project performance and the use of the results to guide improved practice
7. **Information management** – management of information in a manner that meets user needs and satisfies formal security, accountability and transparency requirements.

For each component, the standard provides guidance on how to achieve the required outcomes and lists the type of evidence CMAs will need to provide to show compliance with the standard. It has been drafted in a style similar to ISO¹⁰ or Australian Standards.

The recommended state-wide standard is consistent with the *National Framework for Natural Resource Management Standards and Targets*¹¹, in both concept and content. This framework, which NSW committed to adopt under a bilateral agreement with the Australian Government,¹² envisages the development of 'Best Practice Management or Governance Standards' for NRM. The intent is that these standards assist in the achievement of natural resource condition outcomes expressed in targets. The framework also shows that standard are intended to cover the scope of issues addressed in integrated catchment plans, and be able to apply broadly to

¹⁰ International Organization for Standardisation.

¹¹ NRM Ministerial Council (2003) *National Framework for Natural Resource Management Standards and Targets*, revised 8 April 2003, p. 8. Available at <http://www.nrm.gov.au/monitoring>.

¹² *Bilateral Agreement Between the Commonwealth of Australia and The State of New South Wales to Deliver the Natural Heritage Trust*, 14 August 2003.

NRM systems established by governments (including legislation, policy, process and institutions). The National framework proposes that they support among other things:

- decision-making that is integrated, comprehensive and transparent, including adequate stakeholder consultation
- decision-making that is based on sound science, economic analysis, the best available information and, where appropriate, predictive modelling
- adequate M and E
- application of adaptive management and continuous improvement.¹³

Application of the whole of the state-wide standard will mean that trade-offs made between environmental, economic and social/cultural outcomes are transparent and have been informed by best available information and analysis. Specific tools or methods for making these trade-offs are not prescribed, as the best tool to use will vary with scale and particular circumstances.

The recommended standard is also a good fit with the new institutional model for NRM in NSW (see Chapter 1), and will underpin its long-term stability. The standard supports regional planning, investment and decision-making, allowing flexibility and innovation while ensuring quality in the NRM process so that all stakeholders can be confident that best-practice NRM is being delivered. For example, it does not prescribe or recommend methods for managing salinity. Instead, it requires that a range of matters be systematically considered to inform decisions on investment to tackle salinity issues – including local knowledge, relevant science, understanding of local farming practices, potential impacts on ground and surface water systems at all scales and broader economic impacts. That is, the standard provides a framework for using science and information in the most appropriate ways, rather than imposing scientific rules or benchmarks that are more appropriately determined at local and regional scales.

In addition, the recommended standard has widespread support among stakeholders. Although the standard's format has been revised since the NRC released draft standards as part of its November 2004 consultation paper (see Box 2.1), the overall approach of the standard (and much of its content) is the same as in the draft standards. This approach is widely accepted by state agencies, CMAs, environment groups and others. For example, in its submission in response to the consultation paper, the Department of Environment and Conservation stated that it:

'supports the use of process-based standards as a means to ensure the rigour and consistency in identifying resource based outcomes and management actions needed. In taking this approach, the NRC is recognising that regional variation in the type, condition and status of natural resources, economic conditions, community aspirations and technical capacity requires a level of flexibility for both Government and CMAs in identifying achievable resource outcomes'.¹⁴

Importantly, compliance with the standard will not be shown via a 'check the box' approach. Rather, the NRC will audit the CMAs' application of the standard. Each CMA will be required to demonstrate that it has usefully embedded the standard in its day-to-day operational and business activities, and that it is applying the individual components of the standard in an integrated way. By requiring high-quality business and planning processes, the standard aims to promote consistent rigour, accountability and transparency in NRM. It also aims to support

¹³ Ibid.

¹⁴ Department of Environment and Conservation (March 2005) *Submission to NRC on draft consultation paper on standards and targets*, p. 1.

the coordination and cooperation that is needed to achieve improvements in natural resource outcomes at all scales, and to promote adaptive management.

CMAs have experienced Board members and staff, many of whom implicitly follow practices consistent with some parts of the standard. However, there is value in CMAs formally adopting all parts of the standard and, where necessary, documenting the quality procedures that they apply. This will help to identify and implement improvements in process, achieve a consistent approach within and across CMAs, and also provide for continuity when circumstances change (such as when new CMA Board members are appointed).

While the standard applies especially to CMAs, it is widely applicable and could equally be implemented by government agencies or any group or organisation associated with the management of natural resources. Indeed, the standard will be most effective if applied broadly. For example, CMAs will be required by the standard to use best available information to inform decision-making. However in many cases, the quality of the information available to them, and its fitness for purpose, will depend on other organisations, particularly state agencies applying the standard. This will improve the outcomes that CMAs can achieve by applying the standard. The NRC's recommendations for broader application of the standard and targets are discussed in chapter 6.

The rest of this chapter discusses important aspects of the recommended standard in more detail, and some of the NRC's key considerations in developing the standard:

- Section 2.1 describes the scope and structure of the standard, including the importance and interdependence of the components
- Section 2.2 discusses the relationship between the state-wide standard and the use of targets and other instruments to express priorities
- Section 2.3 explains why the NRC is not recommending minimum benchmarks or specific best management practices as standards
- Section 2.4 outlines NRC's approach to auditing compliance of CMAs and their CAPs with the standard.

2.1 Scope and structure of the standard

The standard identifies seven components involved in high-quality NRM (see Table 2.1). Each of these components is interdependent. In addition, each is critical to elements of adaptive management, including planning, implementation, audit and response (see Figure 2.1).

In general, the components have been included in the state-wide standard because they:

- add value to past work by ensuring a focus on integrated and coordinated outcomes
- help to achieve a consistent approach and quality in NRM across NSW while allowing for regional variation to suit diverse circumstances
- were consistently identified at workshops, in submissions and through other consultations as being important for successful delivery of NRM.

Table 2.1: Summary of components in the standard and their importance

Component of the standard	Why important
Collection and use of knowledge	Will drive use of best available information to inform decisions and best practice management. Will increase transparency of decisions and help to identify information gaps and the ways these can be addressed.
Determination of scale	<p>Will affect all aspects of quality NRM, including approaches to collaboration, risk management, types of community engagement, M and E, and evaluation of costs and benefits.</p> <p>Must be applied alongside all other components so that sensible outcomes are achieved at all scales and adverse impacts across boundaries are avoided.</p>
Opportunities for collaboration	Will encourage NRM based on partnerships, shared knowledge and resources. Partners will include individual land managers, local environment or landcare groups, local government and government agencies. Will promote coordinated effort and resources, which will be much more effective than individual organisations working in isolation.
Community engagement	Will ensure that NRM is based on shared commitment and values. Will encourage listening to and acknowledging the views of others, by maintaining good, open communication with all interested parties and by building understanding of natural resource issues.
Risk management	Will ensure that possible constraints on achieving outcomes – including social/ cultural and economic impacts – are considered and managed appropriately. Will focus natural resource managers on addressing key (rather than all) risks and their appropriate management in relation to potential scale, probability, severity and frequency. Will ensure that risks are identified and managed appropriately, rather than being avoided.
Monitoring and evaluation	Will ensure that both M and E are planned and implemented, and that the lessons learned from evaluation are fed into an improved information base and future decision-making processes. Both will meet quality standards that ensure that the outputs are useful, fit for purpose and can be integrated with other M and E efforts.
Information management	Will ensure quality, accessibility, consistency and applicability of information. Should drive coordinated management and maintenance of integrated information management systems that meet the needs of stakeholders.

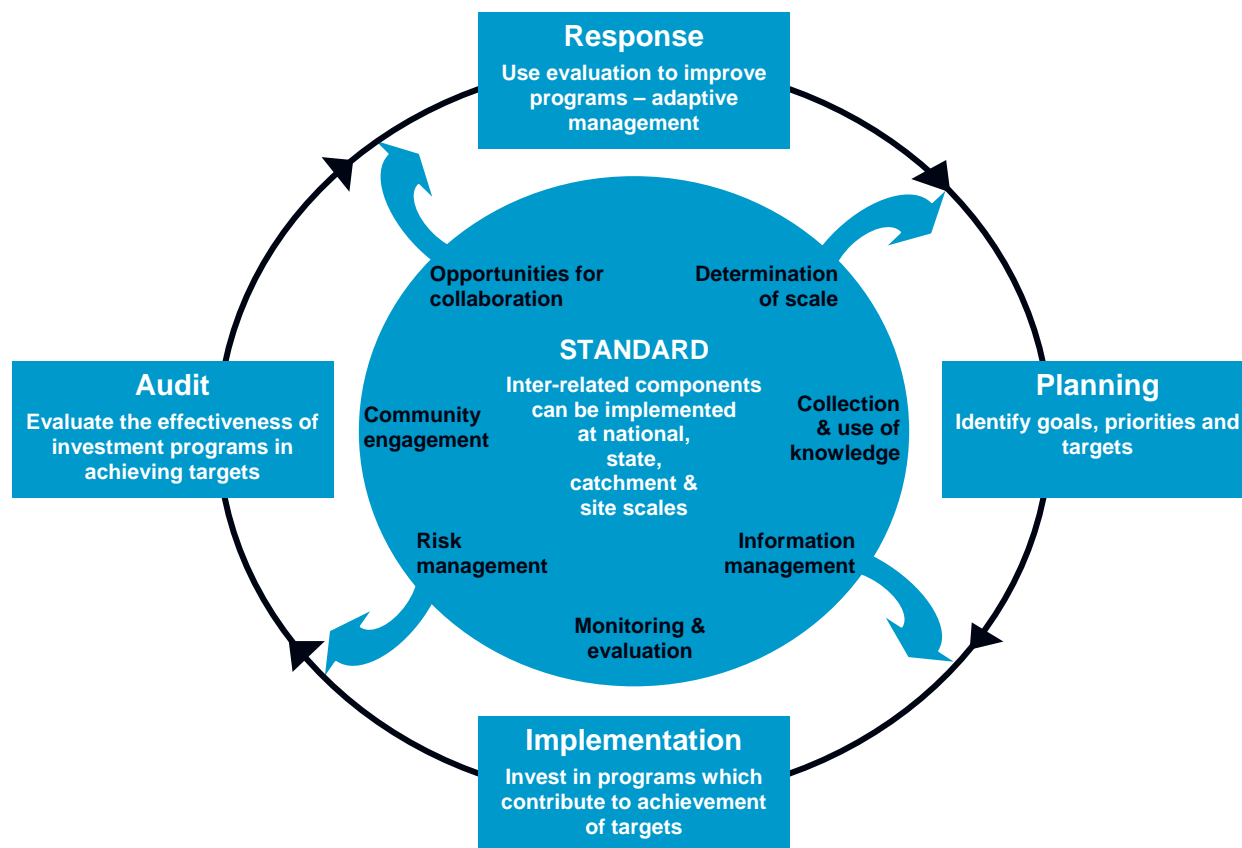


Figure 2.1: Components of standards drive adaptive management at all scales

The standard is structured so that the main focus is on outcomes, supported by guidance material and evidence requirements to satisfy an audit process. For each component there is:

- a statement of the *required outcome*
- *Guidance* on how to achieve the outcome
- *Evidence requirements* that indicate possible ways of satisfying a compliance auditing process. To provide flexibility, the standard allows for alternative evidence to be used if it can be demonstrated that it effectively achieves the outcome.

Table 2.2 illustrates this structure for the component 'Determination of scale'.

Table 2.2: Example of component: ‘Determination of scale’

Required outcome	
Management of natural resource issues at the optimal spatial, temporal and institutional scale to maximise effective contribution to broader goals, deliver integrated outcomes and prevent or minimise adverse consequences.	
Guidance	Evidence requirements
<ul style="list-style-type: none"> ▪ Assess the scale – spatial, institutional, temporal – relevant to each issue ▪ Evaluate the potential for delivery of multiple benefits – environmental, economic and social/cultural ▪ Consider socio-economic impacts and their implications for making trade-offs ▪ Assess the potential positive and negative impacts on resources and stakeholders at different scales ▪ Assess the potential contribution to regional or state-wide targets ▪ Maximise benefits by incorporating assessments of scale into project planning, implementation, review and making trade-offs ▪ Learn from and/or build on previous projects and experiences ▪ Have regard to risk management strategies when considering impacts on stakeholders 	<ul style="list-style-type: none"> ▪ Evidence of research and analysis of information relevant to determining appropriate scale ▪ Evidence of a good understanding of relevant regional, state and national issues and social and economic factors associated with scale ▪ Documented evidence showing that analysis of scale has meaningfully informed planning, implementation, review and making trade-offs ▪ Documented evidence of risk identification, evaluation and management arising from the identified scale for management ▪ Evidence to demonstrate that the application of this component has been informed by the application of other components <p style="text-align: center;">AND/OR</p> <ul style="list-style-type: none"> ▪ Documented evidence of additional or alternative strategies used to achieve the required outcome

The components of the standard are inter-related. The achievement of each required outcome depends on and is related to the achievement of other required outcomes. For example, there are links between the ‘Collection and use of knowledge’ and ‘Community engagement’ components. Community engagement will involve both the provision of information to stakeholders and the collection of information from them on their values, priorities and local knowledge. Successful application of the standard depends on achieving the required outcomes for all components rather than isolated components.

However, not all components will be equally important for all decisions or activities. The way CMAs apply the standard needs to sensibly correspond to the nature and magnitude of the decision or activity involved. (For example, risk analysis for multi-million dollar investments will be more detailed and sophisticated than for small one-off projects.) In addition, their decisions about the appropriate application of the components of the standard need to be clearly justified.

The standard does not include specific protocols for M and E or information management, nor does it include or reference detailed methods for delivering 'on-ground' action. Specific protocols for M and E and information management that can be applied state-wide are important, and the standard requires that these be adopted consistently where they are agreed. However, the standard itself is not a central repository for these. The standard does not include methods for on-ground action because they are so often specific to particular circumstances, and the intent is for the standard to allow for regional flexibility.

The NRC plans to develop additional guidance material for using the standard. The content of this guidance will initially be generated in response to testing the use of the standard in a pilot process with three CMAs. This will help to identify where additional guidance is most needed and the most appropriate form for that guidance. The guidance material is likely to continue to develop as lessons are learnt from applying the standard and from auditing against it. It will also be modified to adapt to changes in NRM policy and legislation that will help inform application of the standard.

2.2 How does the standard relate to targets and other instruments?

Application of the standard will support natural resource managers to identify both their region's specific priorities, and methods for addressing these priorities under the umbrella of state-wide targets. These priorities may be expressed as regional targets, but may also be appropriately expressed using other instruments such as maps or plans where it is important to express a spatial priority. (For example, priorities for biodiversity could be expressed spatially by a map of a bioregion that identifies areas of high conservation value.)

Applying the standard to the development of regional targets or other instruments that express regional priorities will mean these instruments are based on best available information, coordinate outcomes across catchment and institutional boundaries, are consistent with state-wide targets and reflect community capacity to implement them. For example, CMAs that apply the standard in developing their catchment targets for improving the condition of particular native vegetation communities will take into account:

- best available vegetation mapping that shows the extent and significance of those communities in a bioregion
- local and state-wide priorities for the recovery of threatened species
- the state-wide target for improving condition of native vegetation
- the potential impact on productive capacity of the land.

Applying the standard will also ensure that activities are implemented that maximise the outcomes achieved. This is because the standard encourages CMAs to get the most out of the available resources through effective coordination of partnerships, a focus on achieving multiple benefits from single investments, meaningful engagement with stakeholders and sharing of information. Again, the benefits of the standard will be greatest if it is applied broadly. For example, CMAs can pursue partnerships and coordination of projects, but cannot control the response of others and their willingness to participate. Application of the same standard by others will reduce such barriers.

Box 2.1 Changes to draft standards

Since the NRC released its draft standards in its November 2004 consultation paper, it has refined these standards in response to stakeholder feedback and further development of its ideas. In summary:

- The 5 draft standards have been developed as components of one standard, reflecting their interdependency and the need to consider and apply them together
- The NRC has rewritten the standard using, as a foundation, the format of other recognised standards such as ISO or Australian Standards to ensure clarity, avoid ambiguity in interpretation and make it easier for external auditors to audit
- Components of the standard relating to information management and M and E have been developed (these were flagged but not developed in the consultation paper)
- The economic and social/cultural elements of the draft standards have been incorporated into other components, to reflect the integrated nature of economic and social/cultural considerations
- Planning and prioritisation is not identified as a separate component of the standard because all components contribute to both planning and prioritisation processes
- A new component for community engagement has been included in response to strong stakeholder feedback that this is a critical component.¹⁵

Despite these changes, the overall intent of the standard and much of the content remains the same as in the draft standards.

2.3 Why not minimum benchmarks or best management practices?

During its consultation process, the NRC noted that many stakeholders expected it to develop standards that were based on minimum benchmarks, or best management practices for implementing NRM in specific circumstances. The NRC considered both of these approaches but concluded that they were inappropriate for state-wide standards because they generally don't allow for flexibility across diverse landscapes. However, it believes both approaches can be useful at a regional level.

For example, a minimum benchmark for protecting and restoring riparian zones of 50 metres either side of first-order streams is unlikely to be equally appropriate in western and coastal parts of NSW. The appropriate width for riparian zones depends on a range of factors, including the geomorphology and flow of the stream, the existing land-use and the vegetation type. However, within a sub-catchment or landscape it may be possible to set a meaningful benchmark that takes into account available information on these factors. The science and supporting information needed to set these benchmarks comes from a range of sources, including government agencies, local knowledge, and research bodies. Applying the standard will help to identify this information and the circumstances where it is appropriate to use benchmarks.

Best management practices are generally also applied in regionally specific circumstances. For example, a manual for managing acid sulfate soils is a valuable tool in coastal regions but is not applicable inland where this problem doesn't occur.

¹⁵ For example, Sydney Metropolitan CMA stated in its submission that '*the provision of a state-wide standard for consultation with all stakeholders would provide certainty to the community and CMAs that stakeholder consultation was rigorous and consistent throughout the State*' p. 1.

The NRC has found that most stakeholders now accept that its recommended approach to the state-wide standard is more meaningful than minimum benchmarks or very specific best management practices, even if they had originally expected these other approaches.

2.4 Auditing compliance with the standard

The NRC's proposed audit process is critical for embedding adaptive management in NRM – it is intended to be part of a wider learning and continuous improvement process. The audit process is discussed in detail in Chapter 4. This section briefly outlines how it will be applied to assessing compliance with the standard.

The audit of CMAs' compliance with the standard will focus on whether or not they achieve the required outcome for each component of the standard. CMAs will need to demonstrate this compliance. The standard contains *Evidence requirements* to help them understand what they are expected to provide to satisfy the audit process.

Ideally, the provision of evidence for compliance with the standard can be integrated with other reporting requirements and business needs. For example, papers presented to CMA Boards are likely to satisfy many of the requirements if proposals put to the Board are adequately supported by analysis and information consistent with the standard. Similarly, minutes and records of meetings will provide the necessary evidence for some components. Information management systems should be in place to ensure these documents are retained and are accessible.

The NRC is currently undertaking system reviews with three CMAs. This will help to further identify the kinds of evidence already produced and anything additional that is required. Following this process, samples of required evidence and suggested templates will be generated and made available to CMAs.

Recommendation

That the NSW Government adopt the state-wide Standard for Quality Natural Resource Management presented in Attachment 1.

3 State-wide targets

The NRC recommends one aspirational goal, and a suite of 13 resource condition and community targets that contribute to the achievement of this goal, for NRM in NSW.

The aspirational goal centres around maintenance of healthy, functioning landscapes in the long-term. Seven of the state-wide targets together identify the macro-environmental elements of these healthy, functioning landscapes including the important linkages to socio-economic outcomes. Another 6 state-wide targets focus attention on specific priorities for NRM. The underlying intent of all of these targets is to maintain natural resources that are currently in good condition and improve those that are degraded while maintaining or improving socio-economic outcomes.

The recommended targets are ambitious because, for some natural resource issues, it will be difficult to even slow the current rates of decline. Degradation may continue for many years before we begin to see an improvement in, or even maintenance of, the condition of some assets. This is well documented for some natural resource issues, such as salinity. However, for many assets, there is insufficient information to accurately determine baselines, trends or rates of change but we know the threats to the assets are considerable and growing. In these cases, it is not possible to determine what is achievable within a 10-year period. As additional data are collected on the recommended indicators for the state-wide targets, we will be able to develop a more accurate picture of what is realistic and achievable.

To successfully promote the state-wide targets, the CMAs will need to plan and conduct NRM activities that address regional priorities and simultaneously contribute to the outcomes that are important at the state level. In doing so, they will depend on the cooperation of the state agencies responsible for providing the guidance and M and E that will support their efforts.

This chapter discusses the NRC's recommendations for state-wide targets in more detail. Section 3.1 explains the purpose of state-wide targets. Section 3.2 presents the state-wide targets, summarises their intent, and explains how they would be applied at the regional level.

3.1 Purpose of state-wide targets

The recommended state-wide targets will provide focus, coordination and a means of tracking NRM progress within the new institutional model. Their overall purpose is to ensure that natural resources continue to support a range of community values in the long-term. This is a significant challenge given the current status and trends in resource condition. It will require trade-offs between environmental, economic, social/cultural values at local, regional and state scales.

All CMAs are required to promote the achievement of the state-wide targets through their CAPs. However, the way in which they do this will be different for each CMA, and will reflect regional priorities.

3.1.1 Maintaining healthy, functioning landscapes

Ultimately, the achievement of the state-wide targets is expected to result in healthy, functional landscapes in NSW. This overall purpose is captured in the NRC's recommended aspirational goal (see Table 3.1). This goal is a long-term statement, which describes natural resource assets

in terms of the desirable functions that they serve. It reflects the integrated nature of NRM and the relevance of environmental, economic and social/cultural values. It expresses a vision of a desirable long-term outcome.

Table 3.1: State-wide aspirational goal

State-wide aspirational goal

Resilient ecologically sustainable landscapes functioning effectively at all scales and supporting the environmental, economic, social and cultural values of communities.

A resilient landscape:

- maintains basic functions at all space scales including nutrient cycling, water cycling, provision of food and shelter for biota
- maintains viable populations of all native species of plants and animals at appropriate space and time scales
- reliably meets the long-term needs (material, aesthetic and spiritual) of people and communities.

This goal will be applied in different ways across different landscapes, according to the current and desired balance between competing uses in each region, but can be applied to ensure that natural resources function in a way that support the community's values for the environment, economy, society and culture. The state-wide targets break the aspirational goal down into 'steps' that are more immediate and measurable.

3.1.2 Identifying fundamental elements of healthy, functioning landscapes

Seven of the state-wide targets – known as macro-environmental targets – focus on the fundamental elements of NSW's natural resource base:

- **Biodiversity** – in particular the extent and condition of native vegetation and the sustainability of key native fauna populations
- **Water** – in particular the condition of riverine, groundwater and marine ecosystems
- **Land** – in particular the condition of soil
- **Community** – in particular economic sustainability and social well-being. (See Table 3.2.)

These elements are fundamental to a solid natural resource base and are recognised as issues of significance at the state scale. Assessments of progress towards these should inform the state's 'macro-environmental' policy settings.

Detailed supporting information on these and the other targets is presented in Attachment 2. These targets identify the aspects of the landscape that we need to maintain and improve. Careful management of these aspects should ensure that proper landscape functioning is restored and maintained and that the natural resource base as well as economic sustainability and social well-being are maintained in the long-term.

The complexity of landscape features and functions means that these targets are closely linked. Progress towards any one of them is likely to be mirrored by progress in others. For example, improving the condition of riverine ecosystems will require improvements in the extent and condition of riparian vegetation. This will contribute to improvements in overall native vegetation extent and condition. It will also reduce the likelihood of wind and water erosion in the riparian zone, and so contribute to improvements in overall soil condition.

Many different players will contribute to the achievement of these targets to ensure that, in the long-term, healthy functioning landscapes are maintained. These players include land managers, CMAs, local government, state agencies, research institutions and the broader community. The CMAs' application of the state-wide standard will drive the coordination that is necessary to achieve the state-wide targets.¹⁶ In turn, the targets will provide a focus for coordinated efforts among all players, so they can deliver the outcomes that the NSW community is seeking from the natural resource base.

Table 3.2: State-wide macro-environmental targets

Macro-environmental targets	
Biodiversity	<p>1. By 2015 there is an increase in native vegetation extent and an improvement in native vegetation condition</p> <p>2. By 2015 there is an increase in the number of sustainable populations of a range of native fauna species</p>
Water	<p>5. By 2015 there is an improvement in the condition of riverine ecosystems</p> <p>6. By 2015 there is an improvement in the ability of groundwater systems to support groundwater dependent ecosystems and designated beneficial uses</p> <p>7. By 2015 there is no decline in the condition of marine waters and ecosystems</p>
Land	<p>10. By 2015 there is an improvement in soil condition</p>
Community	<p>12. Natural resource decisions contribute to improving or maintaining economic sustainability and social well-being</p>

Note: Targets 3, 4, 8, 9, 11 and 13 are specific priority targets and are listed in Tables 3.3 to 3.6.

3.1.3 Providing guidance on specific issues of importance

A further six state-wide targets focus on a number of specific issues of importance in NSW. These specific priority targets support the achievement of the macro-environmental targets described above. They provide additional guidance to natural resource managers on aspects of where, how or why to focus NRM investment. By applying the standard, CMAs will identify other such guidance from regional strategies, policy documents and other sources, as appropriate to the NRM issue being managed.

One of these targets focuses on community capacity because this is a critical factor in achieving NRM outcomes. The negative impacts of human activity on the landscape have been widespread, but there is enormous potential for the state's community to have a significant, positive influence on natural resources. To realise this potential, the community capacity target directs investment towards those aspects of capacity that can improve NRM outcomes.

A further five targets focus on specific issues related to biodiversity, water and land. In the case of water, for example, there is a target for wetlands. Wetlands are a part of riverine ecosystems, but they have distinct bio-physical characteristics, support unique values, and are managed under different frameworks. Furthermore, wetlands have already been prioritised at

¹⁶ Although, as noted previously, this will be more effective if the standard is applied by all players, not just CMAs.

international and national levels, under The Convention on Wetlands (Ramsar, 1971)¹⁷ and the Directory of Important Wetlands in Australia. The recommended target for wetlands recognises these facts, and distinguishes wetland condition and extent as a specific issue of importance at the state level.

It is important to note that proper application of the state-wide standard will support CMAs in contributing to the outcomes described by this group of targets. For example, in the case of wetlands, CMAs complying with the standard will use best available information when planning activities to improve riverine ecosystem condition, vegetation condition and the sustainability of fauna populations. This information should include a range of scientific information, policies, existing priorities and obligations (including those under The Convention on Wetlands). In turn, the assessment of progress towards the state-wide target for wetlands will help to determine how effective the standard is at ensuring that appropriate available information is considered.

As discussed in Section 2.2, CMAs may translate these targets into regional targets, or express the priorities that they reflect through a variety of other mechanisms such as regional and local plans and strategies, maps or listings of priority areas, and decision support systems. In many cases, these mechanisms may provide better guidance than the state-wide target, because they can be more explicit about technical and spatial details. For example, they may include necessary information about appropriate management approaches, and can identify the most suitable locations for NRM investment. This level of detail cannot be expressed sensibly in a state-wide resource condition target. In the case of native vegetation, for example, specifying the proportion of native vegetation to be retained across the state is not helpful. It is far better to express priorities for vegetation management through a map of a bioregion that shows areas of high conservation value and for this to be developed in cooperation with appropriate state agencies and other stakeholders. For all natural resource assets, the mechanism used to express priorities at the regional level should reflect the scale and nature of the issue.

3.2 State-wide targets

The recommended state-wide targets for biodiversity, water, land and community are presented below, together with an explanation of the intent of the targets, why they are important and how CMAs would apply them at the regional level. Further supporting information for each target is contained in Attachment 2.

3.2.1 Biodiversity targets

The state-wide resource condition targets for biodiversity are shown in Table 3.3.

The intent of these targets is to ensure that biodiversity is retained and enhanced in the long-term. The targets are intended to protect a variety of fundamental ecological processes, including nutrient cycling, oxygen production, carbon storage and water cleansing. Two of the targets focus on the fundamental components of biodiversity: native flora and fauna. The target for native vegetation covers both remnant vegetation and native vegetation that has re-grown after being cleared or disturbed. Remnant vegetation and 'protected regrowth' is protected from broadscale clearing under the *Native Vegetation Act 2003*. The focus of incentives and investment to achieve this target should be on improving the condition of remnant native vegetation,

¹⁷ The Convention on Wetlands, 1971, signed in Ramsar, Iran. Available at <http://www.ramsar.org>.

protecting and improving the condition of native vegetation regrowth and, in some landscapes, revegetation.

The other targets for biodiversity will focus NRM investment on specific issues that the community has identified as important for biodiversity management. The NSW community places significant value on the existence of diverse flora and fauna species. The priorities for managing threatened species are defined under NSW legislation¹⁸ and are communicated by inclusion of a threatened species target. The inclusion of a target for invasive species reflects the fact that invasive species are one of the greatest threats to biodiversity and productivity of land. It is therefore appropriate, at a state level, to guide investment towards addressing this threat.

Table 3.3: State-wide resource condition targets biodiversity

Resource condition targets	
Macro-environmental	<ol style="list-style-type: none"> 1. By 2015 there is an increase in native vegetation extent and an improvement in native vegetation condition 2. By 2015 there is an increase in the number of sustainable populations of a range of native fauna species
Specific priorities	<ol style="list-style-type: none"> 3. By 2015 there is an increase in the recovery of threatened species, populations and ecological communities 4. By 2015 there is a reduction in the impact of invasive species

Biodiversity is vital for healthy, functioning landscapes, has intrinsic value, and is part of the indigenous cultural landscape. It supports primary industries and is valued by the community for environmental and social/cultural reasons. Healthy, functioning native vegetation communities are valuable in themselves. They provide ecosystem services and habitat for native species, support Aboriginal cultural values, are an important resource for continuing Aboriginal cultural practices, have extractive uses and have potential to provide other benefits in the future. Native fauna provide essential ecosystem services such as pollination and nutrient cycling; without them there would be widespread system collapse.

While there are limited data to describe biodiversity in NSW, available information suggests it is declining. The condition and extent of native vegetation in NSW has declined significantly since European settlement, through pressures such as clearing, grazing, the introduction of exotic species, altered fire regimes and urbanisation. Further, in most experts' opinion, the populations of many native fauna species are declining due to processes such as habitat loss, habitat simplification, and predation and competition by exotic species. Achieving the macro-environmental biodiversity targets will mean preventing native fauna populations from becoming threatened or over-abundant.

Promoting the biodiversity targets at the regional level will require many different management approaches. Applying the standard should help CMAs to identify the approach that best addresses regional priorities. It should help them make decisions such as:

¹⁸ See *Threatened Species Conservation Act 1995*.

- whether it is more appropriate to focus on increasing the extent and connectivity of native vegetation (eg, in heavily cleared landscapes) or on improving vegetation condition of both remnant vegetation and regrowth (eg, in highly vegetated landscapes)
- what actions are most appropriate to improve the sustainability of native fauna populations
- whether it is more effective to identify areas of high biodiversity and treat invasive species in those areas, or to identify the invasive species causing most impact and treat those species
- whether it is better to focus activities on recovery of threatened species, populations and communities or to focus on managing threatening processes.

3.2.2 Water targets

The state-wide resource condition targets for water are shown in Table 3.4.

In accordance with the aspirational goal, the intent of the water targets is to ensure the long-term maintenance of:

- fully functioning aquatic and water-dependent ecosystems, supported by adequate river flows
- viable populations of native aquatic and riparian flora and fauna species
- water-dependent environmental, economic and social/cultural values.

Progress towards this long-term vision will depend on significant shorter term improvements in the condition of water resources. Three targets focus on the need to improve the condition of riverine ecosystems and groundwater, as well as maintain the current good condition of marine ecosystems, because these are fundamental elements of a functioning landscape.

A further two targets for wetlands and coastal lakes and estuaries (each of which are components of riverine ecosystems) focus on specific issues of importance at the state scale. As outlined in Section 3.1.3, it is possible to give state level guidance on wetlands because there has already been prioritisation of wetlands under The Convention on Wetlands¹⁹ and the Directory of Important Wetlands in Australia²⁰. Australian and NSW Governments have committed to protect wetlands with international and national significance, and it is appropriate to highlight this commitment in a state-wide target. A target for estuaries and coastal lakes is included to distinguish these systems from freshwater riverine ecosystems, recognising that the coast has 'unique physical, ecological, cultural and economic attributes'.²¹

Properly functioning aquatic ecosystems support environmental values, human health and wellbeing, cultural activities and primary production. However, many of the state's riverine and groundwater systems are extensively degraded. Riverine ecosystems remain under threat, particularly from water extraction. Other threats include flow regulation, poor water quality, changes in land use, clearing of vegetation and destruction of habitat. Continuing pressures on groundwater include over-extraction, salinity and other contamination. While marine waters in

¹⁹ Ramsar Convention 1971.

²⁰ Environment Australia (2001) *A Directory of Important Wetlands in Australia*, Third Edition, Environment Australia, Canberra.

²¹ NSW Government (1997) *NSW Coastal Policy 1997: A Sustainable Future for the New South Wales Coast*, p. 8. Available at <http://www.coastalcouncil.nsw.gov.au>.

NSW remain in relatively good condition, they too are subject to pressures of urban development, inappropriate land management and recreational use. Without intervention, degradation of many riverine ecosystems and groundwater systems is likely to continue and the integrity of marine systems may be lost.

By applying the standard, CMAs will be able to promote the state-wide water targets and simultaneously incorporate state and regional priorities for the management of water resources and aquatic ecosystems, including those listed under the *Water Management Act 2000* and numerous water sharing plans for surface and groundwater systems. Other regional priorities are expressed in a broad range of documents, including the Water Quality and River Flow Interim Environmental Objectives²², and the NSW Government's statements of intent in response to the Healthy Rivers Commission inquiries²³. The standard, particularly the required outcome in relation to 'Collection and use of knowledge', will guide CMAs through a rigorous process to consider these priorities.

Table 3.4: State-wide resource condition targets for water

Resource condition targets	
Macro-environmental	<p>5. By 2015 there is an improvement in the condition of riverine ecosystems</p> <p>6. By 2015 there is an improvement in the ability of groundwater systems to support groundwater dependent ecosystems and designated beneficial uses</p> <p>7. By 2015 there is no decline in the condition of marine waters and ecosystems</p>
Specific priorities	<p>8. By 2015 there is an improvement in the condition of important wetlands, and the extent of those wetlands is maintained</p> <p>9. By 2015 there is an improvement in the condition of estuaries and coastal lake ecosystems</p>

3.2.3 Land targets

The State-wide resource condition targets for land are shown in Table 3.5. The intent of the resource condition targets for land is to promote biological diversity within soils, maintain landscape functionality, improve the long-term profitability and sustainability of industries supported by land and limit off-site impacts of soil degradation (such as water quality degradation). The achievement of these targets will reduce specific degradation processes, such as erosion, dryland salinity and induced soil acidity.

²² EPA (1999) *NSW Water Quality and River Flow Interim Environmental Objectives*, NSW Environment Protection Authority, Sydney.

²³ The Healthy Rivers Commission reports and the Statements of Intent are now available from the publications listed on DIPNR's website at www.dipnr.nsw.gov.au.

Table 3.5: State-wide resource condition targets for land

Resource condition targets	
Macro-environmental	10. By 2015 there is an improvement in soil condition
Specific priority	11. By 2015 there is an increase in the area of land that is managed within its capability

A target for soil condition reflects its fundamental importance within a healthy, functioning landscape. Healthy soils have nutrient cycling and moisture and carbon holding capability, and support diverse populations of flora and fauna both above and below ground. They are also more stable than soils in poor condition, and are less subject to erosion and other degradation pressures. The sustainable land-use target identifies the management of land within its capability as one of the single most important factors affecting long-term sustainable land use and soil condition. The land capability target encourages consideration of other aspects of 'land' apart from soil (such as slope).

There are limited state-wide data describing soil condition and the extent of land managed within its capability. Current trends in the condition of land resources are therefore difficult to identify. Available data indicate that the area affected by salinity in NSW is increasing, as is the area affected by acidity.²⁴

Applying the standard will help CMAs to promote these two targets and incorporate regional priorities for management of land resources. For example, the standard's required outcome in relation to 'Collection and use of knowledge' might prompt CMAs to use the Land and Soil Capability System developed by DNR²⁵. This provides a method for assessing hazards at the regional and local levels. CMAs may then choose to offer incentives for activities that deal with the greatest hazards. The required outcome in relation to 'Determination of scale' means that CMAs will consider the nature and scale of expected public and private benefits that might result from management actions that improve soil condition. The required outcome for 'Community engagement' means that CMAs will employ appropriate strategies to improve community awareness of the implications of certain land management techniques, and build the capacity for participation in projects that will improve soil condition.

²⁴ DEC (2003) *New South Wales State of the Environment Report 2003*, Department of Environment and Conservation, Sydney.

²⁵ The Land and Soil Capability System should be further developed in consultation with stakeholders outside DIPNR.

3.2.4 Community targets

The state-wide targets for community are shown in Table 3.6.

The socio-economic target recognises the fundamental inter-relationships between natural resource, economic and social outcomes and explicitly identifies an important natural resource policy direction of the NSW Government. The community's capacity to achieve natural resource outcomes is directly affected by economic sustainability and social-well being, which in turn are fundamentally dependent on the underlying condition of natural resource assets.

Table 3.6: State-wide targets for community

Community targets	
Macro-environmental	12. Natural resource decisions contribute to improving or maintaining economic sustainability and social well-being
Specific priority	13. There is an increase in the capacity of natural resource managers to contribute to regionally relevant natural resource management

Both targets are consistent with the application of the state-wide standard. The standard requires natural resource managers to inform their decisions with best available information on social and economic issues and drives them to consider opportunities for multiple benefits (and transparent trade-offs when these are needed). In particular, requiring natural resource managers to focus on scale, and especially the relevant community scale for delivery of investment, can highlight opportunities to simultaneously achieve environmental, economic, social and cultural benefits.

The intent of the target is not to measure the success of NRM against overall health and wellbeing of communities since so many other factors influence these outcomes. However, it will ensure that NRM makes a positive contribution to these outcomes.

The intent of the community capacity target is to develop the capacity of state and regional communities to achieve the biodiversity, water and land resource condition targets and to efficiently achieve NRM goals in the future. There is already a strong understanding amongst industries and rural communities about the value of good natural resource management for long-term viability. Capacity building is required because of the complexities of landscape processes and land management systems, uncertainty about ways forward, continuing developments in scientific understanding and knowledge, high levels of turnover in land managers and other natural resource managers, and the need to improve institutional and governance arrangements to support adaptive management.

The specific priority target includes building the capacity of individuals, social networks, industry and institutions. It should be recognised that individuals will be more inclined to contribute to natural resource rehabilitation and protection if they also obtain direct benefits. Other benefits of community capacity building in NRM include more stability in relationships amongst stakeholders, improved decision-making and increased numbers of people addressing NRM issues.

There are no timeframes specified in either of the community targets as they are both immediate and ongoing priorities.

The condition of natural resources depends on people and their interaction with the landscape.²⁶ State-wide targets for community are important for achieving NRM outcomes. CMAs and other stakeholders support this approach, despite the fact that communities are not biophysical assets and this theme does not appear in other state or national classifications. CMAs recognise the importance of communities in achieving natural resource outcomes, as demonstrated in the Catchment Blueprints.

The standard will help CMAs to promote the community targets. For example using the best available information including biophysical, economic and social/cultural information will help decision makers balance outcomes across these aspects. The required outcome for 'Opportunities for collaboration' should help them to investigate opportunities for collaborative action, such as the formation of partnerships that may contribute to achieving the community capacity target. By applying the standard, CMAs should be able to effectively integrate regional priorities with the state priorities expressed in the targets.

Recommendation

That the NSW Government adopt the state-wide aspirational goal, resource condition and community targets listed in Tables A2.1 and A2.2.

²⁶ NLWRA (2004) *Social and economic information for NRM: an initial discussion paper*, National Land and Water Resources Audit, Canberra.

4 NRC's audit process

The NRC has developed a process for auditing CMAs' compliance with the standard and promotion of targets that will drive learning and embed adaptive management of natural resources in NSW. This audit process will help to identify the linkages and information flows that will bring accountability and coherence to the NRM system as a whole. These linkages and flows include:

- the science used to identify the best course of action in the short- and medium-terms that leads to the outcomes defined in longer term targets or other instruments
- the flow of priorities from international agreements, national and state legislation, policies and plans into CAPs, alongside regional priorities
- the social and economic assessment of potential impacts of proposals and the capacity of communities to implement them.

The audit process will ensure these flows and linkages are transparent, and that the standard is applied so that CMAs and others adaptively manage towards state-wide and regional targets or other expressed priorities.

The NRC's auditing function is limited to CMAs and the effective implementation of their CAPs. However, any organisation or natural resource manager that applies the standard will benefit from self assessment or independent audits to ensure that they are using the standard effectively and to identify and use lessons learned.

This chapter describes the draft audit process (section 4.1), and discusses the potential for using the NRC's audit process to satisfy other auditing and reporting requirements that are imposed on CMAs or are related to natural resource condition (section 4.2).

4.1 Audit process

The NRC's audit process will span the 10-year life of CAPs. It reflects the relationship between the standard and targets, and recognises that state-wide and regional resource condition and community targets will be achieved over long timeframes. For this reason, early audits will focus on compliance with the standard and the likelihood that proposed catchment targets will be achieved and will contribute to achieving the state-wide targets. Where relevant these audits will also review the outputs from CMA's past investments. Compliance with the standard provides the best early indicator of likely long-term success of the CAPs.

Later audits will be extended to focus on achievement of medium-term catchment targets and their links to the longer term catchment and state-wide targets. The establishment of state-wide M and E of resource condition will ultimately enable the assessment of progress toward long-term targets. This M and E, discussed in detail in chapter 5, is critical for understanding the status of natural assets and the need for investment in NRM, and to improve scientific understanding and inform policy priorities.

The NRC's audit process is summarised in Figure 4.1 and mapped in greater detail in Attachment 3. It includes audits for all CMAs at three milestones within the life of the CAPs, and additional audits for CMAs where there are identified risks.

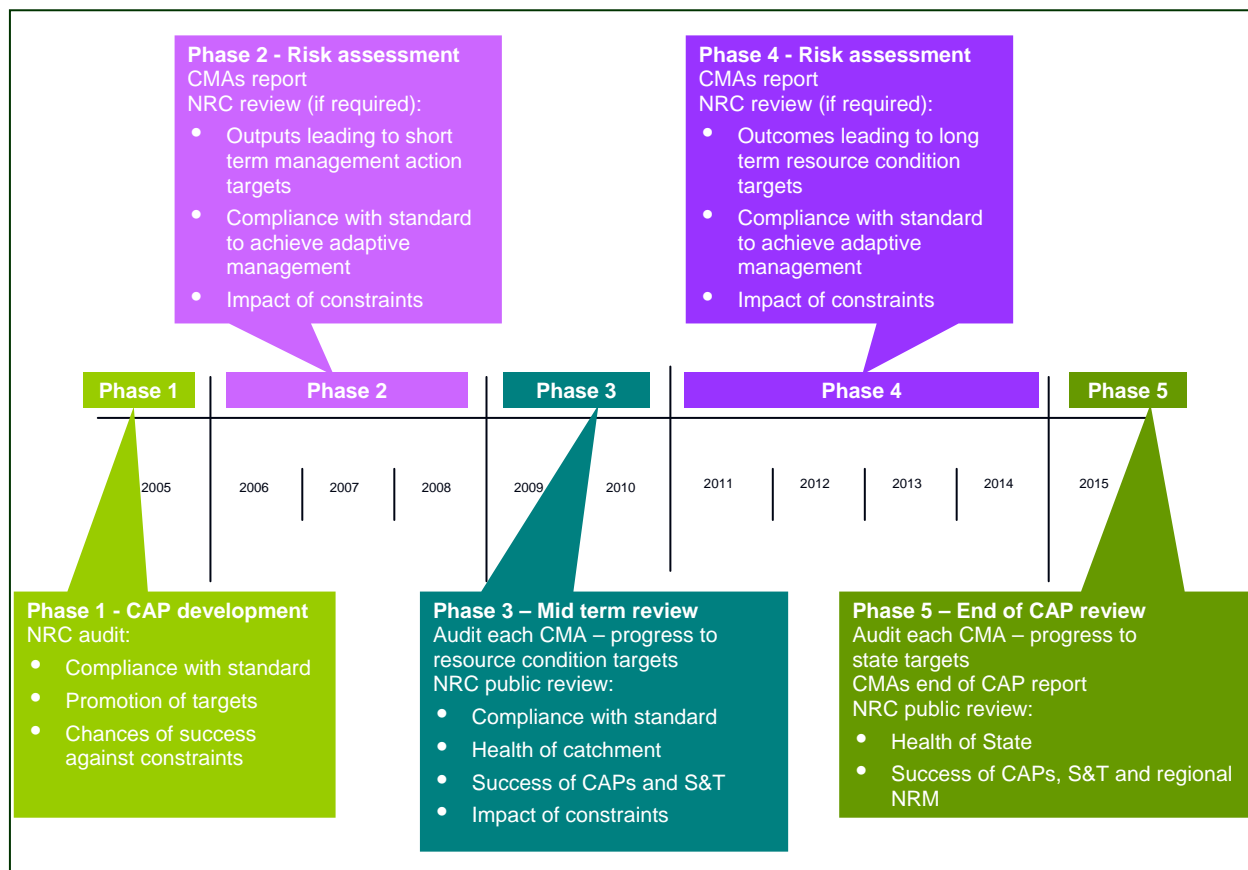


Figure 4.1: Summary of draft audit process

4.1.1 Three milestones for all CMAs

The first milestone audits will occur prior to the CMAs finalising their CAPs in October to November 2005. The focus of these early audits will be on building CMA's capacity to comply with the standard, and putting in place the foundations to build the linkages and information flows necessary to achieve integrated outcomes in the long-term. This will help to ensure that early in the life of CAPs, CMAs are 'doing business' in a way that is consistent with the standard, and that they can build on over time as information is gathered and state-wide and other priorities become better defined.

The second and third milestone audits will occur prior to the mid-term review of CAPs, and just prior to the end of CAPs' 10-year term. At these milestones, each CMA's progress in implementing its CAP consistent with the standard and achieving its targets can be assessed. Initially, the assessment of progress towards meeting targets will focus on short- and medium-term management action targets and the scientific links between these targets and the achievement of longer term resource condition targets.

For example, a CMA may adopt a management action target to revegetate a specified length of riparian corridor by the mid-term of its CAP. If it applied the standard properly, it would have developed this target on the basis that science indicates this action will contribute to the achievement of longer term catchment and state-wide targets for biodiversity and water quality. An audit at the mid-point of the CAP would focus on whether the target had been achieved, and the credibility of the scientific links to resource condition targets given results of M and E and any new research or information. In addition, factors such as the rate of uptake of

incentives for this work or levels of voluntary participation would be used to assess community capacity and the effectiveness of CMA programs to increase this capacity, which are critical to achieving the outcome. This information would also feed into the mid-term review of the CAP.

Towards the end of the first 10-year CAP cycle and beyond, M and E against resource condition targets can be increasingly used to assess the CMAs' progress. Resource condition outcomes will be detectable over different time periods. For example, improvements in vegetation condition could be expected for relatively responsive vegetation types within 10 years. Changes in salinity will be harder to detect and to separate from variation related to climate. Despite the need to commit resources over the long-term and the uncertainty about timeframes, M and E of resource condition outcomes is essential for understanding the status of natural resource assets and the need for further investment, and to improve capacity for NRM. It is also important to establish the scientific credibility of the regional model and NRM generally.

4.1.2 Additional audits based on identified risks

Additional NRC audits will occur between the three milestones (start, mid-point and end of CAP) for CMAs where there are identified risks. For example, CMAs that are less developed organisationally can expect more frequent audits than those that successfully demonstrate compliance with the standard and achievements against targets. This acts as an incentive for improved performance and an opportunity for the NRC, the CMAs and others to focus attention on resolving any difficulties. Well performing CMAs may also initiate their own internal audits as a good business practice.

Equally, CMAs hampered by significant external constraints, whether institutional, social or economic, may also benefit from more frequent audits. For example, Sydney Metro and Hawkesbury Nepean CMAs face considerable institutional and economic constraints to achieving successful implementation of their CAPs. This is because other institutions – including water authorities and local government – have significantly more control over natural resources in these catchments, and much greater capacity for investment than the CMAs. Uncertainty about the evolution of institutional arrangements in these catchments may mean that it is appropriate to trigger more frequent audits and reviews of CAPs to maximise the potential for cooperative and coordinated effort.

These additional audits are intended to be constructive rather than punitive. They will provide opportunities for identifying what is and isn't working, and for applying and sharing the lessons learned. Therefore, a high audit frequency should not be interpreted as an indicator of poor performance.

4.2 Potential to meet multiple reporting requirements with single audit

Joint funding of NRM by the Australian and NSW Governments means there are multiple reporting and auditing requirements imposed on CMAs. There are also potential overlaps with other requirements, such as State of the Environment (SoE) reporting and the National Land and Water Resources Audit. The NRC is consulting closely with the Australian Government agencies and seeking to coordinate with NSW agencies to ensure that all audit and reporting processes are streamlined and can satisfy the requirements of all stakeholders.

Under the bilateral agreements between the Australian and NSW Governments for the National Action Plan for Salinity and Water Quality and for the Natural Heritage Trust, CMAs are

required to monitor, evaluate and report on funded management actions that contribute to management and catchment targets. This information will also inform NRC audits of the implementation and effectiveness of CAPs.

In addition, CAPs must meet specific criteria for national accreditation under these agreements. These criteria are consistent with the NRC's state-wide standard. They include (among other things) that CAPs be underpinned by scientific analysis, have effective involvement of all key stakeholders in plan development and implementation, and demonstrate consistency with other planning processes and legislative requirements applicable to the region. The NRC's recommended standard comprehensively addresses all these criteria. If CMAs apply the standard from the start of CAP development, they should automatically satisfy the national accreditation process. The NRC will continue its efforts to ensure its processes are coordinated with the national accreditation process to avoid duplicated effort.

At the mid-term and end of the life of the CAP, the NRC believes that the aggregated achievements in catchments on a state-wide basis should be assessed, using the collated audit assessments of each CMA as well as state-wide monitoring of state-wide targets and indicators.²⁷ Such an assessment would provide consistent and credible information for a 'NSW State of the Environment' report. For example, the biodiversity, water and land resource condition targets correspond with three of the key themes that are used in SoE reporting. Similarly, local government is required to regularly produce SoE reports. There is potential to use resource condition information collected at the catchment level to inform these local government reports. Currently, a NSW SoE report must be produced every three years and relies on collating best-available information from a wide range of sources with varying frequency and reliability. Ideally, the timing and frequency of the state-wide assessment would be aligned with SoE reporting. This is further discussed in 5.2.3.

In addition, the National Land and Water Resources Audit (NLWRA) collates primary national NRM data and information, and reports on trends in natural resource condition. M and E consistent with the NRC's recommendations outlined in chapter 5 will satisfy the quality and consistency requirements promoted by the NLWRA and ensure that a comprehensive set of NSW data can be used to inform nation-wide assessment of resource condition. Previously, NSW has not been able to provide state-wide coverage for key datasets that other states have provided, which limits the overall national assessment.

The NRC is consulting with the relevant state and national agencies to identify common needs and assist in the development of a streamlined approach to reporting and auditing. Success of this approach requires strong government commitment.

Recommendation

That the NSW Government endorse a coordinated and streamlined approach to natural resource reporting that meets the needs of the Australian and NSW Governments.

²⁷ The NRC would not necessarily do this assessment. For example, it could be part of the State of the Environment reporting process.

5 Monitoring and evaluation to support state-wide targets

The Government asked the NRC to identify the M and E required to support the state-wide targets, and to recommend arrangements for delivering these programs within the relevant state government agencies' existing resources. It asked the NRC to:

- assess the extent to which existing programs meet the identified requirements
- identify whether existing programs could be modified or rationalised to better align M and E programs with supporting the targets
- recommend a process for any necessary transition arrangements. (See Attachment 4 for the terms of reference.)

The NRC sought detailed information on existing M and E programs from the agencies, and obtained technical advice from many of their specialist staff. It also held workshops with agency staff to develop the institutional arrangements needed to support state-wide M and E and to identify the highest M and E development priorities.

Overall, the NRC found that only a few of the existing M and E programs have state-wide coverage as they have generally not been designed to provide state-wide information on resource condition. This is partly because monitoring has historically been driven by regional projects and monitoring the effectiveness of specific investments rather than by state-wide priority setting.

Some of these datasets have the potential to be expanded and developed to support assessing progress towards the state-wide targets. A wide range of other useful information is available but is only relevant to some regions or is collected for very specific projects or programs. (See Attachment 5 for more detail.)

The NRC believes that its recommendations will make the best use of these existing programs and information yet drive further development to provide a better integrated and more useful state-wide M and E system. It believes the agencies have the capacity to implement the arrangements within existing resources. However, more importantly, it requires willingness to commit to state-wide M and E as a core agency function recognising that this is critical to successful NRM in NSW. The key elements of the NRC's recommended arrangements are:

- establishing frameworks for using state-wide datasets and other available information to assess progress towards the targets, and to drive the further development of a more comprehensive set of state-wide indicators and indexes
- adopting a small set of state-wide datasets for which baselines and ongoing monitoring arrangements can be established
- identifying and implementing standards and protocols to improve the capacity for linking and adding to existing and future datasets from a range of sources
- allocating clear responsibilities to specific state agencies to lead the establishment, development and maintenance of state-wide M and E programs for each state-wide target.

The NRC recommends a phased approach to implementation because of existing resource constraints on agencies. The agencies' task is also complex because it requires linking of activities and monitoring of CMAs at the regional level and other natural resource managers such as local government to measures of progress towards state-wide targets.

These factors mean that accountability for implementing the government's decisions on state-wide M and E is critical to ensuring the ongoing usefulness of M and E in the short-, medium- and long-term. This is likely to require independent review of the agencies' activities at key milestones to ensure the government's adopted arrangements are implemented, M and E programs are scientifically sound and appropriate governance arrangements are in place. This will also drive the continued development of a better integrated, cost-effective and more comprehensive system that meets multiple needs of the government and other stakeholders.

The rest of this chapter discusses the NRC's recommended arrangements in more detail:

- Section 5.1 describes the purpose of the proposed state-wide M and E program
- Section 5.2 discusses the key components of the recommended M and E arrangements
- Section 5.3 discusses the reallocation of resources needed to implement the recommended arrangements within existing agency resources.

5.1 Purpose of state-wide monitoring and evaluation

The state-wide targets describe the state's goals to maintain and improve the fundamentals of a healthy landscape, as well as some specific state priorities that contribute to the achievement of these goals. The core purpose of state-wide M and E to assess progress against these targets is to identify the status of and trends in the condition of the state's natural resource assets – land, water, biodiversity and community – which are fundamental to its ongoing environmental, economic and social/cultural health. This is important for:

- informing the macro policy settings for NRM
- assessing the overall effectiveness of investment and effort in NRM
- informing decisions on future levels of government investment in NRM
- informing scientific understanding of macro changes in the landscape.

In contrast, monitoring and evaluating particular investments or projects is useful for assessing the effectiveness and success of particular NRM approaches, or the efficiency of government investment in those projects.

State-wide M and E is analogous to monitoring macro-economic indicators (such as Gross Domestic Product or Consumer Price Index) to assess the health of the economy and using the information gained to inform the use of policy 'levers' that can influence a change in the desired direction. Similarly, it can be compared to assessing the health of a population by monitoring basic parameters (such as average life expectancy and the incidence of certain types of health problems) to inform assessments of the effectiveness of health care and decisions for planning the provision of health services.

These high-level indicators and assessments are appropriately relied on to guide decision-makers at state and national levels. However, they rarely provide a comprehensive understanding of the intricacies of cause and effect in complex systems. Nor do they focus on measuring the effectiveness of specific government investments. Interpreting them is usually supported by drawing on a wide range of other information at a range of scales and from different sources to try and understand the drivers behind the trends and the key issues to be addressed at different scales. In NRM, a state-wide M and E program to assess progress against the state-wide targets can serve a similar function using high-level indicators which lead to

more detailed analysis and monitoring of other parameters as they are relevant at different scales (for example, in CMA regions).

It is important to note that in focusing its recommendations on the state-wide M and E required to assess progress towards the state-wide targets (which is primarily the responsibility of state government agencies), the NRC has not attempted to prescribe the M and E programs that CMAs and agencies might establish to monitor the implementation of CAPs or to assess the effectiveness of specific investments. However, this type of monitoring, and monitoring by other natural resource managers such as local government, can contribute to a state-wide picture of the condition of landscapes, and help in interpreting the underlying causes of trends in this condition.

It is important that the responsibilities of agencies and CMAs to fund and design these programs be resolved and that the links between these activities and state-wide M and E be clearly established. The NRC has found that both agencies and CMAs are confused about these issues. Our view is that CMAs have the capacity to report on the implementation of CAPs and outputs of their activities. However, they generally don't have sufficient resources and technical expertise to monitor resource condition across their region. This M and E is important for informing their planning and prioritisation processes and for assessing overall effectiveness of their activities. The state-wide program may provide sufficient information at a regional level for some issues (for example, vegetation extent) but may not have sufficient resolution in all cases. In these instances, supplementation of state-wide indicators to get adequate resolution at the regional level may be a priority for the region or regionally relevant programs may need to be established.

In addition, the government should consider the role of State of Environment reporting by local government. There is potential for natural resource reporting by CMAs and local government to be consolidated at the regional level to maximise the benefits from available resources.

The role of CMA and agency M and E activities required to assess the implementation and effectiveness of CAPs at a regional scale is discussed in more detail in Box 5.1.

Recommendations

Resolve uncertainty about agencies' and CMAs' roles and funding of regional level monitoring and evaluation programs and link these programs to the state-wide program where relevant.

Review local government's State of Environment reporting function and explore opportunities for consolidated regional natural resource reporting.

Box 5.1 Monitoring and evaluation of implementation and effectiveness of CAPs

The state-wide M and E program to assess progress against state-wide targets is not intended to replace the M and E activities undertaken by CMAs and agencies, which are required to assess the implementation and effectiveness of CAPs. These activities are important for informing continuous improvement of CMA activities, providing accountability, and helping to assess the effectiveness of investment in specific activities. They will involve different types of information to the state-wide M and E programs, although there is likely to be some overlap.

The NRC's review of draft CAPs will involve an assessment of CMAs' application of the standard to develop the CAP and the targets and other priorities it contains. This will require evidence of information sources, links made between actions and expected outcomes, decision processes, community engagement, proposed M and E programs, and so on.

Subsequent audits will increasingly involve an assessment of progress against the targets included in the CAPs, as these plans are implemented. In the early phases, the focus will be on the achievement of short-term management targets and their links to delivering longer term outcomes. Catchment targets will be assessed over longer timeframes to determine whether actions are leading to the desired resource condition outcomes.

DNR is leading an M and E project aimed at helping CMAs to integrate an M and E program into their CAPs, which should support these different assessments over time. The purpose is not to get consistency in the data or indicators collected across all CMAs, but rather to achieve a consistent, high-quality, logical approach to M and E, and to ensure that the program established meets the needs of CMAs by answering the following evaluation questions:

- What is the progress against the desired outcome/target?
- What caused the change/did CMA investment lead to the change (causality)?
- How can we improve our approach as a result of what we've learned (adaptive management)?

It is anticipated that in some cases, the M and E required to answer these questions can also contribute to the assessment of overall resource condition at the state level. For example, CMAs and agencies may decide to monitor the same parameters of resource condition at a regional level that are monitored at the state level, or the information they or agencies collect may help interpret outcomes observed at the state level.

But CMAs and agencies are unlikely to monitor all the indicators at a regional scale that are monitored state-wide. Just as they should apply the standard to develop suitable regional targets that are informed by the state-wide targets but not necessarily the same as these targets, they should develop M and E programs that are appropriate to their catchment taking into account the state-wide M and E programs. Integration and 'scaleability' of M and E is desirable where possible, but forcing this in all cases may result in inefficient investment in M and E at the catchment scale.

5.2 Recommended arrangements for evaluating progress towards state-wide targets

The NRC has undertaken a pragmatic assessment of existing programs and available resources and how these can best be used to start assessing progress against the state-wide targets (see Appendix 5). Its findings indicate that current M and E programs are deficient for this purpose. However, the NRC also recognises that it is not feasible to put a comprehensive, fit-for-purpose program in place immediately. Therefore, its recommended approach is based on making the best use of available information as a starting point, then progressively developing and improving on this basis over the next 10 years to ensure that by the end of the first CAP cycle, a robust and meaningful state-wide M and E program is well established.

The key elements of the NRC's recommended arrangements are:

- Establishing frameworks for using state-wide datasets and other available information to assess progress towards the targets, and to drive the further development of a more comprehensive set of state-wide indicators and indexes.
- Identifying a small set of state-wide datasets for which baselines and ongoing monitoring arrangements can be established and which capture key macro-environmental parameters that are relevant state-wide and important inputs for a range of state-wide assessments
- Identifying and implementing standards and protocols to improve the capacity for linking and adding to existing and future datasets from a range of sources.
- Allocating clear responsibilities to state agencies to lead the establishment, development and maintenance of state-wide M and E programs that allow the assessment of progress against state-wide targets and are fit-for-purpose.
- Establishing a mechanism for regular, independent reviews of state-wide M and E to assess:
 - progress in implementing the arrangements
 - quality assurance and governance arrangements
 - whether the emerging M and E programs are fit-for-purpose.

Each of these elements is discussed in more detail below.

5.2.1 Establishing frameworks for using state-wide datasets and other information to assess progress towards targets

State-wide datasets can provide information on a few macro-environmental parameters. There is potential to enrich assessments of progress towards each target by using these alongside other available information that may be region or issue specific. The challenge is to draw all of this information together in a meaningful way from a range of sources and with variable spatial extent and resolution. It is also important to identify data gaps and develop proposals to address them, and to identify the needs for additional state-wide datasets.

The NRC has identified several steps that will provide a sound foundation for using state-wide datasets and other information in the assessment of progress towards state-wide targets, and for progressing the development of indicators and indexes. These steps are to:

- develop conceptual frameworks that show the cause and effect linkages between landscape processes, actions and outcomes that contribute to achieving the state-wide targets.
- develop a fit-for-purpose M and E program for each target, taking into account existing data collections and prioritising the development of programs to address gaps.
- adopt and promote standards and protocols to improve the quality and consistency of information from a variety of sources, so it can be better integrated into state-wide assessments.
- establish quality assurance and governance arrangements.

Develop conceptual frameworks

Conceptual frameworks should be developed to describe the links between causes and effects that are relevant to achieving the targets. These frameworks will help in assessing whether actions and investments at different scales are contributing to the desired outcome, based on a scientific understanding of the underpinning landscape processes. By establishing relationships between investments, outputs and outcomes at different scales, this will then allow information generated at these scales to be appropriately considered, and sometimes aggregated, as part of a state-wide assessment of progress towards targets. For example, it may allow information reported by CMAs on their investments and outputs to be linked to an overall state-wide assessment of progress. It will also help to identify key datasets that are important to maintain state-wide and other data collection that is appropriately and efficiently focused on specific issues or regions.

Developing these frameworks as an initial step also acts as a filter for assessing the usefulness of available information and its potential contribution to a state-wide assessment. It will help to avoid indiscriminate gathering of large volumes of information without understanding how this information may be useful for supporting an assessment of state-wide trends. In addition, it will help to identify information gaps and be an input to prioritising the highest development needs. Further, it provides a basis for evaluating effectiveness and adaptively managing in response to lessons learned.

In some cases it may be appropriate to use the same conceptual framework for a group of targets. For example, the interrelationships of the biodiversity targets may be best captured in one framework for biodiversity.

Develop a fit-for-purpose M and E program

An M and E program should be designed for each state-wide target. The program needs to show how state-wide datasets and any other information, collected from a variety of sources and at a range of scales, will be used to inform evaluation of progress towards the state-wide target. It also needs to identify information gaps and prioritise and develop programs to address these gaps. This may include the identification of additional state-wide datasets or targeted data collection. The program needs to be underpinned by sound understanding of the relationships between the different pieces of information. It also needs to recognise overlapping requirements for multiple targets and determine how the needs for each target can be met most efficiently.

The program design will need to give consideration to:

- spatial and temporal scales of existing information and future programs

- sampling designs and frequency of measurements
- the inferences that can be drawn from the gathered information
- the knowledge that can be captured to inform assessments of progress towards the state-wide targets, and
- the transitional steps needed to improve the M and E activity over time (some proposed steps are outlined in Attachment 6).

Developing a program is critical for maximising the use of information from other sources and for assessing how data collected by CMAs, Local Government and other natural resource managers can contribute to state-wide assessments. It also has potential to assist these stakeholders with the design of their own programs.

Adopt standards and protocols

Standards and protocols for M and E activities should be promoted and adopted widely, to help to ensure that the information collected from a wide variety of sources is of sufficient quality and compatibility to augment other datasets. Many standards and protocols already exist at national and state scales. However, adherence to them is patchy, both within agencies and across the broader group of contributors to the M and E of natural resources. (For example, a wide variety of methods and classifications are used to assess vegetation condition across the state, which makes it difficult to draw the information together into aggregated assessments.) DNR has specifically identified this as an issue to be addressed as part of the development and implementation of a Knowledge Strategy for the organisation. Other agencies are likely to face similar challenges.

While the adoption of standards and protocols by state agencies is an important first step, consistency with other data collectors is also critical for building useful state-wide datasets and increasing efficiency. Consultation and negotiation with data collectors and users outside agencies will be required, to promote adoption of recognised (preferably at national and international levels) standards and protocols. Considerable development work in relation to these has been completed for the National Land and Water Resources Audit. Ideally, NSW should implement initiatives that are consistent with this work and have been adapted to the specific circumstances in the state as necessary.

Establish quality assurance and governance arrangements

Appropriate quality assurance and governance arrangements should be established, to ensure that the state-wide M and E programs are high quality, long-term and cost effective and meet identified needs. These arrangements should include clear accountabilities for maintaining and improving datasets and information within agencies. These arrangements may not be limited to M and E activity related to state-wide targets but to all of an agency's M and E activities which should enhance the potential for using information for multiple purposes where this is possible. This is likely to require some centralised control of the M and E programs within each agency, to avoid initiatives that result in uncoordinated or fractured programs across regions.

Recommendation

Establish a framework to use information from a range of sources and scales and to prioritise further development of monitoring and evaluation activities that will enrich the evaluation of progress towards each target. This will include:

- *developing conceptual models*
- *designing monitoring and evaluation programs*
- *adopting standards and protocols, and*
- *establishing governance arrangements within agencies.*

5.2.2 Establishing a small set of state-wide datasets

The NRC recommends that a small set of datasets with state-wide coverage and good resolution be established and maintained. These will inform state-wide understanding of 'macro' changes in the landscape. They will also provide a platform for the development of more sophisticated indicators and indexes that also use other information that is not necessarily collected state-wide.

Not all parameters used in the assessment of progress towards the state-wide targets are necessary, practical or cost-effective to monitor state-wide. Modelling or other techniques can allow use of patchy or regionally specific information in broader assessments. However, it is important that some key parameters are monitored state-wide. This will ensure a minimum amount of consistent information is available for the whole state, help to establish robust state-wide indicators and indexes and improve the quality of outputs from modelling or other techniques.

In the immediate term and because of resource constraints, the NRC proposes only four state-wide datasets – native vegetation extent, the Sustainable Rivers Audit, wetland extent, and the extent of mangroves, saltmarsh, seagrass and macrophytes. These have been selected because they are part of past or existing M and E programs. Even so, the existing datasets need to be further developed in coming years to achieve complete state-wide coverage with good resolution. The information currently available is only useful for starting to establish baselines.

Over the next 10 years, these datasets should be progressively developed and expanded and additional datasets established. By 2010, they should include more of the key macro-environmental parameters that can appropriately and meaningfully be measured state-wide. The NRC believes most should be established by 2010 and some earlier.

These proposals are summarised in Table 5.1. More information about the datasets and other information that might be used to measure progress towards each target is included in Attachment 6.

Table 5.1: Proposed establishment and expansion of state-wide datasets

	Existing state-wide datasets	Other state-wide datasets that should be established	Indexes datasets contribute to
Biodiversity	Native woody vegetation extent	Native vegetation extent, type and condition Distribution, abundance and impact of existing and emerging invasive species	Biodiversity index
Water	Groundwater extractions ¹ Sustainable yields from groundwater aquifers ¹ Wetland extent ² Extent of mangroves, saltmarsh, seagrasses and macrophytes ³	Sustainable Rivers Audit (state-wide) Ratio of groundwater extractions to sustainable yield	Riverine condition index Groundwater index Wetland condition index Estuary condition index Near-shore marine condition index
Land		Ground cover Soil carbon content Land and soil capability layer ⁴ Land-use and management survey	Land and soil capability assessment incorporating soil condition index
Community		Community capacity survey	Community capacity index

1. This data is available for some of the state's aquifers but not all. Work is underway to expand coverage and improve quality.
2. This data-set is a subset of the native vegetation data-set
3. Measured by the Comprehensive Coastal Assessment in 2005/06
4. Derived from existing datasets

The NRC has not proposed a separate state-wide data-set for each state-wide target. Rather, it has proposed a series of key parameters that are relevant and feasible to measure state-wide, many of which can be used in an assessment of progress towards more than one target. Assessments of progress towards some of the targets will rely more appropriately on targeted or regional data rather than on a state-wide measure. For example, progress towards the targets concerned with the impacts of invasive species and the recovery of threatened species may be best assessed with an understanding of the regional significance and impacts of particular species. Developing indexes that combine the use of both state-wide datasets and regionally relevant or issue specific information will enable all available information to be used in a state-wide assessment.

Recommendation

That the NSW Government adopt the proposed set of state-wide datasets and commit to their ongoing development.

5.2.3 Allocating clear responsibilities to state government agencies

The successful implementation of the NRC’s recommended arrangements requires clear allocation of responsibilities among the relevant state government agencies. The inherent flexibility in the proposed arrangements mean that there is significant scope to further develop the M and E approach to each target and to take advantage of emerging technologies and new methodologies. The scope of the state-wide targets and the expertise required means that the responsibilities are appropriately spread across DNR, DPI, DEC and the Department of Lands.

Lead roles for reporting progress against each target should be allocated recognising that in most cases, multiple agencies (and other groups) will contribute to the M and E programs for each target, but that it is important to have clear responsibilities, particularly for coordinating the work and for reporting. In some cases, other agencies or organisations may be the primary source of data. For example, while the NRC recommends that DPI be the lead agency for reporting progress against the invasive species target, Rural Lands and Protection Boards and local government are likely to contribute much of the information on weeds. Particular agencies may also contribute the bulk of expertise for some part of a particular M and E program though they are not the lead agency. For example, DEC has expertise in terrestrial biodiversity modelling that is likely to be a critical part of assessing progress towards all of the biodiversity targets though it is not the lead agency for all of these. Agencies should collaboratively use the expertise from all relevant agencies and from other sources to help develop frameworks and design M and E programs.

Table 5.2 identifies the agency best placed to lead the M and E of progress towards each of the 12 recommended targets. The Department of Lands has a specific role that is not related to leading the work for any particular target, but is essential for providing the fundamental layers of spatial information and data storage infrastructure for key components of the M and E programs.

Table 5.2: Lead roles and responsibilities for monitoring progress towards state-wide targets

DNR	DPI	DEC	Lands
Lead agency for:	Lead agency for:	Lead agency for:	For each target:
<ul style="list-style-type: none"> ▪ Native vegetation extent and condition ▪ Riverine ecosystems ▪ Groundwater ▪ Land capability ▪ Soil condition ▪ Socio-economic outcomes ▪ Community capacity 	<ul style="list-style-type: none"> ▪ Invasive species ▪ Marine waters 	<ul style="list-style-type: none"> ▪ Native fauna ▪ Threatened species ▪ Wetlands ▪ Estuaries and coastal lakes 	<ul style="list-style-type: none"> ▪ Provision of the fundamental layers of spatial information ▪ Standards and protocols for data storage and management

Responsibilities for leading the M and E of progress towards a particular target include:

- coordinating collaboration between agencies and other sources of expertise to develop conceptual models and an M and E program for the target
- ensuring that the M and E program for the target is well coordinated with related M and E activities for other targets or other purposes
- driving further development of state-wide datasets and more comprehensive supporting information from a range of sources
- adopting and promoting standards and protocols for M and E related to the target
- evaluating and reporting progress towards the target at key milestones.

In addition, a consolidated report of progress towards all state-wide targets should be produced. The frequency of reporting should be sensibly aligned with the mid-point and end-point of CAP cycles (every 5 years). The NRC recommends that this function be consolidated with existing obligations for State of the Environment reporting. This will avoid duplication, enhance the comprehensiveness of State of the Environment reporting, and leverage the existing allocation of resources for this function.

Ultimately the arrangements may work more effectively and efficiently if one agency or body has overall oversight of these and other related M and E activities. This should be considered following the outcomes of any independent review of progress in implementing the arrangements (see section 5.2.4).

Recommendations

That DNR, DEC and DPI be allocated lead roles for the development and maintenance of monitoring and evaluation programs to support each state-wide target consistent with the described arrangements.

That Department of Lands have clear responsibility for the provision of the fundamental layers of spatial information and for developing standards and protocols for data storage and management.

That a mechanism for consolidated state-wide reporting against all targets be established and ideally combined with State of the Environment reporting.

5.2.4 Establishing regular, independent reviews of state-wide M and E

The NRC believes that its recommended approach for establishing M and E programs to assess progress towards the state-wide targets is pragmatic and feasible, given the resource constraints. However, it also recognises that there are risks associated with this approach that need to be managed. For example, monitoring the condition of natural resource assets requires a long-term commitment, because of the nature and rate of change in this condition. The recommended approach, which involves developing and phasing in M and E programs over a 10-year period, creates a risk that there will be a loss of focus and commitment to completing the task and maintaining programs over time. The spread of responsibilities across agencies also means there is a risk that the overall reporting systems lack integration, that agencies do not work collaboratively or fail to meet consistent quality standards.

To manage these risks, the NRC recommends that a regular independent review or audit mechanism be established to:

- maintain accountability for progress towards an efficient, effective and appropriate program of M and E to assess progress towards the state-wide targets
- provide an opportunity for independent review of quality assurance and governance arrangements and identification of opportunities for improvement
- ensure the overall M and E program is sufficiently integrated
- evaluate proposed changes in M and E programs to determine whether they are fit-for-purpose, cost-effective and continue to support the state-wide targets.

The NRC proposes that an initial review be undertaken 12 months after any recommendations are adopted by government, then every two years after that. This would balance the need to drive momentum in the short-term (the next 12 months) with the need to allow sufficient time between subsequent reviews for real progress to be made.

Recommendation

That an independent review mechanism be established to review progress of implementation of monitoring and evaluation arrangements and to provide quality assurance.

5.3 Resources for ongoing development of state-wide monitoring and evaluation

The NRC estimates that the amount of existing resources allocated by state agencies to M and E programs that are relevant to the state-wide targets is \$11.3 million per annum. It believes this amount needs to be increased incrementally from 2005 to about \$14.4 million²⁸ per annum by 2010 so that an M and E program that is closely aligned with the targets can be developed and maintained. These estimates are based on a range of information provided by agencies however the quality and consistency of this information was highly variable. Despite this the NRC believes this is feasible within existing agency budgets. From 2010, the amount would then only need to increase marginally to 2015 to provide for the full development of a more comprehensive program. More detail on these estimates is included in Attachment 7.

The NRC was asked to identify opportunities for rationalising existing M and E programs in order to reallocate resources to the programs needed to assess progress against state-wide targets. To enable it to do so, the NRC asked agencies to provide information about all M and E programs relevant to the natural resource assets of biodiversity, land, water and community capacity, and to identify the purpose of each program and its contribution to meeting statutory obligations. The agencies' own estimates of resources allocated to these are summarised in Table 5.3.

²⁸ In 2005 dollars (an extra \$3.1 million per annum).

Table 5.3: Agency estimates of resources currently allocated to NRM M and E

	DNR	DPI	DEC
Internal (\$m)	\$19.5	\$1.9	\$0.1
External (\$m)	-	\$0.8	\$0.2
Total (\$m)	\$19.5	\$2.7	\$0.3

Note: Estimates for DNR and DPI incorporate conversion of number of full-time equivalents to monetary terms by multiplying by \$100,000.

Some agencies did not provide information about all of their M and E activities, but selectively included information about those that might be considered state-wide programs relevant to the state-wide targets, or those for which estimates of resource allocations could be readily identified. This is reflected in DEC's estimates since it has nominated few state-wide programs for these natural resource assets. In addition, it was difficult for the agencies to provide information on the full range of project-specific or regionally-based M and E programs. As a result, the NRC was unable to perform detailed analysis of the resources allocated to all of these programs and the potential for reallocation.

Despite this, the NRC believes that the resources required to implement its recommended arrangements for a state-wide M and E program can and should be found within existing budgets. Possibly more important than the relatively modest reallocation of resources is that agencies identify this M and E activity as a core function. This needs to be reflected in their institutional structures and in developing governance arrangements that will support the delivery of high quality and cost-effective programs. The NRC considers that this core responsibility has not previously been given sufficient priority over other activities.

The absence of state-wide information constrains other agency functions, such as policy development. It is also likely to limit the capacity of other natural resource managers, particularly CMAs, to identify priorities and to make sound investment decisions. The NRC also notes that the lack of state-wide M and E for natural resources is atypical when compared to nearly all other sectors – for example health, education and transport – especially considering the critical nature of natural resource assets and the levels of government investment. While the monitoring of change in natural systems is often complex, it appears that even basic monitoring programs are currently poorly resourced or managed.

The NRC recognises that the three key agencies engaged in NRM activities are each emerging from an intensive period of legislative reforms and planning activities as a result of structural change. These reforms and activities include:

- developing regulations to enable the commencement of the Native Vegetation Act 2003 including intensive development of the Property Vegetation Plan Developer
- developing regulations and systems to support the implementation of a new approach to the management of threatened species in NSW
- providing systems support and managing staff transitions to newly established CMAs
- internal management of the amalgamation and restructuring of agencies while achieving cost savings
- developing and implementing planning reforms that require significant input from natural resource management staff including the development of regional environment plans, and

- developing a whole of government natural resources policy.

The NRC believes that some of the resources that have been devoted to these activities can now shift to ensuring efficient delivery of basic functions and services, including providing a state-wide M and E program that allows an assessment of the condition of the state's natural resource assets. These assets are fundamental to the state's economic, environmental, economic and social/cultural health. Properly informed policy and sound government investment in natural resources rely on access to this information. Not allocating resources to this activity represents a short-sighted approach to NRM which is inconsistent with the state's long-term dependence on its natural resources.

6 Other actions required for effective implementation of the standard and targets

The NRC has considered what supporting actions the NSW Government needs to take to ensure the recommended state-wide standard and targets can be effectively implemented. It recommends that the government consider a range of critical actions when adopting a final set of targets including: extending the requirement to apply the standard and promote the targets to a broader group of natural resource managers (not just CMAs); developing a consistent state-wide natural resources policy; and establishing links between the standard and targets and other government planning processes.

This chapter discusses the critical actions required for implementation of the state-wide standard and targets.

6.1 Extend requirement to apply the standard and targets

The recommended standard and targets will be much more powerful and effective if applied by all natural resource managers rather than CMAs alone. This broader application is the best way to achieve effective information management and integrated M and E at all scales. It is also the best way to support CMAs, who will rely heavily on support services provided by state agencies and effective partnerships with regional stakeholders, in particular local government, to achieve the outcomes identified in their CAPs.

The state-wide standard has been developed so that it can be used by any natural resource manager at any scale. State-wide targets are also broadly applicable and contributions to their achievement can occur at all scales. Feedback from state agencies suggests willingness to adopt the state-wide standard and targets, particularly where there is no conflict with existing reporting and governance obligations.

If the standard and targets are not broadly applied, CMAs face significant constraints, particularly in coastal and urban areas where the influence of local government and other authorities on natural resources is greatest. For example, Hawkesbury Nepean CMA estimates that it spends more than 50% of its budget on actions to improve river health.²⁹ This is less than 10% of the annual investment needed to restore environmental flows to the Hawkesbury Nepean system.³⁰ It is an even smaller proportion of the cost of other actions to improve river health, which include upgrades to sewage treatment plants, improved stormwater management or management of on-site sewage. Clearly, the achievement of improved catchment health depends heavily on the collective efforts of a number of organisations including the state government, water authorities and local government.

Ideally, all CMAs will develop CAPs that set out a strategic vision for the whole of the catchment in consultation with stakeholders. A CAP focused only on what can be achieved under direct control of CMAs would have limited scope and reduced potential for making meaningful contributions to state-wide targets. Application of the standard and targets by other organisations will improve the opportunities for cooperative and collaborative action that ultimately achieves the outcomes defined in a CAP that has a broader vision.

²⁹ Kerry Brew, pers. comm., August 2004.

³⁰ Hawkesbury – Nepean River Management Forum (2004) *Water and Sydney's Future – Balancing the values of our rivers and economy*.

Any decision to extend the requirement to apply the standard and promote the targets to local government would require extensive consultation. While representatives of local government have been involved in the NRC's consultation process, the uncertainty about the relationship between the state-wide standard and targets and local government planning processes and NRM activities has limited the consideration of how and whether the standard and targets could be applied by local government.

Recommendations

That all state agencies with responsibilities for NRM be required to apply the standard where it does not conflict with existing reporting and governance obligations.

That a review of the applicability of the standard and targets to local government be conducted that includes a comprehensive consultation process.

6.2 Develop consistent policy and programs

Successful application of the standard and achievement of the targets will depend on these instruments' consistency with the policies and programs of state government agencies. The development of the standard and targets has been informed by existing policy and, in turn, they inform policy development at a range of levels as outlined below.

Firstly, state agencies should develop a high-level policy that defines any additional state priorities for natural resource management. This may involve identifying particular assets in a geographic location that have state value, or developing strategies and policies for particular themes. For example, DEC and DPI are currently developing a new Biodiversity Strategy, which may include specific targets and actions that fit under the umbrella of the state-wide biodiversity targets and are consistent with application of the state-wide standard. State agencies may also wish to develop policy around broad socio-economic issues, which may lead to definition of core targets and indicators that specifically address community health and prosperity.

Secondly, state agencies have a critical role as knowledge generators and brokers. This function includes providing and/or developing tools, methods and guidance that support best practice implementation of the state-wide standard. It also involves conducting research or establishing programs for collecting information to meet identified gaps significant at a state level. State agencies have the scientific expertise and experience needed for this role.

Thirdly, state agencies have an important role in ensuring the infrastructure for information management and M and E is in place, and that the information is accessible and (where possible) integrated at all scales. This is critical for effective implementation of adaptive management using the standard and targets.

Lastly, state agencies have a regulatory role. They are responsible for developing and implementing policy to enforce compliance with existing regulations and plans that are critical to achieving natural resource outcomes consistent with the standard and targets. These include Water Sharing Plans, Water Licences and Property Vegetation Plans.

Recommendation

That the NSW NRM agencies develop a Natural Resources Policy that indicates the policy, program and/or investment changes necessary to achieve the targets, any other specific priorities that should be expressed in targets or other instruments, and the methodology for expending state resources across regions to ensure the state-wide targets are achieved.

6.3 Establish links between the standard and targets and planning processes

There is no clearly established link between the state-wide standard and targets for natural resources and government planning processes including Regional Environment Plans, Local Environment Plans and Development Control Plans. These statutory planning processes significantly affect the capacity to achieve natural resource outcomes, particularly in more densely populated areas along the coast.

Consistent feedback through the NRC's consultation process suggests widespread confusion and concern from local government and CMAs on the relationship between their respective plans. If CAPs are not considered in other planning processes, their effectiveness is severely constrained. There is a need to clearly articulate the respective roles and influence of these plans.

Recommendation

That the NSW Government's policy on the respective roles of CAPs and other planning instruments be clearly articulated and communicated.

Attachment 1

STANDARD FOR QUALITY NATURAL RESOURCE MANAGEMENT

Foreword

This Standard was prepared by the Natural Resources Commission (NRC) for the New South Wales Government. This responsibility was assigned to the NRC under the *Natural Resources Commission Act 2003*.

This Standard addresses quality practice in natural resource management. It is intended to be read in conjunction with the *Guide to Using the Standard for Quality Natural Resource Management*.³¹ While it will have general application, the *Guide* will specifically assist NSW Catchment Management Authorities (CMAs) to interpret and apply the Standard.

The Standard is designed to apply to natural resource management at all scales including at the state, regional or catchment, local and property levels. Specifically, the development and implementation of Catchment Action Plans (CAPs) by Catchment Management Authorities (CMAs) must comply with this Standard under s. 13(c) and (d) of the *Natural Resources Commission Act 2003* and s. 20(2)(c) of the *Catchment Management Authorities Act 2003*. The NRC will conduct formal audits of CAPs to assess their compliance with this Standard.

In the development of this Standard, the NRC consulted widely with NSW Catchment Management Authorities, state and Australian Government natural resource management agencies, stakeholders in natural resource management including land managers and environmental interest groups, research organisations and consultants working in natural resource management.

³¹ The first version of this guide should be available in September 2005.

1 Introduction

1.1 Title of this Standard

This is the Standard for Quality Natural Resource Management (the Standard).

References to state-wide standards for natural resource management in NSW in the *Natural Resources Commission Act 2003* and the *Catchment Management Authorities Act 2003* are references to this Standard.

1.2 Scope

The Standard addresses quality practice in natural resource management.

Additional guidance to assist Catchment Management Authorities in applying the Standard is provided in the *Guide to Using the Standard for Quality Natural Resource Management*.³²

1.3 Purpose of the Standard

The purpose of the Standard is to give confidence to the public, government, other interested parties and to natural resource managers themselves that investment in natural resource management is cost effective, protects and improves high value natural resource assets and maximises benefits through actions which contribute to integrated outcomes at all scales. The standard does this by establishing quality processes to deliver best practice natural resource management.

Its aim is to support flexible and innovative regional planning, investment and decision-making while ensuring consistency, rigor and accountability in natural resource management.

Under the *Natural Resources Commission Act 2003*, the NRC will assess the consistency of CMA Catchment Action Plans (CAPs) with this Standard and with state-wide targets through a formal audit process. It will also audit the effectiveness of the implementation of those plans in achieving compliance with this Standard and with state-wide targets.

1.3.1 Prioritisation

The Standard comprises a number of inter-dependent components which, when applied successfully and together, will support natural resource managers in identifying specific investment priorities and in developing methods for addressing these in the context of state-wide targets. It will promote quality and balanced social, economic and environmental outcomes at local, catchment, state and national scales through transparent decision-making and trade-offs.

1.3.2 Continual improvement

Importantly, the Standard, the NRC audit process and the state-wide targets together constitute an integrated approach to achievement of natural resource management goals.

³² The first version of this guide should be available in September 2005.

They all inform and drive the application of an adaptive management process by enabling natural resource managers to identify opportunities for improvement and to implement strategies for their achievement (see Figure A1.1).

In a similar manner and in consultation with stakeholders, the Standard itself will be the subject of a continual improvement process.

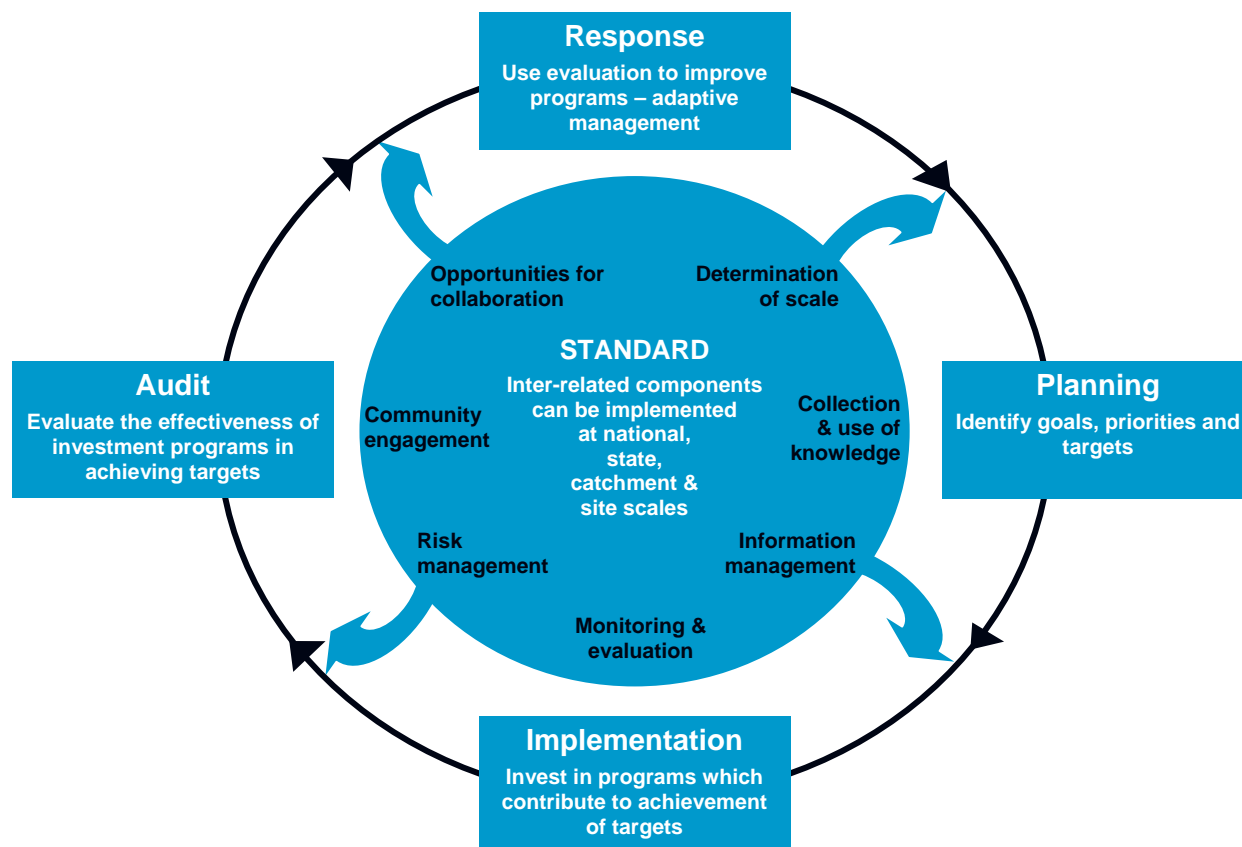


Figure A1.1: The standard, together with the state-wide targets and a learning based audit process, will promote the achievement of state-wide and catchment goals through applied adaptive management.

1.4 Who should apply the Standard?

In addition to the legal obligation that applies to CMAs, the Standard is applicable to any organisation that wishes to:

- Develop and implement natural resource management strategies in an efficient, effective and transparent manner
- Address consistency and comparability with others
- Assure itself that it is using quality processes
- Demonstrate such conformance to others, or
- Make a self-declaration of conformance with the Standard.

Such organisations may include:

- State agencies

- Local government
- Regional and community natural resource management groups
- Industry groups concerned with natural resource management, and
- Landholders.

1.5 Compatibility with other standards

The Standard is compatible with other national and international quality, environmental and other related standards and complements existing legislation on natural resource management. Natural resource managers are encouraged to integrate the Standard with other business management and compliance systems that they may have in place.

1.6 Definitions

Continuous improvement: a systematic approach to increasing the efficiency, effectiveness and appropriateness of any NRM process to achieve desired NRM outcomes, including the revision of the desired outcomes themselves.

Multiple benefits: outcomes that occur when management actions deliver benefits across institutions, spatial areas, resource assets, time scales and interest groups within the community.

Natural resource management: for the purpose of auditing CMAs, the management of water, native vegetation, salinity, soil, biodiversity, coastal protection, marine environment (except for a matter arising under the *Fisheries Management Act 1994* or the *Marine Parks Act 1997*) forestry and any other matter concerning natural resources prescribed by the regulations, as per s. 5 of the *Natural Resources Commission Act 2003*.

Natural resource manager: any individual or organisation with responsibility for natural resource management.

Resource assets: natural resources that are valued within a community for environment, economic, social or cultural purposes.

Scale: the spatial, temporal or institutional dimension of any biophysical, social, economic or cultural aspect of a natural resource management issue.

Self-declaration: a declaration made by a natural resource manager that is not formally accredited compliance with the Standard.

State-wide targets: targets recommended by the Natural Resources Commission under the *Natural Resources Commission Act 2003* and adopted by the NSW Government for natural resource management in NSW.

2 How to use the Standard

The Standard should be used as a tool to improve natural resource management and is designed to be outcome focused. It is not prescriptive in how managers will achieve the required outcomes except when an outcome depends on the common use of an agreed protocol – for example in information management. It encourages innovation and flexibility at all scales. Importantly, it is not intended to be used as a checklist but different components should be used variably in all aspects and stages of natural resource management.

The Standard comprises 7 components. These are: Collection and use of knowledge; Determination of scale; Opportunities for collaboration; Community engagement; Risk management; Monitoring and evaluation; and Information management.

Each component of the Standard specifies a mandatory *Required outcome* which defines the quality of a natural resource management practice that must be achieved.

Guidance is provided on how each outcome may be achieved; but it is not mandatory that the guidance be followed. Where there are other means of achieving the required outcome, natural resource managers are free to adopt strategies of their own choice, provided they can demonstrate equivalence of outcome and that the intent of the Guidance has been met.

The Standard describes *Evidence requirements* which indicate the type of objective evidence that an auditor would expect to find to demonstrate that a required outcome is being achieved, that it has been achieved in the past, and is capable of being achieved in the future. The extent of evidence provided should be commensurate with the issue being managed and the strategy being used.

The Standard should be read as a whole and not as a series of independent requirements. Each of the requirements is inter-related with the others, and compliance depends on their being used in an on-going and integrated manner.

Additional assistance, such as technical guidelines on socio-economic analysis, is provided in the *Guide to the Application of the Standard for Quality Natural Resource Management*.

3 The Standard

3.1 Collection and use of knowledge

3.1.1 Required outcome:

Use of the best available knowledge to inform decisions in a structured and transparent manner.

3.1.2 Guidance:

The types of information important to quality natural resource management decisions might include: biophysical characteristics; community social and economic profiles and impact assessments; regionally relevant and scientifically supported technical guidelines; local experience and expertise; Aboriginal traditional and contemporary knowledge; community and stakeholder values; NRM legislation, policies and strategies, cultural heritage assessments; and evaluation results.

The best available knowledge is the most current information that has wide acceptance. Knowledge will continue to develop and should be reviewed and updated as appropriate. Uncertainty should not prevent action, although any uncertainty should be made transparent and addressed through risk management and an adaptive approach.

Possible steps to achieve this outcome include:

- Identify the information applicable to each decision; including datasets, tools, references, regionally relevant technical guidance and other knowledge sources; proportionate to the potential significance of the decision
- Identify all priorities, policies, strategies and legal, social and other obligations that are already in place at a national, state or local level
- Establish mechanisms to access relevant knowledge and expertise, which may include:
 - technical or scientific working groups
 - links with research organisations
 - subscriptions to appropriate publications and circulation lists
 - attendance at appropriate conferences/seminars/field days, and
 - participation in community forums
- Keep records or minutes of consultations
- Assess and document the credibility, validity, reliability, relevance and accessibility of available information
- Research and consider the socio-economic profile of the geographical area and its key constituents
- Incorporate lessons learned from previous experiences and evaluation processes
- Keep a copy of all documented information that was used as the basis for decisions
- Record how the information was applied, including any data analysis and manipulation/interpretation tools
- Record any adaptations or assumptions made and their impact on decisions
- Identify and resolve any inconsistencies or contradictions in information
- Document any gaps in the knowledge required and identify opportunities for the proposed investment to supplement existing data.

3.1.3 Evidence requirements:

- Staff members are able to identify appropriate information sources
 - Mechanisms to maintain technical knowledge and expertise and awareness of community issues
 - Records of the identities, sources and locations of all information used and reasons for decisions on their acquisition and use
 - Sample records indicate a depth and breadth of literature search and consultation commensurate with the potential level of investment and significance of the project
 - Demonstrated understanding of the socio-economic profile of the area
 - Sample records reflect the analysis and application of current scientific, social, economic and cultural knowledge
 - Records or minutes of consultations
 - Evidence of how inconsistencies or contradictions were addressed
 - Evidence to demonstrate that the application of this component has informed and been informed by the application of other components
- AND/OR
- Documented evidence of additional or alternative strategies used to achieve the required outcome.

3.2 Determination of scale

3.2.1 Required outcome:

Management of natural resource issues at the optimal spatial, temporal and institutional scale to maximise effective contribution to broader goals, deliver integrated outcomes and prevent or minimise adverse consequences.

3.2.2 Guidance:

Correct identification of the scale of an issue is fundamental to the effective integrated management of natural resources and to appropriately make trade-offs between social, economic, environmental and cultural outcomes.

The optimal scale for management will depend on the spatial and temporal scales of natural systems and the factors influencing them, the scale that communities engage with natural resources and the scales at which individuals and organisations manage natural resources. These scales do not always align. As a result, managers may need to operate across a variety of scales to address different natural resource issues. This will have implications for the type of knowledge required, the nature of collaborative arrangements and the community engagement necessary to achieve outcomes.

Possible steps to achieve this outcome include:

- Assess the scale – spatial, institutional, temporal – relevant to each issue
- Evaluate the potential for delivery of multiple benefits – environmental, social and economic
- Consider socio-economic impacts and their implications for making trade-offs
- Assess the potential positive and negative impacts on resources and stakeholders at different scales
- Assess the potential contribution to regional or state-wide targets
- Maximise benefits by incorporating assessments of scale into project planning, implementation and review
- Learn from and/or build on previous projects and experiences
- Have regard to risk management strategies when considering impacts on stakeholders.

3.2.3 Evidence requirements:

- Evidence of research and analysis of information relevant to determining appropriate scale
- Evidence of a good understanding of relevant regional, state and national issues and social and economic factors associated with scale
- Documented evidence showing that analysis of scale has meaningfully informed planning, implementation, review and making trade-offs
- Documented evidence of risk identification, evaluation and management arising from the identified scale for management
- Evidence to demonstrate that the application of this component has informed and been informed by the application of other components

AND/OR

- Documented evidence of additional or alternative strategies used to achieve the required outcome.

3.3 Opportunities for collaboration

3.3.1 Required outcome:

Collaboration with other parties to maximise gains, share or minimise costs or deliver multiple benefits is explored and pursued wherever possible.

3.3.2 Guidance:

Collaboration with other parties is a key component of effective natural resource management. It promotes the achievement of integrated outcomes at the optimal scale and can enable managers to access additional resources, properly address the needs of diverse stakeholders, minimise risks and share information.

Parties that may be involved in collaborative action include: state agencies; regional and industry organisations; local and community groups; Aboriginal communities; individual land managers; and local government. Contributions to collaborative action may include the delivery of on-ground works, access to communication networks, resources or equipment and expertise or experience in delivering particular projects.

Possible steps to achieve this outcome include:

- Apply an understanding of the physical scale of each issue and the roles, responsibilities and activities of other parties to identify those that may have a common interest
- Involve potential partners in investigating opportunities for collaboration and in planning action to optimise the management of natural resource issues at the appropriate scale
- Analyse the costs and benefits of possible collaborations
- Define and allocate roles and responsibilities appropriate to each partner's interest and capacity
- Maintain meaningful communication and coordination of collaborative arrangements appropriate to the nature of the partnership
- Define a process for the early identification and timely resolution of conflicts.

3.3.3 Evidence requirements:

- Evidence that collaborative arrangements are sufficient and appropriate to managing issues and maximising benefits at the appropriate scale
- Records of communication and meetings with other parties appropriate to the nature of collaborative arrangements
- Evidence that sufficient responsibility is assigned for the effective management of partnerships
- Formal or informal arrangements with other parties including MoUs or other agreements
- Evidence that the risk of insufficient or ineffective collaboration is identified early and managed or resolved in a timely manner (where necessary with the assistance of third parties)
- Evidence to demonstrate that the application of this component has informed and been informed by the application of other components

AND/OR

- Documented evidence of additional or alternative strategies used to achieve the required outcome.

3.4 Community engagement

3.4.1 Required outcome:

Implementation of strategies sufficient to meaningfully engage the participation of the community in the planning, implementation and review of natural resource management strategies and the achievement of identified goals and targets.

3.4.2 Guidance:

Community engagement is critical to the achievement of natural resource goals. Landholders, Aboriginal communities, environmental and other interest groups, government and the general community are all important stakeholders in natural resource management. Between them these groups own or manage natural resources, have experience or knowledge of natural systems, are traditional owners and maintain diverse environmental, economic, social, cultural or spiritual values.

Successful engagement strategies will build a broader understanding of community values, educate, raise awareness, enable participation, anticipate and resolve conflict and increase knowledge of the social and economic impacts of natural resource management actions. Their extent will be proportionate to the potential level of the investment and the possible socio-economic impact.

Possible steps to achieve this outcome include:

- Develop and maintain effective communication networks with all relevant and interested community groups
- Incorporate the range and diversity of community views and values in the development of goals and targets, implementation and review
- Determine the purpose and nature of engagement required to achieve the desired natural resource management outcomes for each project
- Develop and employ engagement strategies at an organisational and project level that recognise diversity within the community, are culturally appropriate, voluntary, and are appropriate to building community capacity and willingness to contribute
- Develop and implement a procedure for handling complaints in a positive and timely manner, commensurate to the extent of operation
- Monitor and evaluate the effectiveness of community engagement strategies.

3.4.3 Evidence requirements:

- Evidence of networks that can accommodate diversity within the community and are sufficient to support effective two-way communication
 - Evidence of analysis and response to community views and issues including environmental, social and economic, cultural and spiritual values, particularly where they may be diverse, competing, negative or obstructive
 - Evidence of the assessment of the effectiveness of community engagement strategies and the application of lessons learned from previous experiences
 - Documented complaint handling procedures or a demonstrated intent to respond positively to complaints
 - Evidence that claims will be corroborated by community representatives
 - Evidence to demonstrate that the application of this component has informed and been informed by the application of other components
- AND/OR
- Documented evidence of alternative strategies used to achieve the required outcome.

3.5 Risk management

3.5.1 Required outcome:

Consideration and management of all identifiable risks and impacts to maximise efficiency and effectiveness, ensure success and avoid, minimise or control adverse impacts.

3.5.2 Guidance:

Risk is a measure of the likelihood that some external factor will reduce the ability to achieve a desired outcome. In natural resource management risk can be associated with, for example, biophysical, socio-economic, institutional, technical, financial, temporal and cultural factors.

Impacts are the positive and negative consequences of management actions and may be environmental, economic, social and/or cultural.

It is important to assess risk properly and manage it appropriately. High risk does not necessarily preclude an action but rather dictates the need for a management strategy and appropriately focused monitoring and evaluation.

Possible steps to achieve this outcome include:

- Determine key environmental, economic, social, cultural and institutional risk
- Assess all risks on the basis of potential scale, probability, severity and frequency of identified impacts
- Develop prevention and management strategies for risks of all types commensurate with the significance of investment
- Be aware of all potential impacts and manage or mitigate their effects
- Regularly review risk management strategies and update when necessary
- Incorporate the consideration of risks and impacts and any relevant management strategies into monitoring and evaluation activities.

3.5.3 Evidence requirements:

- Records of risk and impact identification and assessment of their scale, probability, severity and frequency
 - Records of the development and implementation of strategies for the management of risks and impacts, including monitoring and control protocols
 - Evidence of regular review and subsequent adjustment of risk ratings and management strategies
 - Evidence to demonstrate that the application of this component has informed and been informed by the application of other components
- AND/OR
- Documented evidence of alternative strategies used to achieve the required outcome.

3.6 Monitoring and evaluation

3.6.1 Required outcome:

Quantification and demonstration of progress towards goals and targets by means of regular monitoring, measuring, evaluation and reporting of organisational and project performance and the use of the results to guide improved practice.

3.6.2 Guidance:

Evaluation should assess the efficiency, effectiveness and appropriateness of strategies in progressing towards catchment and state-wide targets and compliance with the Standard. Evaluation should inform ongoing management, post-program review and an adaptive approach to promoting continuous improvement in natural resource strategies.

Commitment to monitoring and evaluation programs is essential to the effective assessment of progress and will require cooperation between CMAs, agencies and other natural resource managers at different spatial, temporal and institutional scales. Data collection, management and analysis at these different scales should meet the evaluation and monitoring needs of other parties relying on the use of the data.

Possible steps to achieve this outcome include:

- In association with relevant parties identify performance indicators and information necessary to measure program success and progress towards desired outcomes
- Identify and conform with pre-determined monitoring protocols to ensure quality, objectivity, quantum, confidence levels and credibility of data
- Allocate roles and responsibilities and negotiate any contractual arrangements with third parties sufficient to ensure adequate resourcing, continuity, maintenance and review of the monitoring approach
- Implement a program of internal audit and management review to ensure compliance with this standard
- Develop and employ a procedure for using evaluation in adaptively managing the achievement of goals and targets
- Actively administer the approach to meet the organisation's own needs and to contribute to the needs of external parties
- Ensure that the development of goals and targets include monitoring and evaluation requirements.

3.6.3 Evidence requirements:

- Evidence of a documented monitoring and evaluation approach which encompasses all strategies and projects and audit of compliance with the Standard
- Sample documentation that indicates appropriate monitoring and evaluation design, taking into account the specific outcomes and targets being measured, the relevant variables and the prioritisation of monitoring activities on the basis of risk management
- Sample monitoring records that indicate appropriate personnel, methodology, sample sizes, records, auditing and compliance with the predetermined approach
- Sample documentation that indicates appropriate analysis of data and justification of conclusions
- Evidence that monitoring and evaluation meets the needs of the organisation and identified external parties
- Evidence of monitoring and evaluation being used as a tool for corrective and preventative action and continual improvement
- Evidence to demonstrate that the application of this component has informed and been informed by the application of other components

AND/OR

- Documented evidence of alternative strategies used to achieve the required outcome.

3.7 Information management

3.7.1 Required outcome:

Management of information in a manner that meets user needs and satisfies formal security, accountability and transparency requirements.

3.7.2 Guidance:

Effective management of information - scientific, economic, social and cultural - is critical to its utility in increasing the quality of natural resource management decisions. Information management systems should accommodate the needs of users operating at different scales and with different capacities.

Such systems will require cooperation between different organisations and agencies to ensure that information capture, storage, description and affordability satisfy user needs, respect confidentiality and facilitate useful interpretation to deliver required products.

Possible steps to achieve this outcome include:

- Design and/or implement information management systems that meet the needs of all users and that all contributors can comply with
- Identify roles and responsibilities for information collection, capture, storage, custodianship, access, use, protection and archiving
- Ensure information management is consistent with any relevant existing protocols
- Document data in a way that allows users to easily determine the suitability of information for their purposes, using the ANZLIC metadata format
- Use information in a manner commensurate with its reliability, sensitivity, intellectual property arrangements (including ownership of Aboriginal information) and commercial confidentiality
- Make information available to potential users in an easily accessible form and at a cost appropriate for the extent and importance of its potential use.

3.7.3 Evidence requirements:

- An information management system which meets the needs of the organisation and relevant external parties and is objectively fit-for-purpose given the scale of investment and the nature of decisions
 - Evidence that the quality and integrity of data and other information is maintained through safeguards to ensure its responsible management and use
 - Documentation of responses to user feedback
 - Evidence to demonstrate that the application of this component has informed and been informed by the application of other components
- AND/OR
- Documented evidence of alternative strategies used to achieve the required outcome.

Attachment 2

SUPPORTING INFORMATION FOR STATE-WIDE TARGETS

This attachment contains supporting information for the suite of resource condition and community targets that the NRC is recommending. These include both 'macro-environmental' and 'specific priority' targets. The macro-environmental targets focus on the key elements of healthy, functioning landscapes (see Table A2.1). Specific priority targets focus on a number of specific issues of importance in NSW and they support the achievement of the macro-environmental targets (see Table A2.2).

Table A2.1: State-wide macro-environmental targets

Macro-environmental targets	
Biodiversity	<p>1. By 2015 there is an increase in native vegetation extent and an improvement in native vegetation condition</p> <p>2. By 2015 there is an increase in the number of sustainable populations of a range of native fauna species</p>
Water	<p>5. By 2015 there is an improvement in the condition of riverine ecosystems</p> <p>6. By 2015 there is an improvement in the ability of groundwater systems to support groundwater dependent ecosystems and designated beneficial uses</p> <p>7. By 2015 there is no decline in the condition of marine waters and ecosystems</p>
Land	<p>10. By 2015 there is an improvement in soil condition</p>
Community	<p>12. Natural resource decisions contribute to improving or maintaining economic sustainability and social well-being</p>

Table A2.2: State-wide specific priority targets

Specific priority targets	
Biodiversity	<p>3. By 2015 there is an increase in the recovery of threatened species, populations and ecological communities</p> <p>4. By 2015 there is a reduction in the impact of invasive species</p>
Water	<p>8. By 2015 there is an improvement in the condition of important wetlands, and the extent of those wetlands is maintained</p> <p>9. By 2015 there is an improvement in the condition of estuaries and coastal lake ecosystems</p>
Land	<p>11. By 2015 there is an increase in the area of land that is managed within its capability</p>
Community	<p>13. There is an increase in the capacity of natural resource managers to contribute to regionally relevant natural resource management</p>

The NRC expects that the information contained in the following tables will assist the application of these targets at the regional level. For each target, the tables present:

- Rationale and intent of target

- Key links to other state-wide targets
- Key supporting state-wide policies and actions
- How CMAs should apply this state-wide target in their regions
- Examples of how key components of the state-wide standard will assist CMAs to promote this target
- Example of a catchment target (or catchment management target) contributing to this target
- Measures to assess progress against state-wide targets (existing or proposed state-wide data-sets in bold)
- Relevant national matter/s for targets.

All documents cited in the supporting information tables are included in the Reference List at the back of this Attachment. The list does not include references to all documents that were consulted in the development of the targets. The list includes many state policies and other documents that will have an impact on the regional application of the targets.

Macro-environmental

Native Vegetation

1. By 2015 there is an increase in native vegetation extent and an improvement in native vegetation condition

<p>Rationale and intent of target</p>	<p>The intent of this target is to protect the ecological processes supported by native vegetation that underpin primary industries and the community's environmental, social and cultural values. Healthy, functioning native vegetation communities are a fundamental element in healthy, functioning landscapes. They are valuable in themselves, provide habitat for native species, support industries such as native forestry and honey production and have potential to provide other benefits in the future. Native vegetation is also of particular importance to Aboriginal communities and provides ecosystem services such as carbon storage and oxygen production.</p> <p>The overall condition and extent of native vegetation across the state has declined significantly since European settlement, due to pressures such as clearing, grazing, the introduction of exotic species, altered fire regimes and urbanisation. Many NSW coastal areas remain relatively vegetated, and in some areas coverage is increasing, however there has been a decline in certain communities such as littoral rainforests. Western landscapes also remain well vegetated, but there is pressure for further clearing in a few locations. Most central landscapes are relatively cleared. Comprehensive native vegetation mapping exists in some areas of NSW, but quantification of the current condition across the state remains unclear. There is very little information on the extent and condition of aquatic and marine vegetation.</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to the targets for:</p> <ul style="list-style-type: none"> ▪ <i>Riverine ecosystems</i>: Healthy riparian and in-stream vegetation is vital for fully functioning riverine ecosystems. ▪ <i>Soil condition</i>: Native vegetation supports soil processes and limits the area affected by degradation processes such as salinity and erosion.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation such as the <i>Native Vegetation Act 2003</i> and associated regulations, the <i>National Parks and Wildlife Act 1974</i>, and the <i>Fisheries Management Act 1994</i>. The 1999 NSW Biodiversity Strategy contains many objectives and actions relating to native vegetation extent and condition. DEC and DPI are preparing a revised NSW Biodiversity Strategy which is expected to provide further priorities and actions that will contribute to this target.</p> <p>State agencies are working towards providing CMAs and other natural resource managers with comprehensive modelling and information on the condition of native vegetation across NSW.</p>
<p>How CMAs should apply this state-wide target in their regions</p>	<p>The <i>Native Vegetation Act 2003</i> encourages protection of native vegetation regrowth, revegetation and rehabilitation of land. Through Property Vegetation Plans, the Act encourages private land managers to protect regrowth of high conservation value and manage native vegetation consistent with regional, state and national priorities. To a large extent, CMAs will be able to contribute to the achievement of this target by providing incentives for Property Vegetation Plans. Regional vegetation priorities will be reflected in the incentives component of the PVP Developer. CMAs should target areas of their catchment consistent with regional priorities and achieving the state-wide target.</p>

	<p>Regional values have been identified in some regions in Draft Regional Vegetation Management Plans and in Catchment Blueprints. The value of native vegetation should be assessed on an IBRA sub-region basis,³³ and in the context of how cleared that IBRA sub-region and vegetation type is. Increasing extent might be a focus in more heavily cleared landscapes, or where development pressure is very high. Improvements in condition may be more important in more highly vegetated landscapes. The Coastal Dune Management Manual (DIPNR 2001) and the CPR Coastal Plant Regeneration CD (DIPNR 2003) may assist CMAs in coastal areas.</p>		
<p>Examples of how key components of the state-wide standard will assist CMAs to promote this target</p>	<p>All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are:</p> <ul style="list-style-type: none"> ▪ <i>Risk Management:</i> To a large extent, achieving this target will rely on the voluntary contributions of private land managers. This may be just one risk considered by CMAs when applying appropriate risk identification, assessment, prevention and management strategies. ▪ <i>Opportunities for collaboration:</i> As native vegetation is managed on both private and public land, it will be important for CMAs to identify and communicate with other parties that have related responsibilities such as the National Parks and Wildlife Service, Department of Lands, Forests NSW and local private land managers. 		
<p>Example of a catchment target contributing to this target</p>	<p>By 2012 increase native vegetation cover by 25,000 hectares across the Tablelands, Escarpments and Ranges and Coastal Hills Landscapes to enhance catchment protection while maintaining productive potential (<i>Mid North Coast Blueprint</i>).</p>		
<p>Measures to assess progress against state-wide target</p>	<p>2005</p> <ul style="list-style-type: none"> ▪ Native woody vegetation extent³⁴ ▪ Vegetation coverage of NSW³⁵ ▪ Rangeland Assessment Program ▪ Areas managed for conservation ▪ CMA regional monitoring 	<p>2010</p> <ul style="list-style-type: none"> ▪ Native vegetation extent and type ▪ PVP vegetation condition information ▪ Rangeland Assessment Program ▪ Areas managed for conservation³⁶ 	<p>2015</p> <ul style="list-style-type: none"> ▪ Native vegetation extent, type and condition
<p>Potential index</p>	<p>Biodiversity index</p>		
<p>Relevant national matter for targets</p>	<ul style="list-style-type: none"> ▪ Native vegetation communities' integrity 		

³³ Interim Biogeographic Regionalisation for Australia (IBRA) is a landscape based approach to classifying the land surface. This approach has been developed by the Australian Government Department of Environment and Heritage.

³⁴ As defined by DEH/DIPNR (2005)

³⁵ As defined by Keith (2004)

³⁶ Both private and public land

Macro-environmental

Native Fauna

2. By 2015 there is an increase in the number of sustainable populations of a range of native fauna species

<p>Rationale and intent of target</p>	<p>The intent of this target is to protect the ecological processes supported by native fauna (both vertebrates and invertebrates) that underpin the community's environmental, social and cultural values as well as underpinning primary industries. Native fauna are a fundamental element in healthy functioning landscapes. Without native fauna there would be widespread system collapse as native fauna provide essential ecosystem services such as pollination and nutrient cycling. Fauna are therefore important for terrestrial vegetation systems, soil processes and terrestrial ecosystems in general.</p> <p>Most experts believe that the population trend, distribution, survival and reproductive ability of most non-threatened native fauna is declining due to processes such as habitat loss, habitat simplification and predation and competition by exotic species. However, some species have adapted to modified environments and are now over-abundant. Achieving this target will mean preventing populations from becoming threatened or over-abundant. Extensive monitoring of native fauna extent only exists for waterbirds and kangaroos, although some long-term studies have been conducted for other species in specific locations or regional areas.</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to the targets for:</p> <ul style="list-style-type: none"> ▪ <i>Riverine ecosystems</i>: Managing riverine fauna may contribute to improving the sustainability of native fauna populations. ▪ <i>Native vegetation</i>: The native vegetation target partners the native fauna target, acknowledging the interactions between native vegetation and fauna.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation such as the <i>National Parks and Wildlife Act 1974</i>, the <i>Threatened Species Conservation Act 1995</i> and the <i>Fisheries Management Act 1994</i>. The 1999 NSW Biodiversity Strategy and the Native Fish Strategy contain many objectives and actions relating to native fauna sustainability. DEC and DPI are preparing a revised NSW Biodiversity Strategy, which is expected to provide further priorities and actions that will contribute to this target.</p> <p>State agencies currently support long-term monitoring of some native fauna populations. Agencies will need to expand or target their support of long-term studies in abundance, distribution and reproductive ability of some native fauna.</p>
<p>How CMAs should apply this state-wide target in their regions</p>	<p>CMAs may address this target in concert with other targets, for example by implementing actions to prevent or reverse habitat loss and by reducing the impact of invasive species on native fauna. CMAs may need to balance local and regional priorities with state priorities as expressed in the revised Biodiversity Strategy or other policy instruments.</p> <p>CMAs may contribute to the conservation of populations (total number of individuals) by taking action to conserve local sub-populations (geographically or otherwise distinct groups).</p>

<p>Examples of how key components of the state-wide standard will assist CMAs to promote this target</p>	<p>All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are:</p> <ul style="list-style-type: none"> ▪ <i>Collection and use of knowledge:</i> There may be very little information available on populations of species, so it may be important that CMAs identify the available information applicable to each decision, including datasets, tools, references, information sources and other knowledge bases. ▪ <i>Opportunities for collaboration:</i> As actions related to native fauna protection will be required on both private and public land, it will be important for CMAs to identify and communicate with other parties with related responsibilities such as the National Parks and Wildlife Service, Department of Lands, Forests NSW and local private land managers. 		
<p>Example of a catchment target contributing to this target</p>	<p>No Catchment Blueprints contain targets related directly to native fauna populations although many contain targets to increase the area managed for conservation, which may improve habitat and contribute to the achievement of this target. For example: By 2012, protect, connect, enhance and manage for biodiversity conservation, a minimum of 30% of the original distribution of each native vegetation community type of the catchment (<i>Southern Blueprint</i>).</p>		
<p>Measures to assess progress against state-wide target</p>	<p>2005</p> <ul style="list-style-type: none"> ▪ Native woody vegetation extent³⁷ ▪ Aerial waterbird survey ▪ Sustainable Rivers Audit – fish survey (MDB) ▪ Monitoring of listed threatened fish populations ▪ CMA regional monitoring 	<p>2010</p> <ul style="list-style-type: none"> ▪ Native vegetation extent and type ▪ Aerial waterbird survey ▪ Sustainable Rivers Audit – fish survey ▪ Monitoring of listed threatened fish populations ▪ CMA regional monitoring 	<p>2015</p> <ul style="list-style-type: none"> ▪ Native vegetation extent, type and condition
<p>Potential index</p>	<p>Biodiversity index</p>		
<p>Relevant national matter for targets</p>	<ul style="list-style-type: none"> ▪ Significant native species and ecological communities 		

³⁷ As defined by DEH/DIPNR (2005)

Specific priority

Threatened Species

3. By 2015 there is an increase in the recovery of threatened species, populations and ecological communities

<p>Rationale and intent of target</p>	<p>The intent of this target is to increase the rate of recovery of threatened species, populations and ecological communities and conserve their current and future economic, social and environmental value. This value exists, for example, in potential food crops and pharmaceuticals and in ecosystem functioning. The conservation of threatened species is also important because of the intrinsic value they hold for many people. Native species, populations and communities are important to Aboriginal culture, and it is important to recover species for cultural reasons as well as ecosystem function and economic and social purposes.</p> <p>Current recovery of threatened species, populations and communities is difficult to determine because comprehensive data are expensive to obtain and often not collected. Expert opinion is that few threatened species have recovered, while more species, populations and communities are becoming threatened. Expert opinion also indicates that it is unrealistic to expect that all threatened species can be recovered. Action and investment should therefore focus on priority actions that improve the habitat of multiple species, or address threatening processes, rather than focussing on populations of individual threatened species in isolation.</p> <p>The target allows for flexibility in managing the threatened species, populations and communities that are most likely to benefit from the available resources and capacity.</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to the targets for:</p> <ul style="list-style-type: none"> ▪ <i>Invasive species</i>: Many actions required to promote the recovery of threatened species will involve managing invasive species. ▪ <i>Riverine ecosystems</i>: Threatened species management will promote the effective functioning of riverine ecosystems. ▪ <i>Estuaries and coastal lakes</i>: Recovery of many threatened coastal species and communities involves effective estuary management.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation such as the <i>Threatened Species Conservation Act 1995</i> (as amended) and the <i>Fisheries Management Act 1994</i>. The 1999 NSW Biodiversity Strategy contains many objectives and actions relating to the recovery of threatened species, populations and communities. DEC and DPI are preparing a revised NSW Biodiversity Strategy, which is expected to provide further priorities and actions that will contribute to achieving this target.</p> <p>DEC and DPI currently work collaboratively with other organisations and individuals to recover individual species, populations and communities of high value, and to ameliorate key threatening processes (listed under the Threatened Species Conservation and Fisheries Management Acts).</p>

How CMAs should apply this state-wide target in their regions	CAPs and associated investment activities will need to balance regional priorities with state priorities where they have been identified in the state policies listed above, with particular attention on the lists of threatened species, populations and communities. Some threatened species, populations or communities will be of particular value to a catchment community. CMAs may focus threatened species actions on the recovery of those high-value species, populations or communities if available resources are likely to be effective in reversing declining trends. Many recovery actions are likely to focus on managing threatening processes. Threatened species profiles produced by DEC and DPI can provide guidance on identifying regional priorities and actions, as can recovery plans where they have been prepared, Priorities Action Statements, and priorities identified within Catchment Blueprints.		
Examples of how key components of the state-wide standard will assist CMAs to promote this target	All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are: <ul style="list-style-type: none"> ▪ <i>Collection and use of knowledge</i>: CMAs will need to identify the threatened species information appropriate to each decision. Relevant information may include current known distribution and modelling tools. ▪ <i>Community engagement</i>: To encourage community awareness, capacity and participation, CMAs need to ascertain community views and values, including those of Aboriginal communities, when prioritising actions that may impact on threatened species, populations and communities. 		
Example of a catchment target contributing to this target	Improve from their 2001 status threatened species, populations or ecological communities found naturally within the Gwydir catchment listed under the <i>Threatened Species Conservation Act 1995</i> or <i>Commonwealth Environmental Protection and Biodiversity Conservation Act 1999</i> , by 2010 (<i>Gwydir Blueprint</i>).		
Measures to assess progress against state-wide target	2005 <ul style="list-style-type: none"> ▪ Native woody vegetation extent³⁸ ▪ Movement between categories of listed threatened species, populations and communities ▪ Monitoring of listed threatened fish populations ▪ CMA regional monitoring 	2010 <ul style="list-style-type: none"> ▪ Native vegetation extent and type ▪ Movement between categories of listed threatened species, populations and communities ▪ Actions implemented under Priority Action Statements and Threat Abatement Plans ▪ Monitoring of listed threatened fish populations ▪ CMA regional monitoring 	2015 <ul style="list-style-type: none"> ▪ Native vegetation extent, type and condition
Potential index	Biodiversity index		
Relevant national matter for targets	<ul style="list-style-type: none"> ▪ Significant native species and ecological communities 		

³⁸ As defined by DEH/DIPNR (2005)

Specific priority

Invasive Species

4. By 2015 there is a reduction in the impact of invasive species

<p>Rationale and intent of target</p>	<p>The intent of this target is to reduce the impact of one of the greatest threats to biodiversity (Morton <i>et al</i>, 2002) and productive land use - invasive species. Predation, competition and habitat degradation of invasive species commonly threaten the survival of native flora and fauna, and interfere with the natural functioning of ecosystems. Invasive species also threaten the social and economic values of many local communities through their impact on agricultural systems. It is estimated that invasive species cost NSW hundreds of millions of dollars in control and lost production (NSW Weed Strategy).</p> <p>Invasive species (both pest animals and plants) continue to have a large negative effect on biodiversity and productive land use and are expected to remain a major problem. Despite successful control programs for some species, the abundance and extent of most invasive species in NSW has not reduced and new invasive species have continued to establish themselves (DPI Submission on NRC Consultation Paper).</p> <p>'Invasive species' includes exotics and natives, aquatic, terrestrial, coastal and marine flora and fauna species, vertebrates and invertebrates. It includes, but is not limited to, listed noxious weeds and pest animals and may include over-abundant natives. This target recognises that some species will be invasive in some areas but not others, and the species targeted for action should reflect the impact they are having on high value assets. It does not necessarily include all exotics, as these may not be considered invasive. Actions should focus on protecting sites and systems as well as those species that are having the greatest negative impact on assets with environmental, economic, social or cultural values and for which there is potential to reverse the negative impact with available resources.</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to the targets for:</p> <ul style="list-style-type: none"> ▪ <i>Sustainable land use</i>: invasive species impact on agricultural production, cause erosion and soil degradation and affect the functioning of coastal habitats such as dunes. ▪ <i>Native vegetation</i>: Invasive species are an important process threatening the natural functioning of native vegetation. ▪ <i>Riverine ecosystems</i>: Invasive species threaten the ability of riverine ecosystems to function effectively.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation such as the <i>Noxious Weeds Act 1993</i>, the <i>Rural Lands Protection Act 1998</i>, the <i>Native Vegetation Act 2003</i> and associated regulations, the <i>Threatened Species Conservation Act 1995</i>, the <i>Fisheries Management Act 1994</i>, and the 1998 NSW Weed Strategy. The 1999 NSW Biodiversity Strategy contains objectives and actions related to the management of invasive species. DEC and DPI are preparing a revised strategy, which is expected to provide further priorities and actions that will contribute to this target. The responsibility for the control of pests and weeds is shared by DPI, Department of Lands, DEC, local councils, Rural Lands Protection Boards and landholders. DPI regularly collates information on pest animal distribution and abundance and is investigating the possibility of collecting similar information on weeds. This will provide data for the indicators, as well as information for CMAs and other organisations wishing to promote this target.</p> <p>The Coastal Dune Management Manual (DIPNR 2001) and the CPR Coastal Plant Regeneration CD (DIPNR 2003) may assist CMAs in coastal areas.</p>

How CMAs should apply this state-wide target in their regions	Regional priorities and values will need to be balanced with the direction provided by the state policies listed above, and with local values, depending on the distribution and impact of targeted weeds and pests. Catchment Blueprints will express regional priorities, as will Regional Weed Management Plans where they have been prepared. CMAs may choose to identify high-value areas for treatment of invasive species. Alternatively, they may choose to manage invasive species by targeting those that are causing major impacts or those that can be treated most effectively with available resources.		
Examples of how key components of the state-wide standard will assist CMAs to promote this target	All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are: <ul style="list-style-type: none"> ▪ <i>Determination of scale:</i> The expected public and private benefits of management actions for invasive species will need to be assessed across different spatial, temporal and institutional scales. As many actions likely to be funded through CMAs will involve the control of invasive species on private land, the public benefit of these actions should be identified. ▪ <i>Opportunities for collaboration:</i> Communication with other parties with related roles, interests and responsibilities such as Rural Lands Protection Boards may identify opportunities for coordinated management of pest animals. 		
Example of a catchment management target contributing to this target	By 2012 the area of public and private land and waters infested with listed high priority weeds will not exceed year 2000 levels (<i>South East Blueprint</i>).		
Measures to assess progress against state-wide target	2005 <ul style="list-style-type: none"> ▪ Vertebrate pest surveys ▪ W1 weeds database ▪ Aquatic and terrestrial weed mapping ▪ Marine pest monitoring ▪ CMA regional monitoring 	2010 <ul style="list-style-type: none"> ▪ Distribution, abundance and impact of existing and emerging invasive species 	2015 <ul style="list-style-type: none"> ▪ Distribution, abundance and impact of existing and emerging invasive species
Potential index	Biodiversity index		
Relevant national matter for targets	<ul style="list-style-type: none"> ▪ Ecologically significant invasive species 		

Macro-environmental

Riverine Ecosystems

5. By 2015 there is an improvement in the condition of riverine ecosystems

<p>Rationale and intent of target</p>	<p>The intent of this target is to protect functioning riverine ecosystems and the environmental, social, economic and cultural values they support. Healthy riverine ecosystems supported by adequate river flows are a fundamental element of healthy, functioning landscapes. Improving the condition of rivers, riparian zones and floodplains across the state will maintain primary ecological production, maintain high-value habitat and viable native flora and fauna populations, and replenish soils. It will also promote the health and well being of rural and urban communities, as well as profitable primary industries across the state. People rely on riverine ecosystems for drinking-water supplies, irrigation, stock watering, industrial use, aquaculture and recreational use. These ecosystems are also of great social, cultural and spiritual importance to Aboriginal and non-Aboriginal communities.</p> <p>Many NSW river systems are extensively degraded and remain under threat, particularly from water extraction but also from flow regulation, poor water quality, changes in land use, clearing of vegetation and destruction of habitat. Improvements in river health will depend largely upon allocation of water for ecological purposes. Without this and other intervention, degradation of many riverine ecosystems is likely to continue in response to past and present activities.</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to the targets for:</p> <ul style="list-style-type: none"> ▪ <i>Wetlands</i>: The wetlands target will contribute to the broader target of improving the condition of riverine ecosystems. ▪ <i>Native vegetation</i>: Any improvement in condition or increase on extent in native aquatic, riparian or floodplain vegetation will contribute to the achievement of the native vegetation target. ▪ <i>Estuaries and coastal lakes</i>: Improved condition of riverine ecosystems will contribute to the improved condition of estuaries and coastal lakes.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation such as the <i>Water Management Act 2000</i> and water sharing plans, Water Quality and River Flow Interim Environmental Objectives, NSW Government Statements of Intent and Healthy Rivers Commission Inquiry Recommendations, NSW Salinity Strategy 2000, NSW Weirs Policy, and the State Water Management Outcomes Plan 2002. State agencies have indicated that development of a state floodplain management and harvesting policy is a high priority.</p> <p>The MDBC is leading the Sustainable Rivers Audit and is in the process of developing further monitoring protocols.</p> <p>To implement the <i>Water Management Act 2000</i>, DNR is developing macro plans for parts of NSW not covered by existing Water Sharing Plans.</p>

How CMAs should apply this state-wide target in their regions	<p>The values provided by riverine ecosystems vary at local, regional and state scales. The scale of each issue the CMA is addressing will determine which values their actions should reflect. For example, issues relating to flow often need to be addressed at the state scale, so decisions related to flow should reflect state-wide priorities. CMAs should also consider regional values and priorities for water management, including allocation, that are expressed in state policies and other documents, such as water sharing plans. Water quality can often be addressed at the local or regional scale, so catchment targets for this issue probably need to reflect regional and local priorities.</p> <p>A variety of other guidance material is also available. For example, the <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i> (ANZECC and ARMCANZ, 2000) provides technical guidance on water monitoring, and the <i>Rehabilitation Manual for Australian Streams</i> (Rutherford <i>et al</i>, 2000) provides guidance on planning and conducting rehabilitation activities.</p>		
Examples of how key components of the state-wide standard will assist CMAs to promote this target	<p>All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are:</p> <ul style="list-style-type: none"> ▪ <i>Opportunities for collaboration:</i> CMAs are encouraged to investigate opportunities for collaborative action with neighbouring CMAs to address cross-boundary issues - for example, they may collaborate with an upstream CMA on aquatic habitat issues. ▪ <i>Risk management:</i> CMAs should be aware of all the potential impacts of their activities, and manage or mitigate these impacts. For example, they must manage the potential impacts of floods on riparian works funded through CMA investment. 		
Example of a catchment target contributing to this target	<p>An identifiable net improvement in riverine health across the Lower Murray Darling Catchment by 2012. This will be determined by:</p> <ul style="list-style-type: none"> ▪ an improvement in the native to introduced fish ratio (55% improvement in species ratio, 25% improvement in abundance ratio, measurable improvement in biomass ratio) ▪ a 20% reduction in the number of days subject to blue green algal alerts ▪ the reinstatement of more natural flow patterns as modelled in each of five river management zones (<i>Lower Murray Darling Blueprint</i>). 		
Measures to assess progress against state-wide target	<p>2005</p> <ul style="list-style-type: none"> ▪ Sustainable Rivers Audit (Murray-Darling Basin) ▪ In-stream salinity levels ▪ CMA regional monitoring 	<p>2010</p> <ul style="list-style-type: none"> ▪ Sustainable Rivers Audit (Murray-Darling Basin + implementation in coastal rivers) ▪ In-stream salinity levels ▪ Integrated Monitoring of Environmental Flow ▪ Water Sharing Plans review ▪ CMA regional monitoring 	<p>2015</p> <ul style="list-style-type: none"> ▪ Sustainable Rivers Audit (coverage established for whole state)
Potential index	<p>Riverine condition index incorporating Sustainable Rivers Audit</p>		
Relevant national matters for targets	<ul style="list-style-type: none"> ▪ Inland aquatic ecosystems integrity (rivers and other wetlands) ▪ Nutrients in aquatic environments ▪ Turbidity/suspended particulate matter in aquatic environments ▪ Surface water salinity in freshwater aquatic environments ▪ Significant native species and ecological communities ▪ Ecologically significant invasive species 		

Macro-environmental

Groundwater

6. By 2015 there is an improvement in the ability of groundwater systems to support groundwater dependent ecosystems and designated beneficial uses

<p>Rationale and intent of target</p>	<p>The intent of this target is to ensure that groundwater continues to support ecosystem functioning, human health and economic activity. Groundwater supports a wide range of ecosystems in NSW, both above and below the ground and healthy groundwater systems are fundamental elements of healthy, functioning landscapes. Many native plant species use groundwater during their lifecycle. A variety of animal species, such as invertebrates and microscopic organisms, live within aquifers and depend on groundwater. Where groundwater is an important contributor to surface flow, terrestrial and aquatic fauna also depend on this resource. Groundwater is a vital resource for human use in both inland and coastal areas. More than 200 towns in NSW use groundwater as their principal water source, and many regional economies rely on it for irrigation, stock watering, industrial purposes and human consumption.</p> <p>Pressure on groundwater resources has increased over recent years and many systems in NSW are at high risk of over-extraction or contamination. Salinity has a major impact on groundwater quality, but contamination by nitrates, pesticides, pathogens, hydrocarbons and other substances is also known to occur. Limited data on water quality are available, so it is difficult to quantify the extent of the problem, the fate of pollutants or the impact on dependent ecosystems.</p> <p>Designated beneficial uses are those listed in the water sharing plans for NSW groundwater sources. These are based on the beneficial uses listed in the <i>Water Quality Guidelines</i> (ANZECC, 2001) and the <i>Raw Water for Drinking Purposes Guidelines</i> (National Health and Medical Research Council, 1996).</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to the targets for:</p> <ul style="list-style-type: none"> ▪ <i>Wetlands</i>: Groundwater discharges into and recharges from wetlands. The volume and quality of water in one will affect the other. ▪ <i>Native vegetation</i>: Many native vegetation species rely on groundwater.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation, such as the Groundwater Quality Protection Policy 1998, <i>Water Management Act 2000</i>, State Water Management Outcomes Plan 2002, and the Groundwater Dependent Ecosystems Policy 2002.</p> <p>DNR is developing groundwater Macro Water Sharing Plans for parts of NSW not already covered by existing water sharing plans.</p> <p>DNR has developed a register of groundwater dependent ecosystems, but the information it contains is currently limited and could be reviewed.</p>

<p>How CMAs should apply this state-wide target in their regions</p>	<p>Regional community values and identified state priorities should influence the way in which this target is implemented through CAPs. Many groundwater systems cross regional boundaries. Where this is the case, a cross-regional focus will be required to implement this target. Regional values are identified in documents such as gazetted Water Sharing Plans and Catchment Blueprints. The Macro Plans being developed by DNR will list beneficial uses of groundwater for the remainder of the state. Cross-regional priorities can be identified through documents such as the Great Artesian Basin Strategic Management Plan 2000 and the MDBC's Projections of Groundwater Extraction Rates and Implications for Future Demand and Competition for Surface Water. The state policies listed above provide direction on state priorities.</p>		
<p>Examples of how key components of the state-wide standard will assist CMAs to promote this target</p>	<p>All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are:</p> <ul style="list-style-type: none"> ▪ <i>Opportunities for collaboration:</i> CMAs will need to collaboratively manage groundwater reserves with some or all of the following stakeholders: DNR, irrigators, local government, the MDBC and the Great Artesian Basin Consultative Council. ▪ <i>Collection and use of knowledge:</i> CMAs will need to identify all priorities and actions that are identified in existing strategies, and obligations that are already in place. Documents such as Water Sharing Plans for groundwater can provide guidance on regional priorities. 		
<p>Example of a catchment target contributing to this target</p>	<p>The Surface Water System Health Index Rating and the Groundwater System Health Index Rating improved at 60% of relevant monitoring sites and maintained at all other monitoring sites by 2010 (<i>Western Blueprint</i>).</p>		
<p>Measures to assess progress against state-wide target</p>	<p>2005</p> <ul style="list-style-type: none"> ▪ Groundwater extractions ▪ Sustainable yields from groundwater aquifers ▪ EC at nominated bores ▪ Groundwater baseflow ▪ Artesian pressure ▪ Review of Groundwater Sharing Plans ▪ CMA regional monitoring 	<p>2010</p> <ul style="list-style-type: none"> ▪ Ratio of extraction to sustainable yield ▪ EC at nominated bores ▪ Groundwater baseflow ▪ Artesian pressure ▪ Review of Groundwater Sharing Plans ▪ CMA regional monitoring 	<p>2015</p> <ul style="list-style-type: none"> ▪ Ratio of extraction to sustainable yield ▪ EC at nominated bores ▪ Groundwater baseflow ▪ Artesian pressure ▪ Review of Groundwater Sharing Plans ▪ CMA regional monitoring
<p>Potential index</p>	<p>Groundwater index</p>		
<p>Relevant national matters for targets</p>	<p>No national matters refer specifically to groundwater, but many are indirectly related. For example 'Inland aquatic ecosystems integrity'.</p>		

Macro-environmental

Marine Waters



7. By 2015 there is no decline in the condition of marine waters and ecosystems

<p>Rationale and intent of target</p>	<p>The intent of this target is to maintain the current integrity of NSW marine ecosystems³⁹ that underpin the social, economic and cultural values of all NSW communities. Healthy marine ecosystems are a fundamental element of healthy, functioning landscapes. Marine waters support commercial industries such as fisheries and aquaculture and have an important role in coastal recreation. In addition, access to a healthy coastal environment is important for many location-specific values for Aboriginal and non-Aboriginal communities.</p> <p>NSW marine waters are generally in good condition but are subject to a range of threats and impacts - particularly from urban development, inappropriate land management (point and diffuse source pollution) and recreational use (DEC, 2003). These pressures are increasing, although no comprehensive state scale data for the condition of marine water ecosystems are available to establish current (baseline) condition.</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to the targets for:</p> <ul style="list-style-type: none"> ▪ <i>Land capability</i>: Promoting the use and management of land within its capability will reduce pollutants entering marine waters. ▪ <i>Riverine ecosystems</i>: The riverine ecosystem target promotes freshwater quality, improved habitat and the integrated management of fresh and salt water environments and species that inhabit both zones.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation such as the Coastal Policy 1997, <i>Marine Parks Act 1997</i>, <i>Fisheries Management Act 1994</i>, Marine Protected Areas in NSW: An Overview 2001, and the Strategic Framework for the Evaluation and Monitoring of Marine Parks in NSW 2004. Consistent with the <i>Natural Resources Commission Act 2003</i>, this target applies unless there is a conflict with a matter arising under the <i>Fisheries Management Act 1994</i> or the <i>Marine Parks Act 1997</i>.</p> <p>NSW is committed to developing a comprehensive, adequate and representative system of marine protected areas and implementing a monitoring, research and evaluation program for all marine parks (MPA, 2000).</p> <p>DNR has prepared a draft Coastal Zone Management Manual to guide the integrated management the coastal zone. The manual is being updated to consider initiatives such as regional strategies and the establishment of CMAs.</p> <p>A draft set of Marine Water Quality Objectives for NSW Marine Waters 2004 has been prepared.</p>

³⁹ NSW marine waters extend 3 nautical miles off the NSW coast.

How CMAs should apply this state-wide target in their regions	<p>The values of marine waters vary at the local and regional scales. It is expected that specific targets and actions will implement state priorities (to maintain or improve marine ecosystems, including their water quality, for their integrity) consistent with regional community values, local characteristics and the capacity of communities. Guidance on other state and regional priorities is available from the state policy documents listed above. Regional priorities may also be included in the Catchment Blueprints.</p> <p>In many cases CMAs, themselves, will have limited direct influence on achieving this target since key actions are more directly controlled by other bodies. Through application of the state-wide standard, CMAs may decide that contributing to this target is a relatively low priority for them.</p> <p>The Department of Planning and Infrastructure's current work to develop regional strategies along the NSW coast will produce further location-specific guidance for the implementation of this target, particularly in relation to the integration of planning reforms with natural resource management in the coastal zone.</p>		
Examples of how key components of the state-wide standard will assist CMAs to promote this target	<p>All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are:</p> <ul style="list-style-type: none"> ▪ <i>Risk management</i>: Local councils have an important role in approving and managing coastal development and urban issues such as storm water pollution. The environmental objectives of local councils, and the ability of the CMA to collaborate with councils, are likely to be key institutional risks associated with achieving catchment targets for marine waters. ▪ <i>Collection and use of knowledge</i>: The Coastal Policy and Marine Water Quality Objectives may be examples of information applicable to each decision. The Coastal Policy provides information on state priorities, whereas the proposed Marine Water Quality Objectives can provide guidance on regional priorities. 		
Example of a catchment management target contributing to this target	<p>A 2000 ha increase in the area of identified aquatic and marine ecosystems under conservation management by 2007 (<i>Upper North Coast Blueprint</i>).</p>		
Measures to assess progress against state-wide target	2005	2010	2015
	<ul style="list-style-type: none"> ▪ Frequency of induced algal blooms ▪ Species abundance in rocky reef communities ▪ Beachwatch (local council monitoring) ▪ Marine Protected Areas ▪ CMA regional monitoring 	<ul style="list-style-type: none"> ▪ Frequency of induced algal blooms ▪ Species abundance in rocky reef communities ▪ Beachwatch (local council monitoring) ▪ Marine Protected Areas ▪ CMA regional monitoring 	<ul style="list-style-type: none"> ▪ Frequency of induced algal blooms ▪ Species abundance in rocky reef communities ▪ Beachwatch (local council monitoring) ▪ Marine Protected Areas ▪ CMA regional monitoring
Potential index	Near-shore marine condition index		
Relevant national matter for targets	<ul style="list-style-type: none"> ▪ Estuarine, coastal and marine habitats integrity 		

Specific priority

Wetlands

8. By 2015 there is an improvement in the condition of important wetlands, and the extent of those wetlands is maintained

<p>Rationale and intent of target</p>	<p>The intent of this target is to ensure long-term protection of a diverse range of wetlands and the social, economic, environmental and cultural services they provide. It focuses on ‘important’ wetlands, which are those listed under The Convention on Wetlands (Ramsar, 1971) or the Directory of Important Wetlands in Australia. Wetlands have many social, economic and environmental values, and are linked to Aboriginal and non-Aboriginal religious and spiritual beliefs. Healthy, fully functioning wetlands are important for primary ecological production, water storage, storm protection, flood mitigation, groundwater recharge and discharge, water purification and retention of nutrients and sediments (Ramsar Convention Secretariat, 2004). They contain a diverse range of flora, are important storehouses of plant genetic material, provide permanent and temporary habitat for many animal populations and are breeding grounds for many fish and bird species.</p> <p>Despite their importance, wetlands are some of the most degraded of Australia’s natural resources and they remain under threat, particularly through altered flow regimes, loss of habitat, water harvesting and pollution. Wetlands can only be maintained by the maintenance or reintroduction of a relatively natural hydrological regime.</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to the targets for:</p> <ul style="list-style-type: none"> ▪ <i>Riverine ecosystems</i>: As wetlands are one component of riverine ecosystems, there is a strong link between these targets. ▪ <i>Groundwater</i>: A close relationship exists between some groundwater systems and wetlands, as certain groundwater systems discharge into wetlands and are recharged by wetlands. ▪ <i>Estuaries and coastal lakes</i>: Many coastal wetlands have physical and ecological links to estuaries directly linking these targets.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation such as the Water Quality and River Flow Interim Environmental Objectives, Healthy Rivers Commission Statements of Intent and Inquiry Recommendations, the <i>Water Management Act 2000</i>, State Water Management Outcomes Plan 2002, SEPP 14 – Coastal Wetlands and the MDBC’s Floodplain Wetlands Management Strategy and Floodplain Management Strategy.</p> <p>State agencies are in the process of revising the 1996 Wetlands Management Policy, and have indicated that developing a state floodplain management and harvesting policy is a high priority. DEC and DNR are developing a watering plan for the Macquarie Marshes and Gwydir Wetlands.</p>
<p>How CMAs should apply this state-wide target in their regions</p>	<p>CMAs will need to balance national, state, regional and local priorities when promoting this target. National priorities (expressed through listings under The Convention on Wetlands and the Directory of Important Wetlands) will need to be implemented in line with the values of the local and regional communities. Regional values and priorities for wetlands are expressed in a variety of policies and documents including accredited Catchment Blueprints. Of particular importance are the state policies listed above, Water Sharing Plans and macro plans (under development). DNR is currently producing a manual focusing on the rehabilitation and construction of saltwater wetlands.</p>

<p>Examples of how key components of the state-wide standard will assist CMAs to promote this target</p>	<p>All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are:</p> <ul style="list-style-type: none"> ▪ <i>Community engagement:</i> CMAs should ascertain community views and values, including those of Aboriginal communities, to identify regional priorities that will influence management actions. For example, many wetlands have particular value to local Aboriginal communities. ▪ <i>Monitoring and evaluation:</i> To improve their knowledge of wetland systems, CMAs should identify causal links between outputs and project objectives. 		
<p>Example of a catchment management target contributing to this target</p>	<p>By 2006 re-establish natural wetting and drying regimes in three sites totalling an area that accounts for 10% of coastal floodplain wetlands (<i>Mid North Coast Blueprint</i>).</p>		
<p>Measures to assess progress against state-wide target</p>	<p>2005</p> <ul style="list-style-type: none"> ▪ Wetland extent (Subset of native woody vegetation extent) ▪ Inflow hydrology ▪ Aerial waterbird survey ▪ CMA regional monitoring 	<p>2010</p> <ul style="list-style-type: none"> ▪ Wetland extent (subset of native vegetation extent and type) ▪ Inflow hydrology ▪ Aerial waterbird survey ▪ CMA regional monitoring 	<p>2015</p> <ul style="list-style-type: none"> ▪ Wetland extent and condition (subset of native vegetation extent, type and condition)
<p>Potential index</p>	<p>Wetland Condition Index</p>		
<p>Relevant national matters for targets</p>	<ul style="list-style-type: none"> ▪ Aquatic ecosystems integrity (rivers and other wetlands) ▪ Nutrients in aquatic environments ▪ Turbidity/suspended particulate matter in aquatic environments ▪ Surface water salinity in freshwater aquatic environments ▪ Significant native species and ecological communities ▪ Ecologically significant invasive species 		

Specific priority

Estuaries and Coastal Lakes

9. By 2015 there is an improvement in the condition of estuaries and coastal lake ecosystems

<p>Rationale and intent of target</p>	<p>The intent of this target is to sustain functional and resilient estuary and coastal lake ecosystems that reflect the social, economic, cultural and environmental values of NSW communities. Estuaries and coastal lakes have an important environmental and economic role as a breeding ground for many fish and shellfish species, and as the site of oyster production. They also have other environmental functions, such as filtering pollutants, and provide opportunities for recreational activities, such as fishing and boating, which also support coastal tourism. Access to healthy estuaries and coastal lakes supports many location-specific values for Aboriginal and non-Aboriginal communities.</p> <p>Most NSW estuaries and coastal lakes are modified or degraded to some extent - very few remain pristine (NLWRA, 2002 and HRC, 2002). Importantly, the condition of estuaries and coastal lakes that are considered 'pristine' (NLWRA, 2002 and HRC, 2002) should be maintained. Estuaries and coastal lakes are variously subject to threats and pressures, particularly from urban development, inappropriate land management (point and diffuse source pollution) and recreational use. Management of other coastal landforms, including beaches and dunes is important for achieving this target.</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to the targets for:</p> <ul style="list-style-type: none"> ▪ <i>Riverine ecosystems</i>: The riverine ecosystems target promotes freshwater quality, improved habitat, and the integrated management of downstream water bodies such as estuaries and coastal lakes. ▪ <i>Marine waters</i>: The management and condition of estuaries has a direct influence on the near shore marine environment. ▪ <i>Land capability</i>: Management of land within capabilities will reduce off-site pollutant impacts in estuaries and coastal lakes.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation such as the <i>Coastal Protection Act 1979</i>, <i>Fisheries Management Act 1994</i>, <i>Coastal Policy 1997</i>, <i>Water Quality and River Flow Interim Environmental Objectives</i>, <i>Water Management Act 2000</i>, <i>State Water Management Outcomes Plan 2002</i>, <i>SEPP 71 - Coastal Protection</i>, the NSW Government's <i>Statements of Intent</i> (in particular for Coastal Lakes of NSW), and other <i>Healthy Rivers Commission Inquiry Recommendations</i>.</p> <p>The NSW Government has committed to implementing the first stage of the <i>Coastal Lakes Strategy</i> (HRC, 2003). This includes preparing sustainability assessments and strategies for eight priority coastal lakes.</p> <p>NSW Estuary Management Plans are the basis for estuary management in NSW. These are developed at a local scale and should be based on best available information and community consultation.</p> <p>DNR has prepared a draft <i>Coastal Zone Management Manual</i> to guide the integrated management of estuaries and the coastal zone. The manual is being updated to consider initiatives such as regional strategies and CMAs.</p> <p>The comprehensive Coastal Assessment has funded the development of important tools and datasets that can be used to underpin management and planning in the coastal zone.</p>

How CMAs should apply this state-wide target in their regions	<p>The values provided by estuaries and coastal lakes vary at the local, regional and state scales. Specific targets and actions within CAPs should aim to improve degraded estuaries and coastal lakes ecosystems consistent with regional community values and capacity, NRM priorities and local characteristics. CMAs may establish partnerships with local government which is responsible for developing and implementing Estuary Management Plans. Regional priorities may be identified in the Statement of Intent for the Coastal Lakes of NSW, Water Quality and River Flow Interim Environmental Objectives and Catchment Blueprints.</p> <p>The Department of Planning and Infrastructure's current work to develop regional strategies and manuals along the NSW coast will produce further location-specific guidance for this target, particularly in relation to the integration of planning reforms with natural resource management in the coastal zone.</p>		
Examples of how key components of the state-wide standard will assist CMAs to promote this target	<p>All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are:</p> <ul style="list-style-type: none"> ▪ <i>Collection and use of knowledge:</i> The <i>Statement of Intent for NSW Coastal Lakes</i> is an example of a priority or strategy that should be identified, as it is already in place at a state level. ▪ <i>Opportunities for collaboration:</i> CMAs should identify and communicate with groups such as local estuary committees and the Department of Lands which have related roles, interests or responsibilities. 		
Example of a catchment target contributing to this target	<p>No decline, and where appropriate an improvement, in Estuarine Ecosystem Functioning as reflected in key indicators by 2012 (<i>Central Coast Blueprint</i>).</p>		
Measures to assess progress against state-wide target	<p>2005</p> <ul style="list-style-type: none"> ▪ Extent of mangroves, saltmarsh, seagrass and macrophytes⁴⁰ ▪ Freshwater inflow ▪ Fish assemblages ▪ Stress biomarkers ▪ Pelagic chlorophyll <i>a</i> ▪ Estuaries Baseline Data Collection Program ▪ Hydrography survey ▪ NSW Shellfish Program ▪ CMA regional monitoring 	<p>2010</p> <ul style="list-style-type: none"> ▪ Extent of mangroves, saltmarsh, seagrass and macrophytes ▪ Freshwater inflow ▪ Fish assemblages ▪ Stress biomarkers ▪ Pelagic chlorophyll <i>a</i> ▪ Estuaries Baseline Data Collection Program ▪ Hydrography survey ▪ NSW Shellfish Program ▪ CMA regional monitoring 	<p>2015</p> <ul style="list-style-type: none"> ▪ Extent of mangroves, saltmarsh, seagrass and macrophytes ▪ Freshwater inflow ▪ Fish assemblages ▪ Stress biomarkers ▪ Pelagic chlorophyll <i>a</i> ▪ Estuaries Baseline Data Collection Program ▪ Hydrography survey ▪ NSW Shellfish Program ▪ CMA regional monitoring
Potential index	<p>Estuary Condition Index</p>		
Relevant national matter for targets	<ul style="list-style-type: none"> ▪ Estuarine, coastal and marine habitats integrity 		

⁴⁰ As defined by the Comprehensive Coastal Assessment

Macro-environmental

Soil Condition



10. By 2015 there is an improvement in soil condition

<p>Rationale and intent of target</p>	<p>The intent of this target is to conserve the ecosystem functions of soils, improve the profitability of industries supported by soils, promote the biological diversity within soils, and limit off-site impacts of soil degradation (such as water quality degradation). Healthy soils are a fundamental element of healthy, functioning landscapes as they have nutrient cycling and moisture holding capability and support diverse populations of flora and fauna both above and below the ground. They are also more stable than soils in poor condition and are less subject to erosion and other degradation pressures. The achievement of this target will improve structural stability, nutrient cycling and drainage properties of soils.</p> <p>Current trends in soil condition are difficult to determine as limited recent state-wide data are available. Available data indicate that the area affected by salinity in NSW is increasing, as is the area affected by acidity (DEC, 2003). It is also estimated that the rate of soil erosion is five times the rate of soil formation (DEC, 2003).</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to targets for:</p> <ul style="list-style-type: none"> ▪ <i>Invasive species</i>: Reducing the impact of invasive species such as rabbits, feral, pigs and goats can reduce soil erosion and land degradation. ▪ <i>Riverine ecosystems</i>: Improving soil condition will lead to an associated improvement in water quality.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation such as the Policy for Sustainable Agriculture 1998, the State Soils Policy 1987, the Salinity Strategy 2000, and the <i>Soil Conservation Act 1938</i>.</p>
<p>How CMAs should apply this state-wide target in their regions</p>	<p>Many actions to improve soil condition will have direct benefits for land managers as well as broader regional benefits which may affect the way CMAs structure incentives and education programs that contribute to achieving this target. Soil types and properties vary widely as do the management practices that result in improved condition. Local expertise and experience will be critical to developing and implementing regionally relevant practices.</p> <p>CMAs will be able to assess their contribution to these targets through supplementing data collected to inform state-wide progress or by monitoring surrogates such as groundcover or changes in land management practices.</p>
<p>Examples of how key components of the state-wide standard will assist CMAs to promote this target</p>	<p>All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are:</p> <ul style="list-style-type: none"> ▪ <i>Determination of scale</i>: Management actions that improve soil condition will be assessed by considering the different scales of expected public and private benefits. For example, funds to improve soil health may be directed towards actions that reduce the impacts of erosion on water quality downstream. ▪ <i>Monitoring and evaluation</i>: Monitoring and evaluating soil condition at a range of scales will inform management responses aimed at achieving improved condition.

Example of a catchment target contributing to this target	Soil degradation in high hazard areas identified in 2001 is reduced by a minimum of 50 ha by 2012 (<i>Central Coast Blueprint</i>).		
Measures to assess progress against state-wide target	2005 <ul style="list-style-type: none"> ▪ Soil survey and tests (SALIS) ▪ Rangeland Assessment Program ▪ Soil and land use surveys ▪ CMA regional monitoring 	2010 <ul style="list-style-type: none"> ▪ Groundcover ▪ Soil carbon content ▪ Soil survey and tests ▪ Rangeland Assessment Program ▪ CMA regional monitoring 	2015 <ul style="list-style-type: none"> ▪ Groundcover ▪ Soil carbon content ▪ Soil survey and tests ▪ Rangeland Assessment Program ▪ CMA regional monitoring
Potential index	Soil condition index (in conjunction with Land and Soil Capability assessment)		
Relevant national matters for targets	<ul style="list-style-type: none"> ▪ Soil condition ▪ Land salinity 		

Specific priority

Sustainable land use

11. By 2015 there is an increase in the area of land that is managed within its capability

<p>Rationale and intent of target</p>	<p>The intent of this target is to sustain long-term land use without degradation of the land resource to support the long-term profitability of industries that depend on the land and so that ecosystem functions provided by land are maintained. The achievement of this target will contribute directly to improving soil condition, reducing specific degradation processes such as erosion and dryland salinity as well as contribute to conserving biodiversity and minimising adverse affects of land use on water quality.</p> <p>Increasing the area of land that is managed within its capability focuses on land use and management practices rather than resource condition, however many experts believe appropriate land use (including land management practices) is possibly the most important factor influencing land degradation. The NLWRA (2002) found that ‘continued improvements [in the condition of our natural resources] will largely depend on further improvements in land management practices. In some cases changes to land use may have to occur, particularly where some uses are unsustainable.’ Rural communities and industries already have a strong understanding of the value of sustainable practices for long-term viability.</p> <p>Current trends in land management are difficult to determine as limited recent state-wide data are available. Available data indicate that the area affected by salinity in NSW is increasing, as is the area affected by acidity (DEC, 2003).</p>
<p>Key links to other state-wide targets</p>	<p>This target links to many of the other state-wide targets. For example it is linked to the targets for:</p> <ul style="list-style-type: none"> ▪ <i>Soil condition</i>: Increasing the area of land managed sustainably is the single most important factor affecting long-term soil condition. ▪ <i>Invasive species</i>: Sustainable land use can help to limit the spread and impacts of invasive species on productive land. ▪ <i>Estuaries and coastal lakes</i>: Acid sulfate soils are major issues in and around estuaries. Effective management of these soils has implications for improved condition of estuaries.
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and legislation such as the Policy for Sustainable Agriculture 1998, the State Soils Policy 1987, the Salinity Strategy 2000, and the <i>Soil Conservation Act 1938</i>. DNR and DPI are working to enhance state-wide data on land use and are collaborating with CMAs to promote appropriate land management. DNR has recently developed a Land and Soil Capability assessment method that, following further development, testing and consultation, could be used to assess land capability.</p>

How CMAs should apply this state-wide target in their regions	<p>Actions to promote land managed within its capability will vary at regional and local scales, although they should reflect state priorities where these are identified. Cross-regional values may need to be considered where there are cross-regional impacts associated with land degradation. The balance of direct benefits for land holders with broader benefits from actions to achieve this target may affect the targeting of incentives. The Land and Soil Capability System⁴¹ provides a method for assessing hazards at the regional and local levels. Application of this target may prompt CMAs to assess the land in their catchment according to that classification system and target incentives towards the greatest hazards. Regional priorities may already be identified in Catchment Blueprints.</p> <p>CMAs will be able to assess their contribution to these targets through supplementing data collected to inform state-wide progress or by monitoring surrogates such as groundcover.</p>		
Examples of how key components of the state-wide standard will assist CMAs to promote this target	<p>All elements of the state-wide standard could be applied by CMAs when promoting this target. Some examples are:</p> <ul style="list-style-type: none"> ▪ <i>Collection and use of knowledge:</i> Understanding and using scientific and local knowledge about land capability and management methods is key to widespread adoption of sustainable practices. ▪ <i>Community engagement:</i> As actions on private land will have the greatest impact on the achievement of this target, CMAs should engage private land managers in the promotion of appropriate land management practices. 		
Example of a catchment target contributing to this target	<p>By 2012, 70% of area cropped is managed under a best management practice, suitable to prevailing soil, climate and landscape capabilities, as identified by NSW Agriculture (<i>Border Rivers Blueprint</i>).</p>		
Measures to assess progress against state-wide target	<p>2005</p> <ul style="list-style-type: none"> ▪ Land Capability Mapping ▪ ASS hazard mapping ▪ Salinity hazard mapping ▪ Salinity outbreak mapping ▪ Dustwatch ▪ CMA regional monitoring 	<p>2010</p> <ul style="list-style-type: none"> ▪ Land and soil capability layer ▪ Land-use and management survey 	<p>2015</p> <ul style="list-style-type: none"> ▪ Land and soil capability layer ▪ Land-use and management survey
Potential index	<p>Land and Soil Capability System (in conjunction with a Soil Condition Index)</p>		
Relevant national matters for targets	<ul style="list-style-type: none"> ▪ Soil condition ▪ Land salinity 		

⁴¹ The Land and Soil Capability System has been recently developed by DIPNR and applied within the PVP Developer.

Macro-environmental

Socio-economic outcomes

12. Natural resource decisions contribute to improving or maintaining economic sustainability and social well-being

<p>Rationale and intent of target</p>	<p>The intent of this target is to ensure that NRM contributes to balanced environmental, social and economic outcomes. It recognises that these outcomes are inter-dependent and that multiple benefits can be achieved through NRM. It also reflects the NSW Government’s policy direction for NRM. Importantly, natural resource initiatives are most likely to be successful when positive benefits are achieved across the ‘triple bottom line’. Contributions to this target should therefore help to achieve the biophysical targets.</p> <p>Achieving this target will be a key outcome of successful application of the state-wide standard. The standard will help decision makers to rigorously and transparently inform the trade-offs they make. It will help them to identify the likely outcomes of their decisions and the risks associated with these. It will also help them to engage with the social and economic issues faced by their communities.</p> <p>It is not the intent of this target to assess the success of NRM through measures of the health and prosperity of communities. These outcomes are influenced by many other factors external to NRM. However, the target will ensure that NRM makes a positive contribution to these outcomes.</p>
<p>Key links to other state-wide targets</p>	<p>Achieving this target will contribute to the achievement of all state-wide resource condition targets. It is important for both short-term and ongoing successful achievement of natural resource outcomes.</p>
<p>Key supporting state-wide policies and actions</p>	<p>This target builds on existing state-wide policies and approaches to NRM. It will be important for state agencies to consider this target in the context of all of their existing and future natural resource policies and their natural resource decisions. DNR is currently leading the development of the State’s Natural Resources Policy and DPI is developing a Profitable and Sustainable Primary Industries Policy. Both of these will provide information on initiatives that contribute to achieving this target. The decisions made at a state level in relation to natural resources such as water and native vegetation are probably the most critical for achieving this target because of people’s and industries’ long-term dependence on these assets.</p>
<p>How CMAs should apply this state-wide target in their regions</p>	<p>Applying the state-wide standard will help CMAs to achieve this target. It will help them to determine the likely social and economic outcomes of their decisions and investments. Structuring investments around incentives will also help CMA’s make positive contributions to achieving these targets.</p> <p>Catchment targets and management actions that are developed to contribute to this state-wide target can be integrated with the achievement of catchment targets for biophysical resource condition and do not necessarily need to stand alone. The NRC will reference useful information for integrating social and economic considerations in NRM in its Guide for CMAs on the state-wide standard.</p>

<p>Examples of how key components of the standard will assist CMAs to promote this target</p>	<p>All components of the state-wide standard could be applied by CMAs when promoting this target. Some specific examples of how the state-wide standard could be applied by CMAs are:</p> <ul style="list-style-type: none"> ▪ <i>Determination of scale:</i> Focusing on scale, and in particular the relevant community scale for delivery of investment, can highlight opportunities to simultaneously achieve environmental, economic, social and cultural benefits. ▪ <i>Opportunities for collaboration:</i> CMAs should investigate opportunities for formation of partnerships and collaborative approaches. This will contribute to improved understanding of social priorities and help to achieve social outcomes. 		
<p>Example of a catchment target contributing to this target</p>	<p>By 2012 have in place a range of government and private sector incentives and initiatives which:</p> <ul style="list-style-type: none"> ▪ recognise and offset the costs of managing land primarily for native biodiversity and landscape protection and function ▪ encourage a balance of production and natural resource management ▪ provide and support education, training and capacity building (<i>Central West Blueprint</i>). 		
<p>Measures to assess progress against state-wide target</p>	<p>2005</p> <ul style="list-style-type: none"> ▪ ABARE data ▪ ABS census data ▪ ABS economic data ▪ CMA regional reporting ▪ State agency reporting 	<p>2010</p> <ul style="list-style-type: none"> ▪ State-wide survey 	<p>2015</p> <ul style="list-style-type: none"> ▪ State-wide survey
<p>Potential index</p>	<p>Index of contributions to socio-economic outcomes</p>		
<p>Relevant national matters for targets</p>	<p>The Australian and NSW Government Joint Steering Committee requires CMAs' three-year Investment Strategies to not include community targets separate from catchment targets. However, promotion of these state-wide community targets can contribute to achieving biophysical targets and intermediate outcomes identified in the National Framework.</p>		

Specific priority

Community capacity

13. There is an increase in the capacity of natural resource managers to contribute to regionally relevant natural resource management

<p>Rationale and intent of target</p>	<p>The intent of this target is to ensure that natural resource managers (including agencies, industry, community groups and individual land managers) continue to develop their capacity and willingness to contribute to regionally relevant NRM. The capacity of natural resource managers is largely determined by their levels of human, social and economic capital, including their skills, knowledge, networks, confidence and trust. This target is focused on attributes of capacity which can be directly influenced by NRM investment and in turn, lead to behavioural changes identified as important NRM outcomes.</p> <p>There is already a strong understanding amongst industries and rural communities about the value of good natural resource management for long-term viability. Capacity building is required because of the complexities of landscape processes and land management systems, uncertainty about ways forward, continuing developments in scientific understanding and knowledge, high levels of turnover in land managers and other natural resource managers, and the need to improve institutional and governance arrangements to support adaptive management. There is no timeframe specified in this target because it is both an immediate and ongoing priority. The focus on regional relevance acknowledges the diversity of landscapes in NSW and affirms the importance of regional expertise, knowledge and commitment and the development and implementation of practices relevant to each region.</p>
<p>Key links to other state-wide targets</p>	<p>Developing community capacity for NRM will contribute to the achievement of all state-wide resource condition targets. Community capacity is both a short-term and ongoing requirement for progression towards natural resource outcomes.</p>
<p>Key supporting state-wide policies and actions</p>	<p>Many state NRM policies include actions focused on building community capacity and engaging the community in NRM decisions. Agencies' responsibilities under <i>Learning for Sustainability</i>, the NSW Environmental Education Plan 2002-2005, should contribute to achieving the community capacity target. These responsibilities are being reviewed as part of the development of a new education plan beginning in 2006. Agencies will also help to build CMA's capacity through providing knowledge products, technical expertise and working collaboratively.</p>
<p>How CMAs should apply this state-wide target in their regions</p>	<p>CMAs already have some responsibilities for education, training and the provision of material for NRM under the <i>Catchment Management Authorities Act 2003</i>. Actions fulfilling this responsibility will contribute to the achievement of the state-wide community capacity target. CMAs will also target incentives to address some of the financial constraints that limit the capacity of natural resource managers to contribute to NRM outcomes.</p> <p>Catchment targets and management actions that are developed to contribute to this state-wide target will often be integrated with the achievement of catchment targets for biophysical resource condition. As such, capacity building should not be seen as a stand-alone activity and in most instances, is likely to be more effective if seen as an essential part of CMA programs.</p> <p>Principles to guide community capacity building are identified in the <i>National Natural Resource Management Capacity Building Framework</i> (NRM Ministerial Council Programs Committee, 2002).</p>

Examples of how key components of the standard will assist CMAs to promote this target	<p>All components of the state-wide standard could be applied by CMAs when promoting this target. Some specific examples of how the state-wide standard could be applied by CMAs are:</p> <ul style="list-style-type: none"> ▪ <i>Community engagement</i>: It is important that CMAs employ appropriate strategies to create awareness and build capacity to participate in NRM, thereby increasing natural resource manager's knowledge and skills. ▪ <i>Opportunities for collaboration</i>: CMAs should investigate opportunities for formation of partnerships. This will contribute to improved management of natural resources through collaboration and co-learning with other natural resource managers. 		
Example of a catchment target contributing to this target	<p>Increase the percentage of land managers using conservation farming practices (minimum till cropping, crop and pasture rotation, sustainable stock management, stubble retention and soil/water conservation works) from 60% to at least 75% by 2010 (<i>Gwydir Blueprint</i>).</p>		
Measures to assess progress against state-wide target	<p>2005</p> <ul style="list-style-type: none"> ▪ ABARE data ▪ ABS census data ▪ CMA regional reporting ▪ Local government rate base data ▪ NSW Environmental Education Plan reporting 	<p>2010</p> <ul style="list-style-type: none"> ▪ State-wide survey 	<p>2015</p> <ul style="list-style-type: none"> ▪ State-wide survey
Potential index	<p>Index of community capacity</p>		
Relevant national matters for targets	<p>The National Framework recognises community capacity as an intermediate outcome, and not a Matter for Target. The Australian and NSW Government Joint Steering Committee requires CMAs' three-year Investment Strategies to not include community targets separate from catchment targets. However, promotion of these state-wide community targets can contribute to achieving biophysical targets and intermediate outcomes identified in the National Framework.</p>		

Reference list

- ANZECC and ARMCANZ (2000) *The Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Available at <http://www.deh.gov.au/water/quality/nwqms/index.html#quality>.
- DEC (2003) *NSW State of the Environment Report*, Department of Environment and Conservation, Sydney.
- DEC (2004) *Marine Water Quality Objectives for NSW Ocean Waters*, Department of Environment and Conservation, Sydney.
- DEH and DIPNR (2005) *New South Wales Woody Vegetation Change and Extent Mapping*, Department of the Environment and Heritage, Canberra and Department of Infrastructure and Planning, Sydney.
- DIPNR (2003) *CPR Coastal Plant Regeneration*, NSW Department of Infrastructure Planning and Natural Resources, Coastal Unit Newcastle and Coastcare Sydney.
- DIPNR (2005) *Why are Estuaries Important?* Available at <http://www.dlwc.nsw.gov.au/care/water/estuaries/About>.
- DLWC (1996) *The NSW Wetlands Management Policy*, Clarendon Press, Brookvale
- DLWC (1998) *The NSW Groundwater Quality Protection Policy*. Available at http://www.dlwc.nsw.gov.au/care/water/wr/pdfs/quality_policy.pdf.
- DLWC (2000) *Taking on the Challenge: NSW Salinity Strategy*, Department of Land and Water Conservation, Sydney.
- DLWC (2001) *Coastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques*, Coastal Unit Department of Land and Water Conservation, Newcastle.
- DLWC (2002) *State Water Management Outcomes Plan*, Parts 1 and 2. Available at <http://www.dlwc.nsw.gov.au/care/water/>.
- DLWC (2002) *The NSW State Groundwater Dependent Ecosystems Policy*. Available at http://www.dlwc.nsw.gov.au/care/water/wr/pdfs/policy_180602.pdf.
- DLWC, *NSW Weirs Policy*. Available at <http://www.dlwc.nsw.gov.au/care/water/wr/pdfs/weir.pdf>.
- EPA (1999) *NSW Water Quality and River Flow Interim Environmental Objectives*, NSW Environment Protection Authority, Sydney.
- Great Artesian Basin Consultative Council (2000) *Great Artesian Basin Strategic Management Plan*. Available at <http://www.gab.org.au/inforesources/downloads/strategic/smp.pdf>.
- HRC (2002) *Independent Public Inquiry into Coastal lakes*, Health Rivers Commission, Sydney.
- HRC (2003) *Statement of Intent for the Coastal Lakes of New South Wales*, Healthy Rivers Commission, Sydney.

Keith, D. (2004) *Ocean shores to desert dunes: the native vegetation of New South Wales*, Department of Environment and Conservation, Hurstville, NSW.

MDBC (1998) *Floodplain Wetlands Management Strategy for the Murray-Darling Basin-A component of the Natural Resources Management Strategy*, Murray-Darling Basin Commission, Canberra.

MDBC (2004) *Murray-Darling Basin Floodplain Management Strategy*. Available at <http://publications.mdbc.gov.au>.

Morton, S. Bourne, G. Crisofani, P. Cullen, P. Possingham, H & Young, M (2002) *Sustaining our Natural Systems and Biodiversity; an independent report to the Prime Minister's Science, Engineering and Innovation Council*, CSIRO and Environment Australia, Canberra.

MPA (2000) *Developing a Representative System of Marine Protected Areas in NSW: An Overview*, Marine Parks Authority, Sydney.

MPA (2004) *Strategic Framework for the Evaluation and Monitoring of Marine Parks in NSW*, Marine Parks Authority, Sydney.

NLWRA (2002) *Australian Catchment, River and Estuary Assessment, V1*, National Land and Water Resources Audit, Canberra.

NLWRA (2002) *Australia's Natural Resources 1997-2002 and Beyond*, National Land and Water Resources Audit, Canberra.

NLWRA (2004) *Social and economic information for NRM: An initial discussion paper*, National Land and Water Resources Audit, Canberra.

NPWS (1999) *NSW Biodiversity Strategy*, National Parks and Wildlife Service, Hurstville.

NRM Ministerial Council Programs Committee (2002) *National Natural Resource Management Capacity Building Framework*. Available at <http://www.nrm.gov.au/publications/capacity-building/index.html>.

NSW Agriculture (1998) *NSW Weed Strategy*. Available at http://www.agric.nsw.gov.au/reader/weed_legislation/nswstrat.htm.

NSW Agriculture (1998) *Policy for Sustainable Agriculture in NSW*, NSW Agriculture, Orange.

NSW Fisheries and NPWS (2001) *Developing a Representative System of Marine Protected Areas in NSW: An Overview*, Marine Parks Authority, Sydney.

NSW Government (1997) *NSW Coastal Policy 1997: A Sustainable Future for the NSW Coast*. Available at http://www.coastalcouncil.nsw.gov.au/cc_121.html.

NSW Government (2002), *Learning for Sustainability, the NSW Environmental Education Plan 2002-2005*, NSW Council on Environmental Education, Sydney.

Ramsar Convention Secretariat (2004) *The Ramsar Convention Manual: A guide to the convention on wetlands*. Available at http://www.ramsar.org/lib_manual2004e.htm#cap1.

Rutherford, I.D., Jerie, K. and Marsh, N. (2000) *A rehabilitation manual for Australian streams*, Cooperative Research Centre for Catchment Hydrology and Land and Water Resources Research and Development Corporation. Available at <http://www.rivers.gov.au/publicat/rehabmanual.htm>.

Sinclair Knight Merz (2003) *Projections of Groundwater Extraction Rates and Implications for Future Demand and Competition for Surface Water*, Murray-Darling Basin Commission and CSIRO Australia, Canberra.

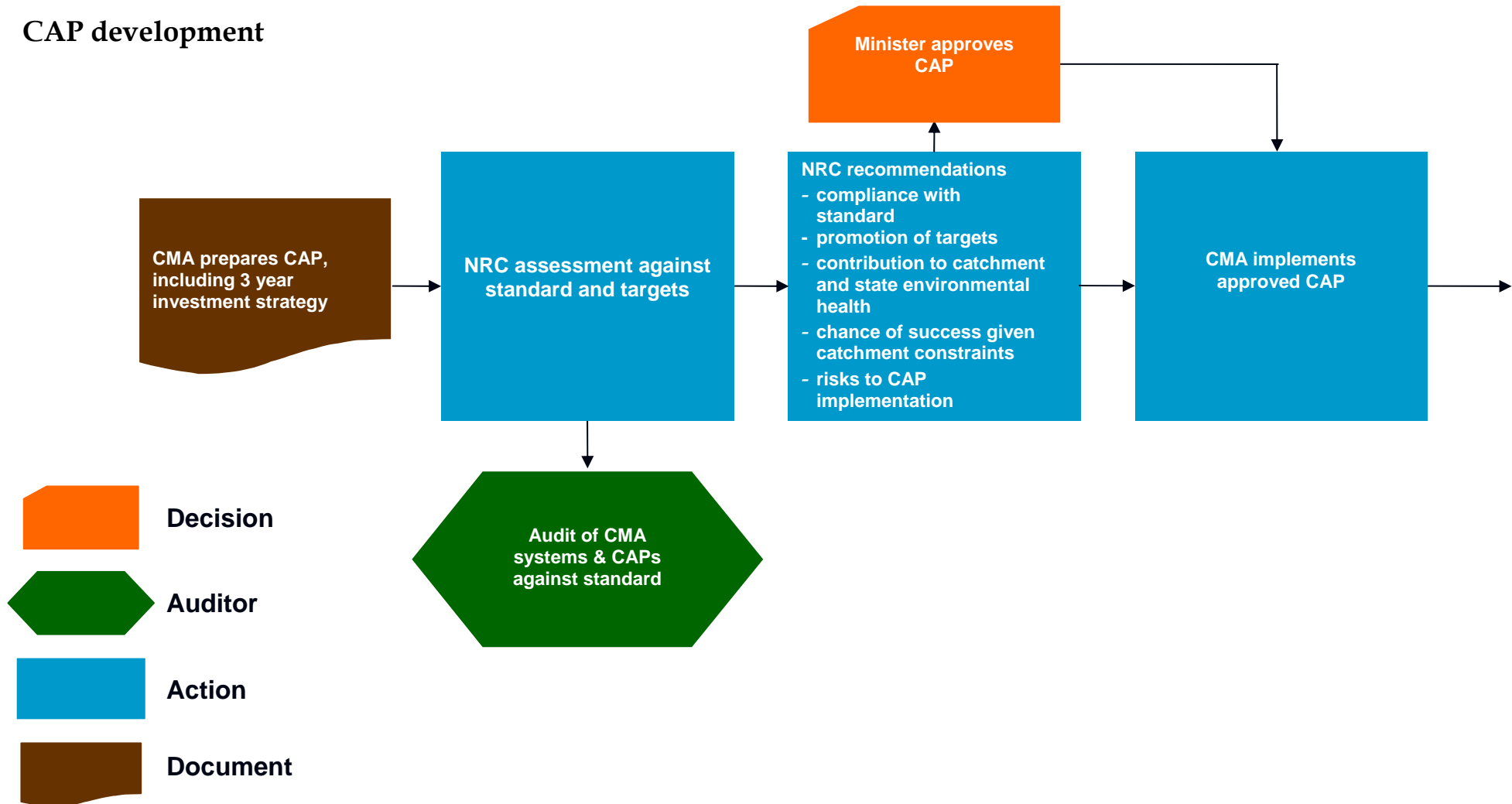
Soil Conservation Service (1987) *State Soils Policy*. Available at <http://www.dlwc.nsw.gov.au/care/soil/policy.htm>.

Attachment 3

AUDIT PROGRAM

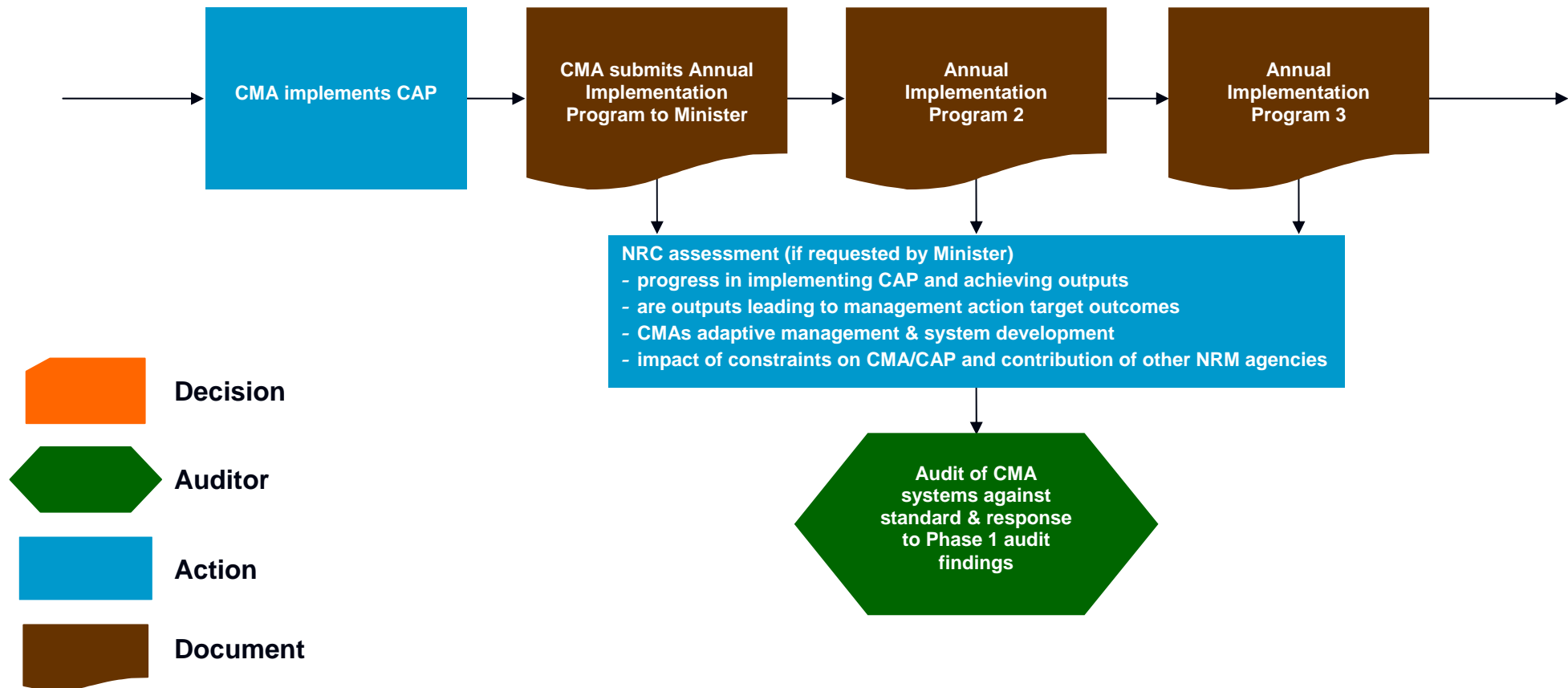
Phase 1

CAP development



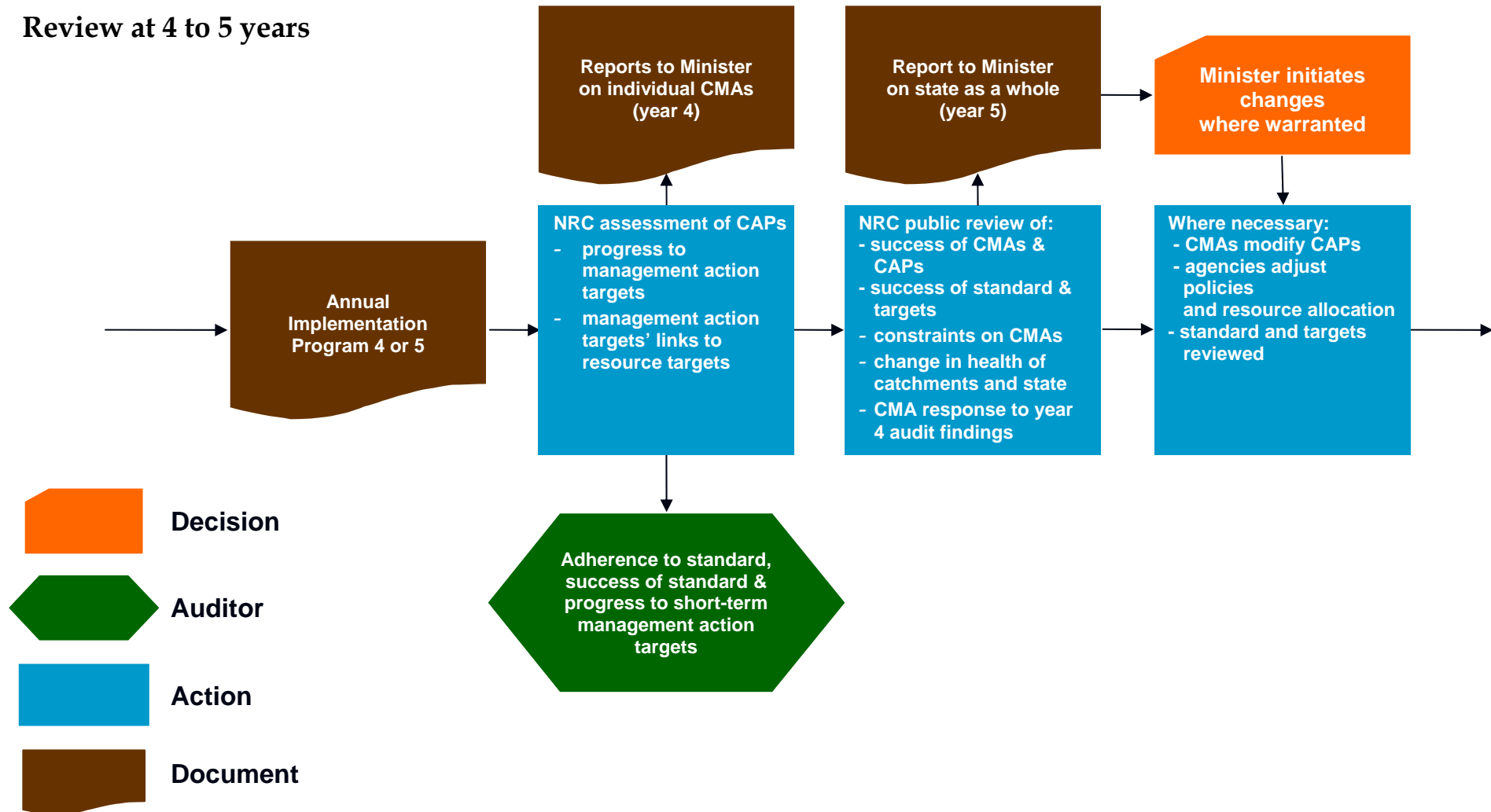
Phase 2

Reviews of Annual Implementation Programs at request of Minister



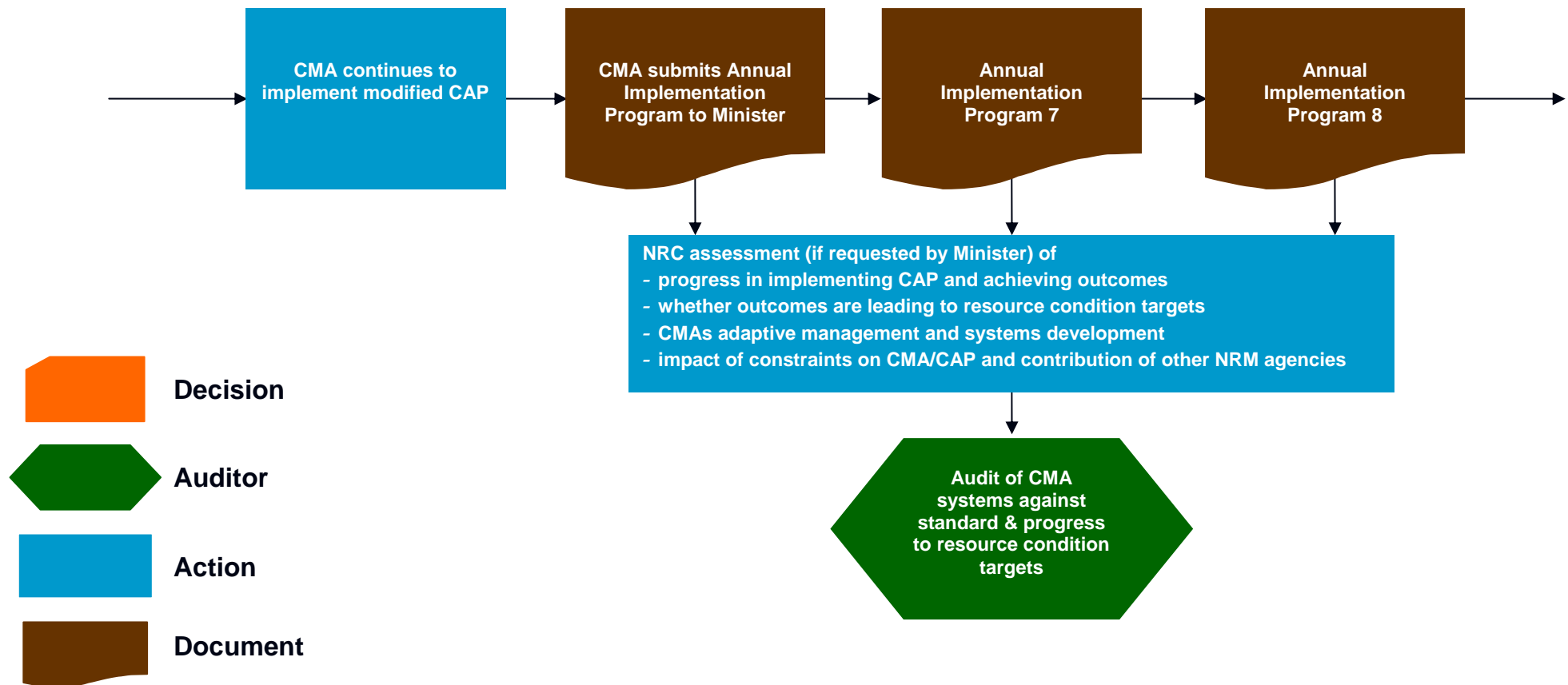
Phase 3

Review at 4 to 5 years



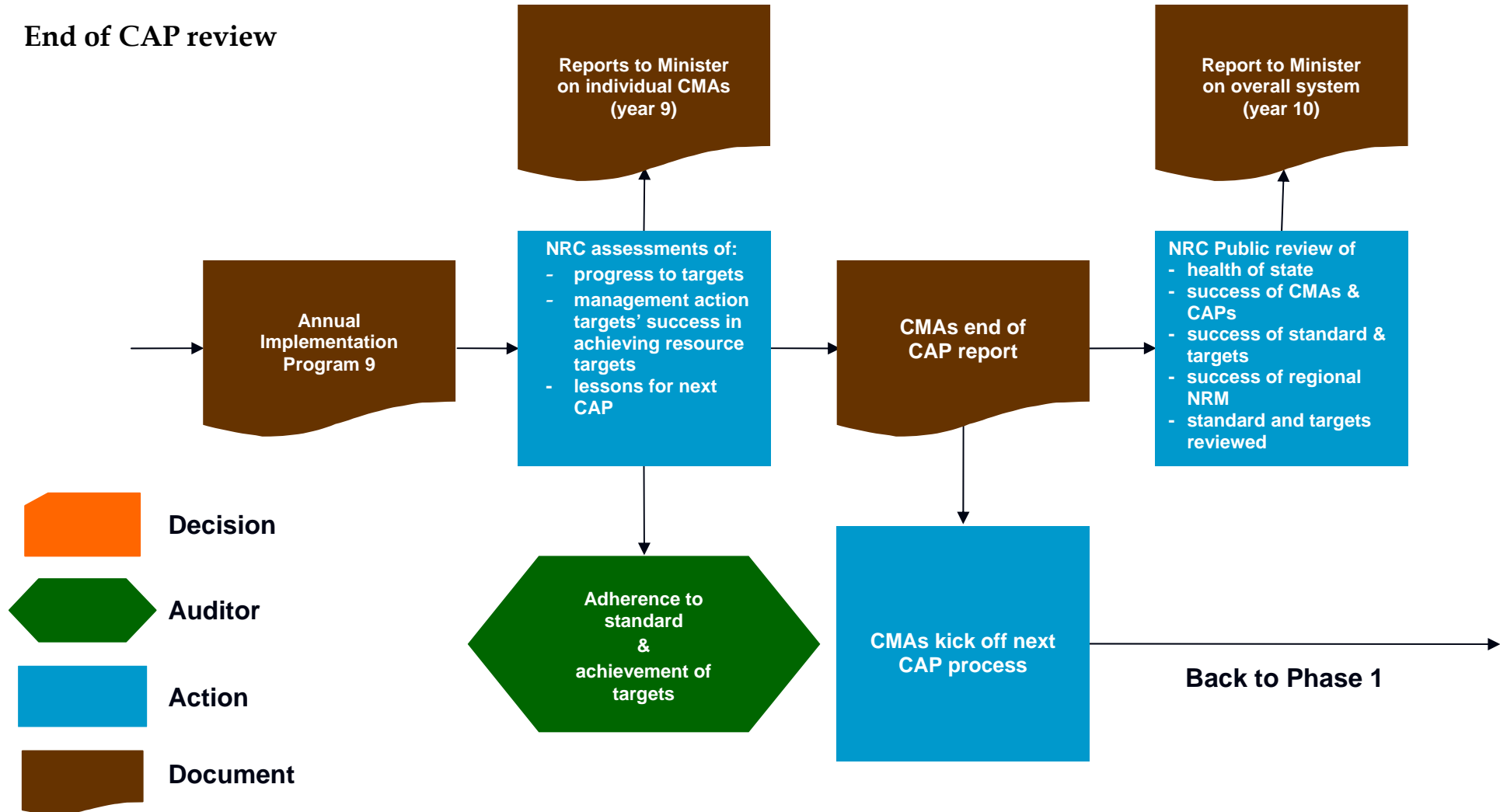
Phase 4

Reviews of Annual Implementation Programs at request of Minister



Phase 5

End of CAP review



Attachment 4

TERMS OF REFERENCE FOR MONITORING AND EVALUATION REVIEW



Premier of New South Wales
Australia

TERMS OF REFERENCE

Noting that the Natural Resources Commission is preparing a final report for submission to Government by July 2005 on its standard and targets for natural resource management, the Commission, as part of this process, is to determine appropriate arrangements for monitoring and evaluating the effectiveness of investments to achieve the state-wide targets. The Commission will undertake this work in consultation with the Department of Environment and Conservation, the Department of Natural Resources, the Department of Primary Industries, the Department of Lands, the Treasury and The Cabinet Office. The recommended arrangements will operate within existing resources.

For this task, the Commission will:

1. identify what monitoring and evaluation is required to support the state-wide targets and the total amount of resources needed for this monitoring and evaluation;
2. assess to what extent agencies' existing monitoring and evaluation programs provide the monitoring and evaluation necessary to support the state-wide targets;
3. identify which existing monitoring and evaluation programs can be modified to support the identified monitoring and evaluation needs;
4. identify which existing monitoring and evaluation programs can be rationalised (i.e. discontinued or scaled back) to permit the reallocation of resources to the identified monitoring and evaluation needs;
5. recommend a process for any necessary transition from extant monitoring and evaluation arrangements to the proposed monitoring and evaluation arrangements; and
6. recommend by the end of July 2005, as part of its final report to Government on the additional resource condition targets and indicators, proposed monitoring and evaluation arrangements to support the state-wide targets.

The arrangements recommended by the Commission must not inhibit agencies' capacity to meet any ongoing statutory obligations.

Attachment 5

EXISTING MONITORING AND EVALUATION THAT SUPPORTS STATE-WIDE TARGETS

The NRC requested that DNR, DEC, DPI and the Department of Lands provide information on existing monitoring and evaluation programs (M and E) relevant to the natural resource assets of biodiversity, water, land and community capacity, and to identify whether these programs could contribute to the assessment of progress towards state-wide targets. The NRC also did its own research on existing programs, to assess the extent to which they support M and E of progress towards each of the state-wide targets.

Overall, the NRC found that only a few of the existing M and E programs have state-wide coverage. Of those that do, most have limitations that mean they are inadequate for assessing progress towards state-wide targets. These limitations include, for example, insufficient spatial coverage, insufficient breadth to provide meaningful assessments, or insufficient ongoing resource allocations to allow the monitoring of trends.

However, despite the limitations, some of these existing programs provide useful starting points for building more comprehensive M and E programs. For example, some programs currently provide state-wide baselines, or will have potential if expanded. Others have limited spatial extent but could be used to inform understanding of trends of progress towards the targets. The NRC's assessment of specific programs and their potential usefulness in assessing progress towards the state-wide targets is summarised in the tables below.

Table A5.1 Key monitoring and evaluation programs or datasets that support state-wide biodiversity targets

Target	Key existing M and E program or datasets that support state-wide targets ⁴²	How they support state-wide targets	Comments	Meets or supports ongoing statutory obligations
Extent and condition of native vegetation	AGO/DNR Native woody vegetation extent 2005	State-wide baseline for native woody vegetation extent	No baseline extent for native vegetation with canopy <20% or groundcover Does not include condition	<i>Native Vegetation Conservation Act 1997</i> <i>Native Vegetation Act 2003</i>
	Keith vegetation classification ⁴³	State-wide classification and compilation map of native vegetation Estimated extent included	Coarse resolution Does not include condition	-
	Rangeland Assessment Program	Vegetation condition assessed annually at 338 sites over 14 years Includes soil surface condition	Western regions only	<i>Western Lands Act 1901</i>
	SPOT 5 satellite data	Will provide benchmark for native vegetation extent across the state and provide a reference point for future data captured	Currently 33% coverage of the state State-wide coverage by 2006 Additional scenes ordered as required	<i>Native Vegetation Act 2003</i>
Sustainability of native fauna populations	Aerial waterbird survey	Baseline and annual survey for abundance and diversity of wetland waterbirds	Indices have been determined and could be used to provide a measure of waterbird abundance Trends in index can be examined over time	-
	Sustainable Rivers Audit – Fish survey	Fish Index and Fish community health scores for rivers in the Murray-Darling Basin	Does not include coastal rivers NSW fish data are also compared with existing quantitative data (patchily obtained over past 30 years) to examine trends in fish assemblages	<i>Water Management Act 2000</i>

⁴² Bold text indicates proposed indicator to measure progress towards state-wide targets

⁴³ Keith, D (2004) Ocean shores to desert dunes: the native vegetation of New South Wales and the ACT, Department of Environment and Conservation, Hurstville, NSW.

Target	Key existing M and E program or datasets that support state-wide targets ⁴²	How they support state-wide targets	Comments	Meets or supports ongoing statutory obligations
Recovery of threatened species, populations and communities	Monitoring of listed threatened fish populations	Range and relative abundance of known threatened fish in marine and freshwater areas	Sporadic surveys only	<i>Fisheries Management Act 1994</i> <i>Environment and Protection and Biodiversity Conservation Act 1999</i>
Impact of invasive species	Vertebrate pest surveys (2002 & 2004)	State-wide infestation baseline for six vertebrate species (2004) State-wide infestation baseline for ten vertebrate species (2002)	Covers only a small set of invasive vertebrate species	-
	Weeds W1 weed database	Data for point location of W1 weed outbreaks	Database contains only some of the fourteen declared W1 weeds in NSW	<i>Noxious Weeds Act 1993</i>
	Aquatic weed mapping	Baseline data for aquatic weeds eg Salvinia, Alligator weed	Some weeds only	<i>Noxious Weeds Act 1993</i>
	Terrestrial weed mapping	Baseline extent for terrestrial weeds	Some weeds only Some mapping only for limited project areas	<i>Noxious Weeds Act 1993</i>
	Marine pest monitoring	Presence/absence and/or relative abundance of known marine pests	General surveys of high risk estuaries beginning in 2005/06 Currently only involves targeted surveys of known pests (eg the seaweed <i>Caulerpa taxifolia</i>)	<i>Fisheries Management Act 1994</i>

Table A 5.2 Key monitoring and evaluation programs or datasets that support state-wide water targets

Target	Key existing M and E program or datasets that support state-wide targets ⁴⁴	How they support state-wide targets	Comments	Meets or supports ongoing statutory obligations
Condition of riverine environments	Sustainable Rivers Audit	Monitors river health in Murray-Darling Basin rivers	Does not include coastal rivers	<i>Water Management Act 2000</i>
	Salinity monitoring	Provides supporting information for river condition	Negligible monitoring on NSW north and south coasts	<i>Water Management Act 2000</i>
	Integrated Monitoring of Environmental Flow	Provides supporting information for river condition	Not a monitoring program but designed to test hypotheses relevant to each region Limited to discrete locations	<i>Water Management Act 2000</i>
Groundwater systems to support groundwater dependent ecosystems and designated beneficial uses	Groundwater quality	EC at nominated bores	Mainly Murrumbidgee/ Murray region, with only limited coverage in other regions	<i>Water Management Act 2000</i>
	Groundwater Database System	Supports ratio of extraction to sustainable yield indicator by measuring water use by most licence holders in major groundwater aquifers	Usage is only monitored in large alluvial systems Monitoring network probably needs expansion Frequency of meter readings probably needs increasing	<i>Water Management Act 2000</i>

⁴⁴ Bold text indicates proposed indicator to measure progress towards state-wide targets

Target	Key existing M and E program or datasets that support state-wide targets ⁴⁵	How they support state-wide targets	Comments	Meets or supports ongoing statutory obligations
Condition of marine waters and ecosystems	Frequency of induced algal blooms	Provides a measure of marine water and ecosystem condition	Existing monitoring but not a widespread basis	-
	Species abundance in rocky reef communities	Provides a measure of marine water and ecosystem condition	Existing monitoring but not a widespread basis	-
	Beach watch	Provides supporting information for marine water and ecosystem condition	Existing programs in greater metropolitan areas Limited monitoring programs in regional areas	-
	Monitoring in Marine Protected Areas	Provides a measure of marine water and ecosystem condition	Existing monitoring but not a widespread basis	<i>Marine Parks Act 1997</i>
Condition and extent of important wetlands	AGO/DNR Native woody vegetation extent 2005	Baseline extent for forested, freshwater and saline wetlands	Coarse spatial resolution Does not define 'important' wetlands Does not measure condition	-
	Hydrography (regulated and unregulated)	Provides information on wetland condition by measuring inflow	Limited to only a few wetlands	<i>Water Management Act 2000</i>
	Aerial waterbird survey	Provides information on wetland condition by measuring abundance and diversity of wetland waterbirds	-	-

⁴⁵ Bold text indicates proposed indicator to measure progress towards state-wide targets

Target	Key existing M and E program or datasets that support state-wide targets	How they support state-wide targets	Comments	Meets or supports ongoing statutory obligations
Condition of estuaries and coastal lake ecosystems	Comprehensive Coastal Assessment	Detailed seagrass, mangrove, saltmarsh and macrophyte mapping for NSW (except Greater Metropolitan region)	Opportunistic surveys of estuarine macrophytes only but part of current Comprehensive Coastal Assessment	-
	Estuaries Baseline Data Collection Program	Supporting information for estuarine condition	39 sites on estuaries and 5 ocean tide sites	-
	Fish assemblages	Supporting information for estuarine condition	Existing monitoring but not a widespread basis	-
	Stress biomarkers	Supporting information for estuarine condition	Existing monitoring but not a widespread basis	-
	Pelagic chlorophyll <i>a</i>	Supporting information for estuarine condition	Existing monitoring but not a widespread basis	-

Table A 5.3 Key monitoring and evaluation programs or data set that support state-wide land targets

Target	Key existing M and E program or datasets that support state-wide targets	How they support state-wide targets	Comments	Meets or supports ongoing statutory obligations
Soil condition	Salinity outbreak mapping	Baseline for salinity extent and severity	Covers eastern and central NSW only	-
	Soil and land use surveys	Point based and general survey data for and managed within its capability, soil carbon, acidity, sodicity, salinity, structure	Limited spatial coverage Historical data from 1950 – 1988	-
	Soil tests (chemical)	Supporting information for soil condition	Not available due to privacy concerns No geo-referencing Other historical data (SALIS): 1980 – 1989 (chemical), 1980 – 1990 (physical), Acid Soil Action Program, 1997 – 2002	-
Land managed within its capability	Land Capability Mapping	Classification outlining types of land uses appropriate for a particular area of land and the types of land management practices needed to prevent soil erosion and maintain the productivity of the land	This classification to be replaced by the proposed Land Soil Capability as measure of progress towards state-wide land targets	-
	Soil Landscape Mapping (SALIS)	Broad-scale soil and landscape map	Covers eastern and central NSW only	-
	Salinity hazard mapping	Baseline for potential salinity in the landscape	-	-
	Acid Sulfate Soils (ASS) hazard mapping	Baseline for landscapes containing ASS and degree of probability along the NSW coastline	-	-
	Dustwatch	Surrogate measure for land management	-	-

Table A 5.4 Key monitoring and evaluation programs or data set that support state-wide community targets

Target	Key existing M and E program or datasets that support state-wide targets	How they support state-wide targets	Comments	Meets or supports ongoing statutory obligations
Community capacity	ABARE ⁴⁶ natural resource management surveys	Baseline data for awareness, skills and adoption of practices for agriculture	Agriculture sector only Limited resolution	-
	ABS census data	Provides basic socio-economic profile information to aid interpretation of progress	-	-
	CMA reporting on specific investments	Information on regionally relevant capacity building activities	Limited spatial coverage No method for aggregation	-
	NSW Environmental Education Plan reporting	Provides information on community capacity to contribute to outcomes for sustainability	DEC currently compiling 2 nd annual report	<i>Protection of the Environment Administration Amendment (Environmental Education) Act 1998</i>

⁴⁶ Australian Bureau of Agriculture and Resource Economics

Attachment 6

TRANSITIONAL ARRANGEMENTS FOR MONITORING AND EVALUATION

This attachment sets out the existing data available for assessing progress towards each state-wide target. It also provides snapshots at 2010 and 2015 of additional state-wide datasets that should be well established by these milestone dates. Snapshots are provided at these dates as they correlate with the mid- and end-points of the Catchment Action Plans. However datasets should be developed and improved incrementally between these dates. The NRC believes that most can be established by 2010.

The following tables outline for each target:

- the lead agency for M and E
- existing state-wide datasets and those that should be in place by the milestone dates of 2010 and 2015
- examples of available information that could help to enrich the assessment of progress towards the targets
- a potential index that could be developed using the state-wide datasets and other available information to form an aggregated measure of progress.

Selection of state-wide datasets

The selection of the state-wide datasets was a two stage process. Initially advice was sought from an Independent Indicators Working Group. This group was established to recommend to the NRC a suite of indicators that were:

- suitable for long-term monitoring
- capable of directly providing short term information on progress or being supported by other information to provide short term measures of progress
- translatable across catchment, region State and National scales
- consistent with National and Regional M&E initiatives

In addition advice was requested on:

- how and where indicators should be monitored
- who should undertake the monitoring
- how the information should be managed
- how the information should be interpreted and evaluated
- what the cost of monitoring these indicators was and how could this be resourced.

An additional process was used to refine the recommendations developed by this group and to develop cost-effective arrangements for implementing an M and E program that was robust and could be accommodated within existing resources. The criteria used to identify existing state-wide datasets and those that should be developed by milestone dates through this process included:

- meaningful condition indicator or credible surrogate for one or more targets
- technical capacity to implement by a milestone date
- feasible to resource within existing budgets
- state-wide coverage

- state-wide relevance

The selected datasets are listed along with other information that can also be used to assess progress in the tables for each state-wide target that follow.

Key steps for implementing monitoring and evaluation programs for each target

The tables below list information that can be used in an assessment of progress towards each target. Lead agencies have been allocated for each target to coordinate and drive development of the related M and E programs. However, lead agencies will work collaboratively with other agencies and groups to:

- Develop conceptual frameworks
- Design an M and E program for the target
- Ensure that the M and E for the target is well-coordinated with related M and E activities for other targets or other purposes
- Drive further development of state-wide datasets and more comprehensive supporting information from a range of sources
- Adopt and promote standards and protocols for M and E related to the target
- Evaluate and report progress towards the target at 2005 and 2010.

1 Native Vegetation

Target	By 2015 there is an increase in native vegetation extent and an improvement in native vegetation condition		
Lead agency	DNR		
Milestone dates	2005	2010	2015
State-wide datasets	Native woody vegetation extent (DEH/DNR 2005)	Native vegetation extent and type	Native vegetation extent, type and condition
Examples of other information	Vegetation coverage of NSW (Keith 2004) Rangeland Assessment Program Areas managed for conservation CMA regional monitoring PVP vegetation condition monitoring		
Potential index	Biodiversity index		

2 Native Fauna

Target	By 2015 there is an increase in the number of sustainable populations of a range of native fauna species		
Lead agency	DEC		
Year	2005	2010	2015
State-wide datasets	Native woody vegetation extent (DEH/DNR 2005)	Native vegetation extent and type	Native vegetation extent, type and condition
Examples of other information	Aerial waterbird survey Sustainable Rivers Audit – fish survey (MDB) Monitoring of listed threatened fish populations CMA regional monitoring		
Potential index	Biodiversity index		

3 Threatened Species

Target	By 2015 there is an increase in the recovery of threatened species, populations and ecological communities		
Lead agency	DEC		
Year	2005	2010	2015
State-wide datasets	Native woody vegetation extent (DEH/DNR 2005)	Native vegetation extent and type	Native vegetation extent, type and condition
Examples of other information	<p>Movement between categories of listed threatened species, populations and communities</p> <p>Monitoring of listed threatened fish populations</p> <p>CMA regional monitoring</p> <p>Actions implemented under Priority Action Statements and Threat Abatement Plans</p>		
Potential index	Biodiversity index		

4 Invasive Species

Target	By 2015 there is a reduction in the impact of invasive species		
Lead agency	DPI		
Year	2005	2010	2015
State-wide datasets	-	Distribution, abundance and impact of existing and emerging invasive species	Distribution, abundance and impact of existing and emerging invasive species
Examples of other information	Vertebrate pest surveys W1 weeds database Aquatic weed mapping Terrestrial weed mapping Marine pest monitoring CMA regional monitoring		
Potential index	Biodiversity index		

5 Riverine Ecosystems

Target	By 2015 there is an improvement in the condition of riverine ecosystems		
Lead agency	DNR		
Year	2005	2010	2015
State-wide datasets	Sustainable Rivers Audit (Murray Darling Basin)	Sustainable Rivers Audit (Murray Darling Basin and implementation in coastal rivers)	Sustainable Rivers Audit (coverage established for whole state)
Examples of other information	In-stream salinity levels CMA regional monitoring Integrated monitoring of environmental flows Water Sharing Plan reviews		
Potential index	Riverine condition index		

6 Groundwater

Target	By 2015 there is an improvement in the ability of groundwater systems to support groundwater dependent ecosystems and designated beneficial uses		
Lead agency	DNR		
Year	2005	2010	2015
State-wide datasets	Groundwater extractions Sustainable yields from groundwater aquifers	Ratio of groundwater extraction to sustainable yield	Ratio of groundwater extraction to sustainable yield
Examples of other information	EC at nominated bores Groundwater baseflow Artesian pressure Review of Groundwater Sharing Plans CMA regional monitoring		
Potential index	Groundwater index		

7 Marine Waters

Target	By 2015 there is no decline in the condition of marine waters and ecosystems		
Lead agency	DPI		
Year	2005	2010	2015
State-wide datasets	-	-	-
Examples of other information	Frequency of induced algal blooms Species abundance in rocky reef communities Beachwatch (local council monitoring) Marine Protected Areas CMA regional monitoring		
Potential index	Near-shore marine condition index		

8 Wetlands

Target	By 2015 there is an improvement in the condition of important wetlands, and the extent of those wetlands is maintained		
Lead agency	DEC		
Year	2005	2010	2015
State-wide datasets	Wetland extent (subset of native woody vegetation extent)	Wetland extent (subset of native vegetation extent and type)	Wetland extent and condition (subset of native vegetation extent, type and condition)
Examples of other information	Inflow hydrology Aerial waterbird survey CMA regional monitoring		
Potential index	Wetland condition index		

9 Estuaries and coastal lakes

Target	By 2015 there is an improvement in the condition of estuaries and coastal lake ecosystems		
Lead agency	DEC		
Year	2005	2010	2015
State-wide datasets	Extent of mangroves, saltmarsh, seagrass and macrophytes	Extent of mangroves, saltmarsh, seagrass and macrophytes	Extent of mangroves, saltmarsh, seagrass and macrophytes
Examples of other information	<p>Freshwater inflow</p> <p>Fish assemblages</p> <p>Stress biomarkers</p> <p>Pelagic chlorophyll <i>a</i></p> <p>Estuaries Baseline Data Collection Program</p> <p>Hydrography survey</p> <p>NSW Shellfish Program</p> <p>CMA regional monitoring</p>		
Potential index	Estuary condition index		

10 Soil Condition

Target	By 2015 there is an improvement in soil condition		
Lead agency	DNR		
Year	2005	2010	2015
State-wide datasets	-	Groundcover Soil carbon content	Groundcover Soil carbon content
Examples of other information	Soil survey and tests (SALIS) Rangeland Assessment Program CMA regional monitoring		
Potential index	Soil condition index incorporating land and soil capability assessment		

11 Sustainable land use

Target	By 2015 there is an increase in the area of land that is managed within its capability		
Lead agency	DNR		
Year	2005	2010	2015
State-wide datasets	-	Land and soil capability layer Land-use and management survey	Land and soil capability layer Land-use and management survey
Examples of other information	Land capability mapping ASS hazard mapping Salinity hazard mapping Salinity outbreak mapping Dustwatch CMA regional monitoring		
Potential index	Land and soil capability assessment index (incorporating soil condition)		

12 Socio-economic outcomes

Target	Natural resource management contributes to maintaining or improving economic sustainability and social well-being		
Lead agency	DNR		
Year	2005	2010	2015
State-wide datasets	-	State-wide survey	State-wide survey
Examples of other information	ABARE data ABS census data CMA regional reporting Local Government rate base data NSW Environmental Education Plan reporting		
Potential index	Index of contributions to socio-economic outcomes		

13 Community capacity

Target	There is an increase in the capacity of natural resource managers to contribute to regionally relevant natural resource management		
Lead agency	DPI		
Year	2005	2010	2015
State-wide datasets	-	State-wide survey	State-wide survey
Examples of other information	ABARE data ABS census data CMA regional reporting Local Government rate base data NSW Environmental Education Plan reporting		
Potential index	Index of community capacity		

Attachment 7

COST OF MONITORING STATE- WIDE TARGETS

The NRC has estimated in the following tables the costs for the proposed new monitoring and evaluation (M and E) arrangements. Cost information has come from DNR, DEC, DPI and the Department of Lands, the work of an Independent Indicators Working Group, the inter-agency Natural Resource Information Needs Committee technical working groups and the NRC's research to develop the state-wide targets. The information from these sources varied widely in terms of quality and quantum of costs and the NRC has assessed the most appropriate and reliable source to incorporate into its estimates.

Table A7.1 estimates and summarises the annual operating costs (in 2005 dollars) of the new arrangements at the 2005, 2010 and 2015 Catchment Action Plan (CAP) cycle milestones for each asset area. The table also summarises these costs against the macro-environmental and specific priorities targets within each asset class. These are snapshots only and costs should be expected to increase incrementally between these milestone dates.

Individual tables have been developed for biodiversity targets (Table A7.2), water targets (Table A7.3), land targets (Table A7.4) and the community capacity target (A7.5). Within each of these asset tables the 'state-wide datasets', which will be the primary focus of measuring progress towards the targets for that asset, are shown in bold. The examples of 'other information', which will be used to enrich the picture of progress toward targets, are also costed and appear below the dataset which they support. However, most of these examples are based on existing agency programs. It is anticipated that other supporting information will be identified and obtained from a range of sources including local government, Rural Lands Protection Boards, industry bodies and research organisations.

The operating costs of the proposed M and E arrangements to support the state-wide targets have been estimated for 2005, 2010 and 2015. These dates relate to CAP milestones of the start, mid and end point of the cycle. Any development costs associated with new M and E arrangements have been included in the operating costs shown in the table and not presented as a separate item. This helps to show the incremental increases that will be needed between the milestone dates. All costs have been estimated in 2005 dollars for ease of comparison.

Where adequate information was available costs associated with existing activities have been phased out and reallocated to support the development of more sophisticated index at future milestones. This has occurred where the development of a new index renders the existing M and E activity obsolete. It is anticipated that there are many more opportunities for such reallocation to occur. It will be a critical function of the lead agencies to identify these opportunities.

Table A7.1 Annual operating costs for new monitoring & evaluation arrangements to support state-wide targets

Asset area	Estimated operating cost of new arrangements (\$000 p.a.)						Existing budget at 2005	
	2005		2010		2015		(\$000 p.a.)	
	Macro-environmental target	Specific priority target	Macro-environmental target	Specific priority target	Macro-environmental target	Specific priority target	Macro-environmental targets	Specific priorities targets
Biodiversity	515	1,555	715	1,765	840	1,765	115	1,505
Water	7,238	1,676	8,438	1,666	8,438	1,886	7,138	1,676
Land	920	50	870 ⁴⁷	564	870	564	870	-
Community	-	50	-	390	-	390	-	-
Sub-total	8,673	3,331	10,023	4,385	10,148	4,605	8,123	3,181
Total*	12,004 (700)		14,408 (3,104)		14,753 (3,449)		11,304	

* Figure (\$ 000) in brackets is the difference between existing funding and identified M and E needs to support state-wide targets at key milestones

⁴⁷ From 2010 macro-environmental and specific priority targets will be monitored by the single state-wide dataset therefore cost has decreased for macro-environmental target monitoring.

Table A7.2 Estimated cost for biodiversity targets

Target	State-wide Dataset & Other Information	Existing budget (\$ 000 p.a.)	Operating cost 2005 (\$ 000 p.a.)	Operating cost 2010 (\$ 000 p.a.)	Operating cost 2015 (\$ 000 p.a.)
Target 1 (Native vegetation)	Native vegetation extent, type and condition⁴⁸	-	400 (extent woody native)	600 (extent native + type)	800 (extent, type + condition)
	CMA regional monitoring	CMA	CMA	CMA	CMA
	Vegetation classification mapping	Existing data	Existing data	Existing data	Existing data
	Area of each vegetation type managed for conservation	75	75	75	Incorporated into dataset
	Rangeland Assessment Program	Costed in target 10	Costed in target 10	Costed in target 10	Costed in target 10
Target 2 (Native fauna)	Native vegetation extent, type and condition⁴⁹	-	Costed target 1	Costed target 1	Costed target 1
	CMA regional monitoring	CMA	CMA	CMA	CMA
	Annual waterbird survey	40	40	40	40
	SRA-fish survey (MDB)	Costed in target 5	Costed in target 5	Costed in target 5	Costed in target 5
	Monitoring listed fish populations	Costed target 3	Costed target 3	Costed target 3	Costed target 3
Sub-total for macro-environmental targets		115	515	715	840

⁴⁸ May be incorporated into Biodiversity index at 2015

⁴⁹ Ibid.

Target 3 (Threatened species)	Native vegetation extent, type and condition⁵⁰	-	Costed target 1	Costed target 1	Costed target 1
	CMA regional monitoring	CMA	CMA	CMA	CMA
	Implementation actions in Priorities Action Statements & Threat Abatement Plans	550	550	550	550
	Monitoring listed fish populations	135	135	135	135
Target 4 (Invasive species)	Distribution, abundance and impact of emerging and existing vertebrate pest and weeds⁵¹	-	-	960	960
	(Evaluation of existing M&E information)	-	50	Incorporated into state-wide dataset	Incorporated into state-wide dataset
	CMA regional monitoring	CMA	CMA	CMA	CMA
	Vertebrate Pest Surveys	360	360	Incorporated into state-wide dataset	Incorporated into state-wide dataset
	W1 Weeds Monitoring	340	340	Incorporated into state-wide dataset	Incorporated into state-wide dataset
	Weeds Mapping	Existing data	Existing data	Existing data	Existing data
	Marine Pest Monitoring	120	120	120	120
	Rangelands Assessment Program	Costed in target 11	Costed in target 11	Costed in target 11	Costed in target 11
	Threat Abatement Plans	Costed in target 3	Costed in target 3	Costed in target 3	Costed in target 3
Sub- total for specific priority targets		1505	1555	1765	1765
Total for all biodiversity targets		1620	2070	2480	2605

⁵⁰ May be incorporated into Biodiversity index at 2015

⁵¹ Ibid.

Table A7.3 Estimated cost for water targets

Target	State-wide Dataset & Other Information	Existing budget (\$ 000 p.a.)	Operating cost 2005 (\$ 000 p.a.)	Operating cost 2010 (\$ 000 p.a.)	Operating cost 2015 (\$ 000 p.a.)
Target 5 (Riverine ecosystems)	Sustainable Rivers Audit	666 ⁵²	666	1,666 ⁵³	1,666 ⁵⁴
	In-stream salinity levels	345	345	345	345
	CMA regional monitoring	CMA	CMA	CMA	CMA
	Integrated Monitoring Environmental Flows	2,175	2,175	2,175	2,175
	Water Sharing Plan reviews	DNR	DNR	DNR	DNR
Target 6 (Groundwater)	Groundwater Index (incorporating ratio of groundwater extraction to sustainable yields & dependant ecosystems information)	-	-	2,510	2,510
	(evaluation of existing M&E activities)	2,460	2,510	Incorporated into state-wide dataset	Incorporated into state-wide dataset
	Groundwater base flow in rivers	1,140	1,140	1,140	1,140
	Artesian pressure	350	350	350	350
	Review Groundwater Sharing Plans	DNR	DNR	DNR	DNR
	CMA regional monitoring	CMA	CMA	CMA	CMA

⁵² Figure is current funding for SRA p.a. (over 6 years) in the Murray-Darling Basin only, including Australian Government, MDBDC and NSW contributions.

⁵³ Figure includes current SRA funding for the Murray-Darling Basin (over 6 years including Australian Government, MBDC and NSW contributions) and additional funding required p.a. for adopting the SRA method for NSW coastal rivers.

⁵⁴ Ibid.

Target	State-wide Dataset & Other Information	Existing budget (\$ 000 p.a.)	Operating cost 2005 (\$ 000 p.a.)	Operating cost 2010 (\$ 000 p.a.)	Operating cost 2015 (\$ 000 p.a.)
Target 7 (Marine waters and ecosystems)	Near-shore Marine Condition Index	-	-	250	250
	(evaluation of existing M&E activities)	-	50	Incorporated into index	Incorporated into index
	Frequency of induced algal blooms	Limited activity	Limited activity	Incorporated into index	Incorporated into index
	Species abundance in rocky reef communities	Limited activity	Limited activity	Incorporated into index	Incorporated into index
	Beachwatch	Local Government	Local Government	Local Government	Local Government
	Extent of Marine Protected Areas	2	2	2	2
	CMA regional monitoring	CMA	CMA	CMA	CMA
Sub total for macro-environmental targets		7,138	7,238	8,438	8,438
Target 8 (Wetlands)	Wetland Condition Index	-	-	-	220
	Extent of important wetlands (measured by native vegetation extent, type & condition)	Costed in target 1	Costed in target 1	Costed in target 1	Incorporated into Wetland Condition Index
	CMA regional monitoring	CMA	CMA	CMA	CMA
	Inflow hydrology	Costed in target 6	Costed in target 6	Costed in target 6	Costed in target 6
	Waterbird distribution and abundance	Costed in target 2	Costed in target 2	Costed in target 2	Costed in target 2

Target	State-wide Dataset & Other Information	Existing budget (\$ 000 p.a.)	Operating cost 2005 (\$ 000 p.a.)	Operating cost 2010 (\$ 000 p.a.)	Operating cost 2015 (\$ 000 p.a.)
Target 9 (Estuaries & Coastal lakes)	Estuary Condition Index	-	-	280	280
	Extent of mangroves saltmarsh, seagrass, macroalgae, emergent macrophytes	290 (Comprehensive Coastal Assessment 05/06)	290 (Comprehensive Coastal Assessment 05/06)	Incorporated into index	Incorporated into index
	Estuary baseline data collection program	341	341	341	341
	Fish assemblages	Limited activity	-	Incorporated into index	Incorporated into index
	Hydrographic surveys	150	150	150	150
	Stress biomarkers	Limited activity	-	Incorporated into index	Incorporated into index
	Pelagic chlorophyll <i>a</i>	Research only	-	Incorporated into index	Incorporated into index
	NSW Shellfish Program	895 (industry + state government)	895	895	895
	Freshwater inflows	Costed in target 6 ⁵⁵	Costed in target 6 ⁵⁶	Costed in target 6	Costed in target 6
	CMA regional monitoring	CMA	CMA	CMA	CMA
	Sub-total for specific priority targets	1,676	1,676	1,666	1,886
	Total for all water targets	8,814	8,914	10,104	10,324

⁵⁵ Existing network but may need expansion.

⁵⁶ Ibid.

Table A7.4 Estimated cost for land targets

Target	State-wide datasets & other information	Existing budget (\$ 000 p.a.)	Operating cost 2005 (\$ 000 p.a.)	Operating cost 2010 (\$ 000 p.a.)	Operating cost 2015 (\$ 000 p.a.)
Target 10 (Soil condition)	Land and Soil Capability System (LSCS) (incorporates Soil Condition Index)	-	-	Costed in target 11	Costed in target 11
	(Evaluation of existing M&E data)	-	50	Incorporated into LSCS	Incorporated into LSCS
	Salinity outbreak mapping	Existing data	Existing data	Existing data	Existing data
	Soil and land use survey	Existing data	Existing data	Existing data	Existing data
	Soil tests (chemical)	Existing data	Existing data	Existing data	Existing data
	CMA regional monitoring	CMA	CMA	CMA	CMA
	Rangeland Assessment Program (RAP)	870	870	870	870
	Sub total for macro-environmental targets	870	920	870	870

Target	State-wide datasets & other information	Existing budget (\$ 000 p.a.)	Operating cost 2005 (\$ 000 p.a.)	Operating cost 2010 (\$ 000 p.a.)	Operating cost 2015 (\$ 000 p.a.)
Target 11 (Sustainable land use and management)	Land and Soil Capability System (LSCS) (incorporates Soil Condition Index)	-	-	564	564
	(Evaluation of existing M&E data)	-	50	Incorporated into LSCS	Incorporated into LSCS
	CMA regional monitoring	CMA	CMA	CMA	CMA
	Groundcover	-	-	Incorporated into LSCS	Incorporated into LSCS
	Soil Carbon	-	-	Incorporated into LSCS	Incorporated into LSCS
	Salinity outbreak mapping	Existing data	Existing data	Existing data	Existing data
	Dustwatch	Costed in target 10 RAP	Costed in target 10 RAP	Costed in target 10 RAP	Costed in target 10 RAP
	Acid Sulfate Soil hazard mapping	Existing data	Existing data	Existing data	Existing data
	Land capability mapping	Existing data	Existing data	Existing data	Existing data
	Salinity hazard mapping	Existing data	Existing data	Existing data	Existing data
	Sub-total for specific priority targets			50	564
Total for all land targets		870	970	1,434	1,434

Table A7.5 Estimated cost for community targets

Target	State-wide datasets & other information	Existing budget (\$ 000 p.a.)	Operating cost 2005 (\$ 000 p.a.)	Operating cost 2010 (\$ 000 p.a.)	Operating cost 2015 (\$ 000 p.a.)
Target 12 (Socio - Economic)	Community Capacity Index (incorporating community capacity survey)	-	-	390	390
Target 13 (Community capacity to contribute to NRM) ⁵⁷	(Evaluation of existing M&E activity)	-	50	Incorporated into index	Incorporated into index
	ABARE agricultural census data	Existing data	Existing data	Existing data	Existing data
	ABS census data	Existing data	Existing data	Existing data	Existing data
	CMA regional monitoring	CMA	CMA	CMA	CMA
	Local government rate base data	Existing data	Existing data	Existing data	Existing data
	NSW Environmental Education Plan reporting	Existing budget	Existing budget	-	-
	Sub-total specific priority targets	-	50	390	390
	Total for community targets	-	50	390	390

⁵⁷ Progress toward Target 13 will be monitored in conjunction with Target 12

Attachment 8

PROCESS USED TO DEVELOP THE STATE-WIDE STANDARD AND TARGETS

The NRC consulted with a wide range of stakeholders to develop its recommended state-wide standard, targets, datasets and other information with which to measure progress.

It held meetings and workshops with all CMAs, regional stakeholders nominated by CMAs, and state government agencies. It also held discussions with more than 100 scientists and technical specialists.

Table A8.1 outlines the key steps in the process used to develop the state-wide standard and targets and recommendations for M and E arrangements and the stakeholders consulted at different stages of the process.

Table A8.1: Process for developing the state-wide standard and targets

Month	Step	Details
Jun 2004 - Sep 2004	Hold initial consultations with agencies, CMAs and key stakeholders	
Sep 2004 – Dec 2004	Pilot process to develop working drafts of standards and targets	CMAs involved in the pilot process: Lachlan, Murrumbidgee, Namoi, Southern Rivers and Western
Oct 2004	Release ' <i>A Framework for State-wide Standards and Targets</i> '	
Nov 2004	Release ' <i>Consultation Paper – Draft State-wide Standards and Targets</i> '	Submissions invited on draft standards and targets
Dec 2004 – Apr 2005	Receive feedback on the draft state-wide standards and targets and discuss possible approaches for further development. Feedback received through:	
	<ul style="list-style-type: none"> ▪ Workshops and visits with CMAs 	Workshops and/or visits with all CMAs that were not involved in the pilot process
	<ul style="list-style-type: none"> ▪ Meetings and phone hook-ups 	Over 100 scientists and technical specialists consulted
	<ul style="list-style-type: none"> ▪ Working group 	Inter-agency working group from state and Australian Government agencies established to provide advice on indicators for draft targets
	<ul style="list-style-type: none"> ▪ Formal submissions 	22 formal submissions were received on the Consultation Paper

Month	Step	Details
Dec 2004 – Apr 2005	▪ Seminars and Meetings	<ul style="list-style-type: none"> ▪ Natural Resources Advisory Council ▪ Ministerial Reference Group ▪ NRM CEO's Forum (Directors General from various state government departments) ▪ Australian Government NRM Team ▪ Australian Government and NSW NRM Joint Steering Committee ▪ CMA Chairs' meeting ▪ CMA General Managers' Workshop ▪ DIPNR and DEC Deputy Directors General ▪ Australian Government Department of Agriculture, Fisheries and Forestry ▪ Policy officers from DIPNR, DEC, DPI and The Cabinet Office ▪ Environment groups ▪ NSW Farmers Association ▪ Agencies and organisations with Aboriginal NRM responsibilities and interests ▪ Aboriginal staff from DIPNR and CMAs
May 2005	Release draft recommendations to government on state-wide standard and targets	Report on draft recommended standard, targets and indicators plus recommendations for effective implementation.
Jun 2005 – Aug 2005	Review of monitoring and evaluation arrangements to support state-wide targets and refine some targets	<ul style="list-style-type: none"> ▪ Information request sent to agencies ▪ 3 inter-agency workshops ▪ Consultation meetings with other stakeholders
Sep 2005	Final recommendations to government on state-wide standard and targets incorporating recommendations on monitoring and evaluation arrangements	

