



**GUIDE TO USING THE STANDARD FOR
QUALITY NATURAL RESOURCE
MANAGEMENT**

September 2005



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STANDARD FOR QUALITY NATURAL
RESOURCE MANAGEMENT**

A GUIDE FOR CMAS

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List of acronyms

ANZLIC	Australia and New Zealand Land Information Council
CAP	Catchment Action Plan
CMA	Catchment Management Authority
CRC	Cooperative Research Centre
DIPNR	Department of Infrastructure Planning and Natural Resources
DLWC	Department of Land and Water Conservation
DNR	Department of Natural Resources
GIS	Geographic information system
NHT	Natural Heritage Trust
M&E	Monitoring and Evaluation
MDBC	Murray-Darling Basin Commission
NRC	Natural Resources Commission
NRM	Natural resource management
NSW	New South Wales
SoE	State of the Environment

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Revision table

This Guide is intended to be an evolving document. Revisions are listed in the table below.

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1 Introduction

In May 2005, the State Government endorsed the *Standard for Quality Natural Resource Management*. All Catchment Management Authorities (CMAs) in NSW are expected to apply this Standard in all areas of their business. The NRC has written this *Guide to Using the Standard for Quality Natural Resource Management* to assist CMAs in applying the Standard and gaining maximum benefit from it.

1.1 What is the Standard?

The Standard identifies seven things that natural resource managers can *systematically do and consider* in each phase of the adaptive management cycle to ensure their NRM process is sound. This sound base is intended to support CMAs' innovative responses to their particular regional circumstances. It is also intended to provide assurance to the community, Government and other stakeholders that different CMA-specific outcomes reflect a consistent quality of NRM.

The Standard is not a 'recipe' for NRM – it does not prescribe specific steps that should be taken or methods that should be used. Rather, for each of its seven components, it identifies a required outcome – for example, that the best available knowledge is used to inform decisions in a structured and transparent manner – then provides guidance on how that outcome might be achieved, and what evidence might be provided to demonstrate to an auditor that the outcome is being achieved. It is up to individual natural resource managers to judge the most appropriate way to achieve the outcomes in their particular circumstances.

Ideally, all natural resources managers will apply the Standard. However, CMAs are *legally obliged* to apply the Standard. Specifically, they must comply with the Standard in developing and implementing their Catchment Action Plans (CAPs).¹ The NRC will conduct formal audits to assess this compliance.

1.2 How will this Guide help CMAs apply the Standard?

This Guide contains a range of information that should help CMAs to apply the Standard in their particular catchment areas. This includes:

- answers to key questions CMAs have asked the NRC about the Standard, or that we believe will help them better understand the Standard and how to apply it
- boxes that provide examples and case studies to illustrate 'good practice' in applying the Standard, or address issues that are currently of concern to CMAs
- lists of other reference material that may provide further help in applying the Standard.

Most CMAs are likely to make use of some parts of the Guide only, since they already have practical ways of managing their business in line with some of the required outcomes. Ultimately, CMAs need to pragmatically apply the Standard in a way that helps them to operate effectively and demonstrate to others that they are doing so.

¹ 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 Guide should also help agencies and other stakeholders to understand how CMAs will apply the Standard. This should enable agencies to more readily see how they can help CMAs by, for example, developing robust, state-wide information management systems.

The Guide is intended to be an evolving document – it will be updated periodically as additional information becomes available and as CMAs’ experience in applying the Standard increases. CMAs have requested additional reference material on a range of specific issues, but the NRC is still identifying appropriate material and intends to fill these gaps as the Guide evolves. The NRC welcomes any feedback on the Guide, as well as suggestions for additional material to be included.

1.3 What is the relationship between the Standard, this Guide, and other reference documents?

The relationship between the Standard, this Guide and other references is shown in Figure 1.1, below. The *Standard for Quality Natural Resource Management* is the primary document, and CMAs’ CAPs and business systems will be assessed against this document through the NRC audit process. Therefore CMAs should refer directly to the Standard, and be most influenced by it.

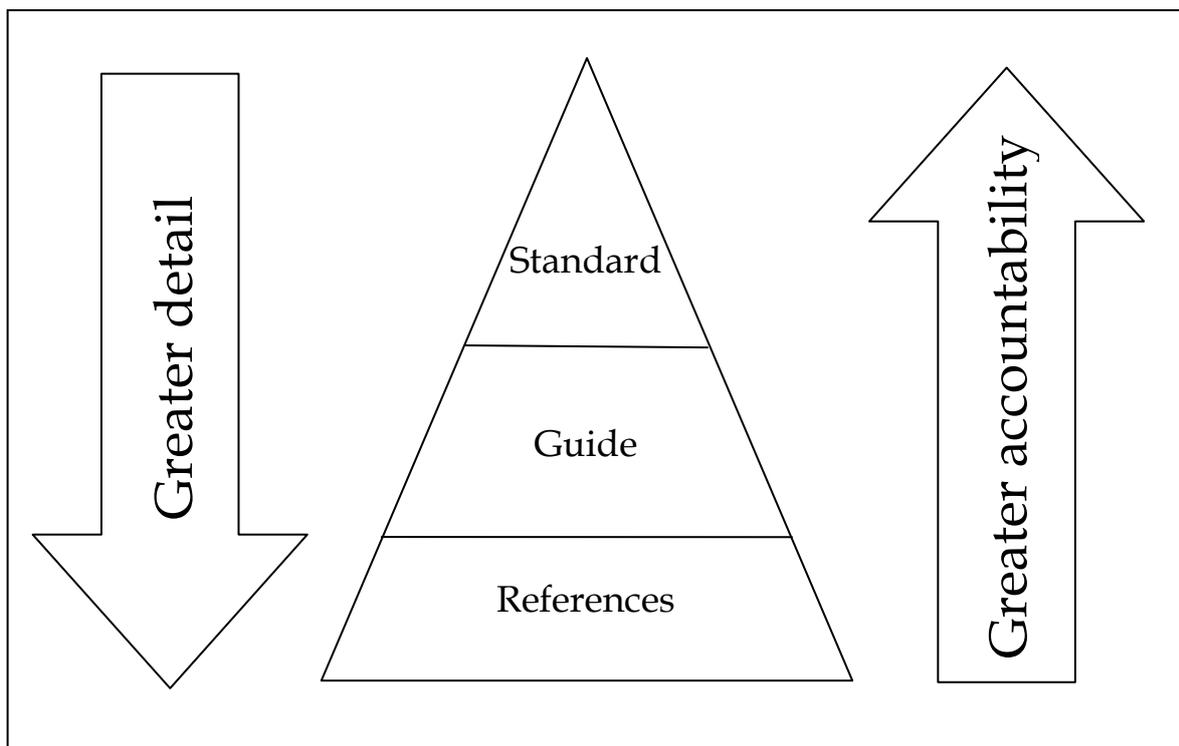


Figure 1.1: Relationship between the Standard, Guide and other references

The *Guide to Using the Standard for Quality Natural Resource Management* and the other references listed in it provide more specific information about natural resource management practices and methods. These documents are intended to help CMAs in interpreting and applying the Standard, but CMAs have no obligation to follow them.

It is important to note neither the Standard nor the Guide is intended to be prescriptive. Rather, the Standard has been specifically designed to take into account the considerable variability in the biophysical, social, economic and cultural conditions in each catchment area, and in community values. The Standard allows CMAs the flexibility to plan and implement the NRM programs that are most appropriate to their unique setting.

1.4 How is the Guide structured?

The next chapter provides an overview of what's involved in systematically applying the Standard to the CMAs' business, and why this is worth doing. The chapters that follow focus on each of the seven components of the Standard:

- Collection and use of knowledge (Chapter 3)
- Determination of scale (Chapter 4)
- Opportunities for collaboration (Chapter 5)
- Community engagement (Chapter 6)
- Risk management (Chapter 7)
- Monitoring and evaluation (Chapter 8)
- Information management (Chapter 9).

2 Applying the Standard to CMA business

Applying the Standard will have significant benefits for CMAs and for NRM in NSW. It will increase the likelihood that regional and state-wide targets will be achieved, by helping CMAs to:

- make balanced decisions that achieve environmental, economic, social, and cultural outcomes
- manage the risks and uncertainty associated with NRM
- establish good governance
- continually improve their approach.

This chapter explains how CMAs can facilitate effective application of the Standard at all phases of the adaptive management cycle by establishing good business systems. It highlights why CMAs can benefit from a transparent and systematic approach to prioritising their activities. Finally, it outlines how CMAs can incorporate different types of values, particularly Aboriginal cultural values and socio-economic values, in all their NRM activities.

2.1 Why are good systems important for applying the Standard?

To properly apply the Standard, CMAs need to have good business management systems in place. These systems can be thought of as 'methods or procedures for operating' that help CMAs to efficiently and productively achieve their organisational and NRM goals. For example, they include:

- organisational practices – such as regularly assessing risk at the organisational and project levels
- rules for conducting specific activities – such as taking meeting minutes and recording why key decisions were made
- structured approaches to CMA activities – such as periodically reviewing monitoring and evaluation results and considering their implications for CMA activities
- resources and tools (particularly IT) which support the above – for example, a GIS based information management system.

Having good systems will help ensure that when CMA staff conduct any given activity, they know what they have the business processes and tools to be most effective.

The NRC's recommendations to Government on whether or not to approve a CAP will be heavily influenced by the CMA's ability to demonstrate that its CAP is supported by quality NRM systems.

2.2 How should CMAs prioritise activities?

CMAs need to establish a robust, systematic process for deciding which investments have the highest priority in their CAPs and investment strategies.

There is a range of prioritisation and decision-making techniques that CMAs can incorporate into their prioritisation process. Common techniques include cost-benefit analysis, multi-criteria analysis and multi-objective decision support systems. Some CMAs are already applying one, or a combination, of these techniques, or a tool they have developed in-house. It may be useful to consider the prioritisation techniques that some Victorian CMAs use when developing their Regional Catchment Strategies, for example:

- *Mallee Regional Catchment Strategy 2003 - 2008*, Ch. 8 Priority Issues and Plans²
- *Wimmera Regional Catchment Strategy 2003 - 2008*, Ch. 15 Program Implementation³
- *Port Phillip and Western Port Regional Catchment Strategy 2004-2009*, Ch. 10 Prioritisation and Implementation.⁴

2.3 How should CMAs incorporate different types of values?

CMAs recognise that they need to consider environmental, social, economic and cultural issues when managing natural resources. While CMAs are typically quite experienced in assessing environmental or biophysical issues, a number have sought practical guidance on how to:

- engage with Aboriginal communities and incorporate Aboriginal cultural values
- incorporate socio-economic information in planning and assess the socio-economic impacts of their investments.

This Guide gives examples throughout to illustrate how these issues are integrated across the 7 required outcomes of the Standard. The Department of Environment and Conservation has prepared additional guidance material⁵ to help CMAs incorporate Aboriginal cultural values. Section 3.3 of this Guide contains additional guidance and references on incorporating socio-economic information.

² Mallee Catchment Management Authority (2000) *Mallee Regional Catchment Strategy 2003 - 2008*. Available at <<http://www.malleecma.vic.gov.au/documents/RCS03-08DOC.pdf>>.

³ Wimmera Catchment Management Authority (2003) *Wimmera Regional Catchment Strategy 2003 - 2008*. Available at <<http://www.wcma.vic.gov.au/index.php/Publications>>.

⁴ Port Phillip and Western Port Catchment Management Authority (2004) *Port Phillip and Western Port Regional Catchment Strategy 2004 - 2009*. Available at <http://www.ppwcm.vic.gov.au/publications_plans.htm>.

⁵ CMAs should contact DEC Aboriginal Heritage Operations Branch Managers to access this information.

3 Collection and use of knowledge

Required outcome: Use of the best available knowledge to inform decisions in a structured and transparent manner

The 'Collection and use of knowledge' component of the Standard requires that CMAs use the best available knowledge to inform their decisions, and that they do so in a structured manner. It also requires that the way in which information and other knowledge has influenced their decisions be transparent. This transparency will help CMAs identify and address information gaps, and provide confidence to their community and other stakeholders that their decisions are solidly founded.

3.1 What types of knowledge should CMAs use?

To determine community values, priorities and appropriate management strategies, CMAs may need to systematically consider some or all of:

- biophysical information
- Aboriginal traditional and contemporary knowledge
- socio-economic information
- regionally relevant and scientifically supported technical guidelines
- local experience and expertise
- community and stakeholder values
- cultural heritage assessments
- evaluation results
- NRM legislation, policies and regional strategies
- planning tools, including Local Environment Plans and Regional Environment Plans
- investor preferences
- state-wide targets
- national matters for targets.

Section 3.1.2 of the Standard lists some possible steps to follow to use this knowledge in a systematic way, appropriate to the decision they are making.

For example, when defining regional catchment targets and management targets, CMAs should consider all the types of information listed above. In contrast, when they are making a decision about what species to use when implementing a revegetation project they might rely on Aboriginal knowledge, biophysical information and technical guidelines for revegetation.

Box 3.1: Using Blueprints as a source of knowledge for CAP development

Catchment Blueprints are one source of knowledge that CMAs have been using in their decision-making processes. These Blueprints express a range of regional values and priorities. Therefore they are an appropriate source of knowledge that CMAs can use during their CAP development process.

However, CMAs need to ensure that their planning and use of the Blueprints during CAP development is consistent with the Standard. For example, if they based decisions on the knowledge contained in their Blueprint, they will need to demonstrate that this knowledge is the best available knowledge in 2005. In some cases, the knowledge used for the Blueprint may still be the best available. However, in other cases better, more up-to-date knowledge will have emerged since the Blueprints were prepared and accredited.

CMAs also need to seek out sources of new knowledge that may be relevant to their CAP development. These sources could include:

- new scientific publications or information describing resource conditions, pressures or management approaches
- new decision-support tools or technical guidelines
- information on changes in socio-economic conditions that may have resulted from drought or other factors
- new knowledge within their own organisation following implementation and evaluation of projects since 2002
- new legislation, policies and state-wide targets.

3.2 What is 'best available knowledge'?

To ensure they make sound decisions, CMAs need to:

- base these decisions on the 'best available knowledge'
- continually identify and access developing and emerging knowledge, so they can update the information on which they base decisions
- establish systems for managing this information appropriately (discussed in Chapter 9).

CMAs can use different mechanisms for accessing best available information, depending on the type of decision they are making and the type of information they need. For example, when preparing their CAPs, CMAs will need to locate the best available technical information (biophysical and socio-economic). To do this, they could become involved in technical working groups, forge links with research organisations, attend appropriate conferences, foster staff development at specific training courses and review appropriate journals and other publications. When they are planning local riparian restoration activities they may need to access best available Aboriginal knowledge, among other things. They might access this through face-to-face conversations with local elders or, at their invitation, other community members who can speak for Country and have knowledge of the area in question.

In any decision process, CMAs need to determine what information is actually the 'best available'. To do this, they should first ensure that all possible sources of knowledge have been considered. Then they need to judge the reliability and relevance of the information they have

obtained. For example, when considering technical information, they could check whether it comes from a reputable source, the currency of the material, the extent of peer review, data gaps and how these are addressed. In some cases, CMAs may not have the required internal expertise or the confidence to make these judgements. Where this occurs, they could access external expertise through state agencies, research organisations, consultancies or expert panels.

However, even 'best available knowledge' can be contested and it may not always be correct or true. Since knowledge is constantly developing, there will always be a level of uncertainty in NRM decisions.

3.3 How does the Standard help CMAs to incorporate socio-economic information?

The socio-economic conditions, trends and issues in CMAs' catchments will influence the success of their NRM activities and programs, and their ability to achieve regional and state-wide targets. In turn, CMAs' activities and programs have the potential to influence the socio-economic well being of individuals and communities. Table 3.1 suggests how CMAs may incorporate socio-economic knowledge at each phase of the adaptive management cycle.

CMAs have highlighted their own need to develop their socio-economic knowledge and expertise. One way they might do this is to prepare socio-economic profiles. These profiles compile socio-economic information and interpret its relevance for natural resource management. They also form a basis from which further social and economic impact assessments can be undertaken. They can be compiled at the catchment scale or at a project scale. Projects that involve significant investment, are implemented over a large area or long timeframe, or have potentially significant impacts may require their own specific profile.

Socio-economic profiles can help CMAs to determine what social and economic issues of local importance they should consider when formulating management targets and actions. For example, in many inland agricultural regions, statistical data shows declining population and increases in average farm size. This may mean that there is low capacity for landholders to undertake labour intensive conservation activities. Therefore, a CMA should design a biodiversity conservation program so that any actions required by landholders are labour efficient and profitable. On the other hand, a conservation program should be designed differently in peri-urban, hilly regions where statistical data indicates farm sizes are decreasing or land is being subdivided into small blocks. In these regions, a CMA may wish to run an education campaign to promote conservation covenants (tax incentives available through a covenant may be more attractive to the owners of small properties).

More information on how to put together a profile can be found in the documents listed in Section 3.5.

Table 3.1: Incorporating socio-economic information in CMA business

Adaptive management phase	CMAs might use socio-economic information when they are:
Planning	<ul style="list-style-type: none"> ▪ Understanding the social and economic environment ▪ Defining catchment targets ▪ Assessing options for management actions ▪ Making decisions about trade-offs ▪ Designing programs that are feasible and acceptable
Implementation	<ul style="list-style-type: none"> ▪ Managing/mitigating risks and impacts ▪ Informing cost sharing decisions
Audit	<ul style="list-style-type: none"> ▪ Assessing the cost-effectiveness of investment ▪ Assessing unintended impacts ▪ Assessing incentive program uptake
Response	<ul style="list-style-type: none"> ▪ Updating the understanding of the social and economic environment ▪ Adapting targets and program design to account for new socio-economic information or changing socio-economic conditions

3.4 How can CMAs demonstrate the use of knowledge in decision-making?

If CMAs have reasonable decision-making and governance arrangements, they should find it relatively simple to demonstrate the links between best available knowledge and the decisions they have made. They should also be able to identify information that does not exist, is not accessible, or is of poor quality and thus justify why this information was not used, while identifying the information gaps they need to fill in the future.

Demonstrating the use of best available knowledge in decision making is likely to involve some documentation and record keeping. However, this documentation should be that level reasonably required to run the CMA's operations effectively. The evidence requirements in the Standard (Section 3.1.3) contain some suggestions for the types of evidence CMAs may use to demonstrate a decision-path. For example, it suggests 'records or minutes of consultations'. In this case, CMAs might list key details from a discussion and reasons for decisions, rather than simply listing decisions and actions.

Processes and record-keeping designed to support a CMA's business continuity needs are likely to have sufficient detail to satisfy an external reviewer. Maintaining adequate business records has many benefits for CMAs. It ensures consistent interpretation, supports future and related decisions, simplifies information sharing and provides for continuity when staff and board members change.

3.5 Sources of additional information for 'Collection and use of knowledge'

Table 3.2: Other references for 'Collection and use of knowledge'

Title	Relevance
Supporting decisions: understanding natural resource management assessment techniques ⁶	This paper provides information on the use of decision-support tools including cost-benefit analysis, multi-criteria analysis, environmental and social impact assessment and other analytical tools.
Compiling regional social and economic profiles: a practical guide for regional NRM bodies in Queensland ⁷	This document describes how to compile a profile, what data and information to include and why, and how to interpret the relevance of a profile to NRM. The suggested data sources are specific to QLD, however, NSW CMAs can access similar data from state agencies, as well as the ABS, ABARE, and the National Land and Water Resources Audit.
Integrating economic and social issues in regional natural resource management planning: a framework for regional bodies ⁸	This document has a large section on how to produce a 'regional overview', what data to collect and the rationale for collecting it, techniques for determining the key social and economic issues that relate to NRM, and how to use the results of this analysis in NRM planning.

⁶ CSIRO (2000) *Supporting decisions: understanding natural resource management assessment techniques*, CSIRO Land and Water report to the Land and Water Resources Research and Development Corporation. Available at http://www.clw.csiro.au/publications/consultancy/2000/support_decisions.pdf.

⁷ Clouston, B. Stanley, J. Hunt, C. and Binney, J. (2004) *Compiling regional social and economic profiles: a practical guide for regional NRM bodies in Queensland*, Queensland Department of Natural Resources, Mines and Energy. Available at <http://www.regionalnrm.qld.gov.au/planning/guidance/social.html>.

⁸ Cavaye, J. (2003) *Integrating economic and social issues in regional natural resource management planning: a framework for regional bodies*. Available at <http://www.regionalnrm.qld.gov.au/planning/guidance/social.html>.

4 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.

In working with communities to improve the way natural resources are used and managed, CMAs intuitively apply their understanding of the biophysical and other 'scales' of natural resource management. These scales vary according to the nature of the problems being addressed, and have implications for the type of actions that should be taken, where they should be taken, and who needs to be involved to plan and deliver effective, integrated solutions.

The 'Determination of scale' component of the Standard requires CMAs to develop explicit, systematic processes for considering scale at all stages of the adaptive management cycle. These processes will help them to consistently plan and deliver projects that take account of the implications of scale and thus maximise benefits across environmental, economic, social and cultural issues.

4.1 What types of scale should CMAs consider?

As they apply the other components of the Standard, and at each phase of the adaptive management cycle, CMAs need to consider:

- **spatial scale** – the geographical ranges over which particular biophysical, social, economic or cultural issues are best understood and managed
- **temporal scale** – the timeframes and lags involved in the cause of natural resource management problems or in delivering improved outcomes
- **institutional scale** – the different organisations involved and their level of interest, be they local, regional, 'basin-wide', state or national
- **community scale** – the communities affected by or involved in improving natural resource outcomes.

This will ensure that they explicitly take into account all the relevant implications of scale, which are integral to deciding how, where and with whom CMAs should spend their time and money.

4.2 How can CMAs identify and assess scale issues?

CMAs need to develop systematic processes for identifying and assessing scale issues. For example, these processes might include the use of checklists, key principles, questions, or other 'memory jog' devices to ensure that scale is explicitly considered and that an awareness of scale enriches their analysis and the quality of their decisions.

CMAs may need to develop these devices in-house. Alternatively, they might be able to adapt their existing project management and risk assessment techniques to help them make explicit the relevant scale issues.

4.3 How should CMAs consider scale in applying other parts of the Standard?

CMAs need to apply their understanding of scale issues when answering other key strategic questions such as:

- what knowledge and information is needed and at what coverage and resolution?
- which organisations and communities are affected by these issues and should be collaborated with or engaged in addressing them?
- what are the key risks to be managed?
- how should success be monitored and assessed?
- who will use the information generated by this project and at what resolution will they need it?

CMAs need to make explicit links between scale and other components of the Standard at both the organisational and the project level (see Table 4.1 for some examples). One way they can do this is to include key scale-related questions or steps in the business processes they establish to apply the other components of the Standard. For example, as part of their risk assessment process CMAs may include questions about the spatial scale at which major risks are likely to manifest, and how they might detect the manifestation of these risks through monitoring and evaluation.

Table 4.1: Examples of links between scale and other components of the Standard

Component	Illustrative links
Collection and use of knowledge	The geographic range of a CMA's activities influences the communities likely to be affected by its activities and thus the level of socio-economic impact assessment that is required.
Opportunities for collaboration	Improving vegetation condition at the bioregion scale is likely to require collaboration between a number of CMAs and other natural resource managers.
Community engagement	When conducting projects over large geographic areas, CMAs may need to approach community engagement at a similar scale. For example, they may need to engage several Aboriginal nations or other communities of interest.
Risk management	There may be different risks at different scales - for example, at a local scale, there may be a risk that individual landholders will experience severe impacts as a result of an NRM action, despite an overall benefit at the catchment scale.
Monitoring and evaluation	CMAs might maximise the benefits of particular types of monitoring and evaluation if they ensure that their data can contribute to assessments at catchment, state and national scales.
Information management	Information to support a CMA's internal reporting can be customised to its own needs, but resource condition data relevant to others at catchment, state and national scales should be collected, stored and shared in a manner appropriate for all of those uses.

4.4 Why should CMAs consider scale when prioritising investments?

Explicit analysis of the scale of a natural resource problem should help to target actions to address it. For example, if CMAs understand the hydrological processes and time lags between particular dryland salinity recharge and discharge areas, they can properly determine the extent and location of revegetation required as well as the likely timeframe over which they can expect improvement.

By contrast, if CMAs don't properly analyse the scale of a dryland salinity problem, they might develop a revegetation program that targets the wrong areas, or targets an unnecessarily large area. As a result, the program might fail to reduce the saline discharge, or inadvertently increase instream salinity by reducing downstream flows. It may also result in waste or inefficient use of limited resources.

Similarly, an understanding of spatial scale for riparian revegetation in different river reaches helped Namoi CMA to target its incentive program to achieve maximum benefits for minimum costs (see Box 4.1).

Box 4.1: Considering scale for effective riparian rehabilitation in the Namoi catchment

Namoi CMA's approach to prioritising river rehabilitation projects ensures that investment is targeted at the optimal spatial scale to maximise benefits in biodiversity and water quality.

Namoi CMA found that previous programs in the region had lacked a strategic approach to investment allocation. River bank rehabilitation projects were undertaken in an ad hoc manner – isolated stretches of rehabilitated riverbank were interspersed among stretches of riverbank still in poor condition. This type of rehabilitation effort – small scale and 'patchy' – is likely to result in a negligible overall improvement in biodiversity and water quality in the subcatchment.

Based on this understanding of the implications of spatial scale for rehabilitation, Namoi CMA developed a new approach for prioritising and funding projects. This approach applies a weighting to projects that propose to restore a length of riverbank that has been identified as having high conservation value and high recovery potential (in their River Styles assessment). Larger scale projects are encouraged because they promote connectivity in the landscape and reduce edge effect. Smaller projects are discouraged.

The new approach ensures that extended stretches of riverbank are rehabilitated to a similar condition, leading to greater aggregate improvements in biodiversity and water quality. It also ensures that community and landholder effort is targeted at the appropriate scale.

4.5 How can consideration of scale help to maximise multiple benefits?

Consideration of scale can help CMAs to maximise multiple benefits when they are prioritising investments. Awareness of scale can highlight where an investment in one biophysical issue might, at different scales, generate benefits for other biophysical, economic, social or cultural issues. For example:

- Establishing groundcover on gullies will have localised soil conservation benefits but might also have downstream water quality benefits.
- Similarly, revegetating salinity recharge areas at the catchment scale might result in habitat benefits when assessed at a bioregional or state scale, depending on the species selected for the revegetation.

This suggests that CMAs should use some form of multi-criteria analysis and GIS-based decision support tools to integrate their assessment of alternate investments.

Awareness of scale can also help CMAs to maximise multiple benefits when they are implementing projects. To successfully realise multiple benefits at several scales, a CMA may need to operate at a range of different scales. For example, they may achieve soil retention and incidental downstream water quality benefits by working with local landholders as a group. However, to effectively deliver planned biodiversity benefits of the same investment, they may need to coordinate with the revegetation efforts of multiple CMAs and state agencies.

Focusing on scale, and particularly the relevant community scale for implementing an investment, can highlight opportunities to simultaneously achieve environmental, economic, social and cultural benefits. The illustration in Box 4.2 shows how a regional scale approach to biodiversity conservation can result in multiple benefits at both regional and local scales.

4.6 How can consideration of scale help in understanding socio-economic impacts?

Consideration of scale issues can help CMAs identify which communities might be impacted by alternate investment options. Understanding the size, geographic extent and time lags of potential impacts will help CMAs to evaluate where to target investment, how to manage flow-on impacts, and how material these impacts might be. Understanding the institutional scale issues will help CMAs identify and work with other local, regional, state or national organisations that may be able to help avoid or manage any negative impacts.

At a specific project level, an understanding of the scale and incidence of impacts is crucial to deciding the extent of efforts required to quantify, analyse and mitigate negative socio-economic impacts (see Box 4.3).

Box 4.2: Considering scale in a biodiversity conservation program

Conservation work in the Southern Mallee region has simultaneously improved biodiversity values, boosted agricultural production, and generated economic and cultural benefits for Aboriginal communities.

A biodiversity conservation program in the Southern Mallee area, previously implemented by the South-west Land Management Group, was developed by community members from the Wentworth and Balranald Shires of NSW. The program specifies regional benchmarks for clearing and conservation - no more than 30% of any one vegetation type should be cleared and at least 20% of each vegetation type should be included in a conservation reserve system.

Legally binding land use agreements are used to scale down the regional benchmarks to the property level. Landowners in the region voluntarily enter into the agreements, subject to assessment and approval, which enable them to offset clearing and cultivation with the establishment of private conservation reserves.

At Wamberra Station, north-east of Mildura, the owners have created private conservation reserves over 21 per cent of their land in return for consent to develop part of their land. The remainder is farmed as grazing and cropping land using spelling and minimum-till farming practices. Over the last 2 years the station owners have realised private economic benefits as a result of their land use agreement (such as improved financial security through diversification and drought-proofing). There have also been multiple benefits for the wider regional community, including biophysical benefits (the preservation of large areas of remnant vegetation) and social/cultural benefits (training in conservation and restoration for local Aboriginal communities, provision of employment in feral animal control and sole access to the land for traditional activities for the local Barkindji community).

Box 4.3: Deciding on the extent of socio-economic impact assessment

CMAs can assess the potential socio-economic impacts of NRM projects at many different levels – from preliminary analysis to detailed analysis. The appropriate level of effort and rigour for socio-economic impact assessment will depend on the level of investment in the target or action being assessed, the likelihood and severity of impact resulting from the target or action, the perceived independence of the person doing the assessment and management priorities.

CMA staff can perform a preliminary socio-economic impact assessment without previous experience. The references listed in Table 4.2 describe some simple techniques, including checklist questions, public consultation processes and basic calculations. If these assessments indicate that there are likely to be ‘significant’ impacts, or if there are high levels of uncertainty or risk to particular groups or community values, a CMA should undertake a more rigorous assessment. A detailed assessment may use techniques such as cost-benefit analysis or cost-effectiveness analysis. CMAs have generally indicated that they do not have in-house expertise sufficient to conduct this level of assessment, so they should access resources beyond their organisation.

4.7 Sources of additional information for 'Determination of scale'

Table 4.2: Other references for 'Determination of scale'

Title	Relevance
Linking ecological scales and institutional frameworks for landscape rehabilitation ⁹	This paper provides a summary of the problems in NRM caused by not taking account of varying spatial and institutional scales and their relationship with biophysical processes. It also proposes some solutions.
Conducting social and economic impact assessment: A practical guide for regional NRM bodies in Queensland ¹⁰	This document is a clear and practical guide on how to undertake a social and economic impact assessment including: steps in the process; what to do in practice; and how to incorporate results in regional NRM plans.
Integrating economic and social issues in regional natural resource management planning: A framework for regional bodies ¹¹	This is a thorough guide that covers many topics of interest to CMAs in the area of social and economic issues (prepared for the QLD Government). In particular: regional profiling; scoping of resource targets; techniques and examples for assessing impacts; and other references.
Socio-economic assessment guidelines for river, groundwater and water management committees ¹² .	Although written for water management committees, this guide is very relevant for CMAs. It details a simple step process for community-based socio-economic assessment.

⁹ Briggs, S. (2001) 'Linking ecological scales and institutional frameworks for landscape rehabilitation', *Ecological Management and Restoration*, Vol 2 No 1, April 2001.

¹⁰ Stanley, J., Clouston, B. and Binney, J. (2004) *Conducting social and economic impact assessment: a practical guide for regional NRM bodies in Queensland*, Queensland Department of Natural Resources, Mines and Energy. Available at <http://www.regionalnrm.qld.gov.au/planning/guidance/social.html>.

¹¹ Cavaye, J. (2003) *Integrating economic and social issues in regional natural resource management planning: a framework for regional bodies*. Available at <http://www.regionalnrm.qld.gov.au/planning/guidance/social.html>.

¹² Independent Advisory Committee on Socio-economic Analysis (1998) *Socio-economic assessment guidelines for river, groundwater and water management committees*. Available at <http://www.dlwc.nsw.gov.au/care/water/wr/pdfs/!15broch.pdf>.

5 Opportunities for collaboration

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

The 'Opportunities for collaboration' component of the Standard requires that CMAs explore the costs and benefits of collaborative action with other users and managers of natural resources, and seek to collaborate when this will increase the effectiveness and benefits of planned NRM activities, or reduce the costs.

5.1 Why is collaboration important for CMAs?

CMAs are aware of the need to pursue effective collaboration because they share responsibility for NRM with other organisations. CMAs, Aboriginal communities, other landholders, and all levels of government have an interest in planning and undertaking NRM activities. The current institutional framework means CMAs and state agencies need to work cooperatively and share knowledge and information management. They also have shared responsibilities in terms of monitoring and evaluation. In addition, CMAs need to access research and new knowledge through many research bodies, industry groups and other organisations.

Collaboration is also important because natural processes operate at different spatial scales, and natural resource issues often cross institutional boundaries. For example:

- The coastal zone of NSW is managed by 5 CMAs, and there are multiple local government areas within these CMAs' boundaries. Therefore to implement effective coastal management strategies, the CMAs will need to coordinate their management efforts with those of local governments.
- In inland NSW, dryland salinity affects significant areas and may extend across CMA boundaries. Further, CMAs are not the only organisations responsible for managing this problem. The Murray Darling Basin Commission (MDBC), state government agencies and various Cooperative Research Centres (CRCs) also have an interest in the issue, as well as significant knowledge and expertise to help manage it. CMAs need to take a collaborative management approach in these situations.

CMAs can increase their effectiveness and achieve multiple benefits (see Section 5.3) if they collaborate with other stakeholders at all phases of the adaptive management cycle. Effective collaboration will enable them to leverage additional resources, address the needs of diverse stakeholders, reduce risks and share information.

5.2 How can CMAs identify opportunities for collaboration?

CMAs should have processes for identifying opportunities for collaboration during their planning phases. They need a systematic way of identifying potential partners for collaboration. These partners might include, for example:

- Aboriginal communities
- educational and research institutions
- individual land managers
- local and community groups
- local government
- other CMAs
- private companies and philanthropic organisations
- regional and industry groups
- state government agencies.

In considering potential partners, CMAs should be guided by the scale and nature of the issues they are trying to address. For example, if the issue is localised soil erosion, they might consider individual landholders and the Department of Primary Industries. If the issue is water quality in a large riverine system, they might consider local governments, water authorities, Aboriginal community representatives, CRCs and industry and recreational groups.

In addition, CMAs should systematically identify the nature of the contributions these partners could make. They should consider several factors when identifying and negotiating these contributions – such as each party's interest in the collaborative action (their motivation for being involved), the synergies that can be achieved through collaborative action, the partners' capacity to contribute (including knowledge, experience, resources) and the partners' level of authority. CMAs might negotiate to receive contributions from partners, or provide contributions to partners that include:

- technical/specialist input into project planning and decision-making
- expertise in a particular aspect of NRM or in dealing with particular communities
- provision of tools
- delivery of on-ground works
- access to communication networks, data, knowledge, equipment or human resources
- links to networks within communities.

Boxes 5.1 and 5.2 describe good examples of collaboration between CMAs, other natural resource managers and stakeholders.

Box 5.1: Illustration of collaboration in the Darling Basin

In July 2005, the Western and Border Rivers/Gwydir CMAs met with Queensland regional NRM groups, Queensland and NSW agencies, and the Murray Darling Basin Commission (MDBC) to identify common information and knowledge needs for NRM within the Darling Basin. The Queensland Murray Darling Committee initiated the meeting, and was supported by the MDBC.

These organisations intend to:

- develop broad common strategies to address the information needs that they identified
- investigate possible arrangements for coordination between regional bodies within the Darling Basin
- develop actions to coordinate their approach to NRM in the Darling system.

Through this type of collaboration, the CMAs can minimise costs and maximise the effectiveness and efficiency of regional NRM. For example, they can identify the information most relevant to their needs, and avoid duplicating efforts with other natural resource managers in the Darling Basin. The parties intend to develop formal arrangements to support the coordination of the group and delivery of information for NRM in the Darling Basin.

5.3 How should CMAs manage collaborative projects?

CMAs should manage collaborative projects in a way that maximises the benefits and minimises costs for all parties. When contemplating a collaborative project, CMAs should identify the costs and benefits (environmental, social, cultural and economic) of their proposed collaboration. They may identify a range of opportunities for accessing additional resources, achieving multiple benefits, addressing diverse stakeholder needs, reducing or sharing risk and increasing awareness of CMA targets, activities and achievements. However, CMAs need to be sure that these benefits outweigh the costs of collaborative action. Such costs may include the human resource costs of promoting and maintaining the collaborative effort, or the public image cost of associating with a partner that the community deems inappropriate.

CMAs should establish clear strategies or agreements with project partners before embarking on a collaborative project. The level of formality and detail in these agreements may vary, but should be appropriate for the partners involved, the level of investment they are making, and the risk associated with the project. CMAs should negotiate partnership agreements that define:

- each partner's desired outcomes and how these will be integrated
- each partner's proposed contributions in terms of financial, human and other resources
- arrangements for information sharing
- intellectual property arrangements
- project risks and how these will be managed
- how partners will maintain meaningful communication
- processes for early identification and timely resolution of conflicts
- evaluation and review processes.

Box 5.2: Illustration of collaboration on the Bega River Health Package & Sustainable Land Management Program

Southern Rivers CMA and the Bega Cheese Cooperative have developed a collaborative project to deliver \$330,000 of NHT funding for NRM activities on dairy farms. Through this project the Bega Cheese Cooperative, which has 110 members, will manage the delivery of incentive funds to farmers for on-farm environmental works. These might include river and wetland protection, effluent management, erosion control, re-vegetation and water efficiency projects. Southern Rivers CMA will provide farmers with technical advice and support to assist them in designing and implementing environmental projects that are consistent with overall farm objectives.

The Southern Rivers CMA identified this project as a crucial step in working with dairy farmers at a large scale. Dairy farms account for almost one-quarter of the private land in the Bega Valley. By collaborating with the Bega Cheese Cooperative, the CMA can maximise the benefits of its investment. It can develop better networks in the dairy industry, have greater access to farmers and higher levels of participation than it could achieve alone.

The CMA and Bega Cheese Cooperative have established several mechanisms to support the success of their collaborative arrangement:

- First, they have made a formal agreement (The Bega River Health Agreement). This agreement links water access provisions with improvements to river health, and provides a mechanism for certainty for investments in water access and river health. The agreement also includes targets for specific areas and issues such as wetlands, river corridors, nutrient management, and water efficiency.
- Second, Bega Cheese Cooperative is developing an Environmental Management System, which will ensure that the partners identify and manage risks in a systematic manner.
- Finally, the partners have developed a Community Engagement Strategy that aims to maximise the benefits of the project by attracting more farmers into the scheme.

This project is a good example of collaboration. It demonstrates how a CMA can leverage support and involvement from the farming community, through collaborative action with another key stakeholder. The project will provide benefits for dairy farmers and will raise their awareness of best practice and the importance of properly managing natural resources.

5.4 Sources of additional information on 'Opportunities for collaboration'

Table 5.1: Other references for 'Opportunities for collaboration'

Title	Relevance
Memorandum of understanding – Natural resource management partnership agreement ¹³	This document outlines the principles, mechanisms and responsibilities for collaboration between local and state governments and CMAs.
Bringing them all together – Effective partnerships for natural resource management ¹⁴	This paper gives relevant background and examples on the components for effective partnerships. However, it does not detail practical techniques for collaboration.

¹³ DIPNR, Local Government Association of NSW and Shires Association of NSW (2005) *Memorandum of understanding – Natural resource management partnership agreement*. Available at <<http://www.lgsa.org.au/site/policy/1000150/1000271.html>>.

¹⁴ Lambert, J. and Elix, J. (2000) *Bringing them all together – Effective partnerships for natural resource management*. Available at <<http://www.communitysolutions.com.au/papers/LMpartnerships.html#top>>.

6 Community engagement

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.

The devolution of NRM responsibilities to CMAs in NSW was based on the premise that, as regional bodies, they are better placed than state agencies to engage regional communities and develop NRM strategies that are based on those communities' values and priorities. This engagement is important to ensure that key decisions on NRM are accepted by the community, and to help realise the enormous potential for the community to have a significant, positive influence on natural resources.

The 'Community engagement' component of the Standard requires CMAs to develop and implement strategies to meaningfully engage a range of communities and community members in their catchment, and involve them in each phase of the adaptive management cycle.

6.1 Which members of the community should CMAs engage?

CMAs need to engage all relevant and interested members of the community, and consider their diverse views. This is important, given that Board members are appointed rather than elected, and will help to ensure that CMAs' decisions are accepted and effective. The community members CMAs should consult during the course of their work include, but are not limited to:

- Aboriginal communities
- landholders
- environmental and other interest groups
- government
- general community
- businesses and industry groups or representatives
- those able to provide local knowledge - indigenous and contemporary
- 'vocal' members of the community
- minority groups
- state and local government agencies
- non-government organisations.

CMAs need to systematically identify the community members who will have an interest in each aspect of their work. This will depend on the scales at which projects and activities are being conducted, the communities and individuals that are likely to be affected, and where relevant knowledge may reside. For example:

- A CMA developing a CAP is planning NRM activities for the whole catchment over a ten-year period, so these activities are likely to affect all parts of its community. Therefore, it should aim for broad representation of the community in the CAP development process.
- However, a CMA implementing revegetation activities in a distinct local area might need to involve a smaller group – perhaps the local Aboriginal community, individual landholders within or adjoining the local area, and a local environmental group.
- In some cases, a CMA might plan an activity that will affect or concern communities that are outside its own boundaries, or extend across the Country of distinct Aboriginal communities or over multiple local government areas. In these cases, it will need to involve these communities, as well as those within its boundaries.

6.2 When should CMAs engage the community?

CMAs should involve the community in all phases of their adaptive management cycle, including planning, implementation, and audit and response. This is important for developing community understanding, interest, ownership and participation. The objectives of community engagement are likely to vary with each phase. The important thing is for CMAs to identify and communicate these objectives to the staff and community members involved.

In the planning phase, CMAs need to engage the community for a number of reasons. The first is to help them identify, consider and understand the diverse social, economic, cultural and environmental values within the community. This may require them to gather information based on community knowledge and experience – for example, community opinions on the potential socio-economic impacts of specific NRM activities, and on how those impacts can be optimised. The second is to help them plan management strategies that the community has the capacity to implement. The third is to ensure they are aware of conflicting priorities within the community, so that they can factor these in when prioritising activities.

In the implementation phase, engaging and involving the community will allow them to harness the resources and interest within community groups, and build their own capacity to contribute to the broader community's goals. It will also help to raise the awareness, knowledge and skills of individuals and groups, and to build the social networks necessary for implementing NRM at a broad scale.

In the audit and response phases, CMAs can involve the community through formal monitoring and evaluation programs or less formal feedback mechanisms. CMAs need to consider and learn from community feedback about the effectiveness of NRM strategies, projects and activities, as well as the effectiveness of the engagement process itself. In doing this, they can demonstrate their commitment to continual improvement.

Box 6.1 describes a good example of community engagement and learning from feedback.

Box 6.1: Illustration of community engagement in the Snowy River Recovery Project

As part of the Snowy River Recovery Project, DLWC (now Southern Rivers CMA) conducted community consultation with representatives of local Aboriginal communities, including traditional owners and Land Councils. During this process, the community representatives made it known that their communities' priority was to achieve practical outcomes, rather than to establish visions, plans and strategies for the area. In particular, they wanted to provide employment for Aboriginal people in the Snowy River area and achieve biophysical outcomes, such as removal of willow trees.

In response to this feedback, DLWC began a collaborative project with these Aboriginal communities and NSW DET/TAFE to conduct training in riparian rehabilitation. The TAFE developed a bush regeneration course (part-time), which focussed on river rehabilitation and included formal and on-ground training. DLWC supported the practical component of the course by contributing on-ground experience, assisting with site selection and providing equipment. Aboriginal community members were involved in the course through the BEM Federation of Elders, which is made up of elders from the Bega, Eden and Merrimans Land Councils. The Bega Elders Council managed the participation of the group, covering aspects such as insurance and other administrative functions.

When participants completed the training course, they received certificates of competency, including ChemSafe, Chainsaw, First Aid and a TAFE Training Certificate II. In addition, several easily identified and accessible areas of the Snowy River and Bega River were remediated, with bushland restored, banks repaired or willow trees removed. Participants from the course were later employed and involved in bushfire mitigation, weed control and river restoration projects in the local area and beyond.

6.3 What do community engagement strategies involve?

CMAs need to develop community engagement strategies at both an organisational level and at a project level. The complexity and depth of these strategies will vary, but all should state the objectives of engagement and outline how the CMA intends to achieve those objectives. The questions that CMAs should consider when developing strategies include:

- What information about the project or activity is relevant to the strategy – contextual information, the scale of the activities or issue involved
- What community members should the strategy target – based on their interest, values, and history of involvement, the level of involvement desired or required for the project/activity to succeed, the current community capacity
- What resources will be required to implement the strategy – CMA staff involvement, budget
- Over what timeframe should the strategy be implemented – the time required to provide community members adequate opportunity for involvement
- What communication approaches and tools will be required - mechanisms for informing and updating the community, appropriate language and media
- What specific mechanisms for involvement will be used – how community can be involved in planning, implementation and review stages
- How will the strategy be evaluated – how the effectiveness of the community engagement will be assessed and how the CMA will incorporate the findings into future strategies.

6.4 Sources of additional information on 'Community engagement'

Table 6.1: Other references for 'Community engagement'

Title	Relevance
Towards whole of community engagement: A practical toolkit ¹⁵	A very thorough and practical guide that describes the components of good community engagement and contains guidance on selecting tools and techniques.
National Natural Resource Management Capacity Building Framework ¹⁶	Guiding principles for planning and implementing capacity building investments at all institutional scales. Useful for CMAs where it contains suggestions and examples of capacity building activities.

¹⁵ Aslin, H.J. and Brown, V.A. (2004) *Towards whole of community engagement: a practical toolkit*, Murray-Darling Basin Commission. Available at <<http://mdbc.gov.au/data/o309t12.pdf>>.

¹⁶ Natural Resource Management Ministerial Council (2002) *National Natural Resource Management Capacity Building Framework*, July 2002. Available at <<http://www.nrm.gov.au/publications/capacity-building/>>.

7 Risk management

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

The 'Risk management' component of the Standard requires CMAs to systematically assess and manage all risks associated with their NRM activities. These risks include factors or events that could have adverse effects on CMA activities and the achievement of their objectives, as well as the potential for CMA activities to have adverse effects themselves.

Most CMAs already conduct some form of risk assessment for some aspects of their work. However, few systematically identify and assess risks across all projects, develop risk management strategies for all projects, and regularly review and update these strategies. By developing protocols and systems to facilitate comprehensive risk management, they are more likely to achieve their intended outcomes.

7.1 What types of risks should CMAs consider?

CMAs need to assess and manage many different types of risk that may jeopardise the effectiveness of their activities. In addition, they need to assess and manage the potential impacts and 'flow-on' effects of their own activities, to ensure they don't have unintended consequences for other stakeholders or natural resource assets.

These risks can relate to a wide variety of factors – such as biophysical, social, economic, cultural, organisational, technical, and other factors. Consider a project to manage groundwater recharge by planting native perennial species across multiple properties. Organisational risks might include failure to effectively engage all landholders, which could reduce the number of people willing to participate in the implementation phase. Technical risks might include limited understanding about the groundwater flow systems in the project area and inappropriate site selection. Economic risks might include reduced productivity if landholders do not adapt their management techniques appropriately.

Table 7.1 provides other examples of potential risks to CMA activities and Table 7.2 provides examples of possible flow-on effects from CMA activities.

7.2 How can CMAs identify and assess risks?

CMAs need to identify risks using a well-structured and systematic process. They should continually review the activities they conduct, at organisational and project levels, and identify anything which could affect the success of those activities or be affected by those activities. They can use a variety of tools and techniques to do this. Their approach may include checklists, judgements based on experience and records, flow charts, brainstorming, systems analysis, scenario analysis and systems engineering techniques.¹⁷ Initially, they may ask themselves general questions about each type of risk.

¹⁷ Standards Australia, *Australian/New Zealand Standard for Risk Management AS/NZS4360:2004*, 2004.

Table 7.1: Examples of the different types of risks CMAs may identify

Type of risk	Examples of risks to CMA activities
Biophysical	Flood may wash away river bank restoration works
Social	Poor relationships between community groups may hamper project to improve connectivity of remnant native vegetation
Economic	Drought may reduce landholders' ability to allocate labour to project
Cultural	Program or project may not be culturally acceptable and may have low uptake rates
Institutional	Existing legislation may prevent actions being undertaken
Organisational	Key staff members may leave and CMA may lose significant program knowledge
Technical	Paucity of data may create uncertainty about management options
Temporal	Land may change hands and this may affect long-term project implementation
Financial	Level of financial support from partner agencies may fluctuate

Table 7.2: Examples of the different types of flow-on effects CMAs may identify

Type of risk	Examples of flow-on effects of CMA activities
Biophysical	River flow in the catchment may be affected by salinity control works
Social	Employment opportunities for young people may be improved
Economic	Regional economy could be improved through increased opportunities in eco-tourism
Cultural	Aboriginal knowledge may be used or distributed in an inappropriate manner
Institutional	New institutions established during one project can be capitalised upon for other projects
Organisational	Project may involve high numbers of staff leaving less staff for other projects
Technical	Information gained from one project may be useful to other projects
Temporal	Adverse impacts in the short-term may be balanced by positive impacts over the longer-term
Financial	Production costs of primary producers could increase as a result of project

Whenever CMAs identify risks, they need to assess or analyse them. That is, they need to determine the likelihood of the event occurring and the consequences if the event were to occur. CMAs can base this assessment on information from:

- past records
- relevant experience
- industry practice and experience
- relevant published literature
- experiments and prototypes
- economic, engineering, ecological or other models
- specialist and expert judgement.

CMAs can choose from a range of existing risk assessment techniques. These include a variety of qualitative, semi-quantitative or quantitative risk assessment techniques. In most cases, CMAs should begin with qualitative analysis to get a general indication of the likelihood and consequences of the risk occurring. For example, when assessing socio-economic risks or impacts, they could use a simple tool such as the Likert scale.¹⁸ Next, they might need to undertake quantitative or semi-quantitative analysis, using tools such as cost-benefit analysis, logic trees, interval arithmetic or Monte Carlo predictions. Information on these methods can be found in the references listed in Table 7.3 (Box 7.1 also provides specific information on socio-economic risks).

CMAs should choose a risk assessment approach that is appropriate to the scale of the project or investment they are considering. For example:

- When assessing a landholder's bid for a small amount of incentive funding, a CMA catchment officer might prepare a simple list of risks associated with the project and suggestions for addressing those risks. If the funding is granted, the catchment officer might review this list on a quarterly basis, and discuss any significant risks with the relevant program manager.
- However, when considering investing in a major re-snagging or weir removal project, a CMA would need to use much more rigorous risk assessment techniques. For example, it might use techniques that incorporate technical information from multi-disciplinary expert panels, hydraulic models and detailed socio-economic impact assessments. If the project goes ahead, it might convene meetings of these expert panels to re-assess the risks at regular intervals or at key milestones, then provide formal reports to the CMA Board.

CMAs need to identify the appropriate level of risk assessment for each of their activities. Deloitte Touche Tohmatsu are currently developing a risk management framework to assist CMAs but, in some cases, they may need to seek external expertise.

¹⁸ Cavaye, J. (2003) *Integrating economic and social issues in regional natural resource management planning: a framework for regional bodies*, p. 64. Available at <http://www.regionalnrm.qld.gov.au/planning/guidance/social.html>.

Box 7.1: Assessing potential socio-economic risks

CMAs need to understand the social and economic impacts that might result from their NRM activities. No management action or program will be impact free. Impacts can involve both costs and benefits for a range of stakeholders. They can be direct or indirect, with 'flow on' effects in the economy and community. Impacts may also 'feed back' to affect the management action itself. Direct and indirect impacts will be felt at different scales, spatially, temporally and institutionally.

CMAs should assess these impacts when deciding whether a proposal should proceed or whether an alternative is preferable. However, socio-economic impact assessment will not normally give a definitive answer on which is the best option. Other factors, including biophysical, cultural, technical and political factors, will influence the choice of a particular option.

The most valuable outcome from socio-economic impact assessment will be that the community is aware of the potential impacts, and has been involved in identifying impact/risk mitigation options. Further sources of information on how to assess potential social and economic impacts are listed in Table 7.3.

7.3 How should CMAs respond to risks?

CMAs need to respond to their risk assessments in every phase of the adaptive management cycle. They need to consider the results of risk assessments when making planning decisions and when implementing projects and activities. For example, during their prioritisation process they need to consider the relative risks associated with specific activities alongside perceived benefits of those activities. As discussed in Section 2.2, they need to have a systematic approach for this prioritisation.

CMAs should not necessarily rule out projects or activities with high risks (although they may choose this option). Rather, they should ensure that their risk management strategies are sufficient to deal with those risks. This will likely require a high level of detail and specificity. For example, if a CMA was investing significant funds in a large, collaborative project, they may need to develop a formal risk management strategy with input and endorsement from project partners and technical experts.

In the audit and response phases, CMAs must demonstrate that they are continually re-assessing risks and adapting their work plans accordingly. In particular, they need to ensure that internal and external monitoring and evaluation programs will generate useful information to help them better understand and/or manage risks.

7.4 Sources of additional information on 'Risk management'

Table 7.3: Other references for 'Risk management'

Title	Relevance
Australian/New Zealand Standard for Risk Management ¹⁹	This is a generic seven-step guide for managing risk that can be applied to a wide range of activities or operations of any public, private or community enterprise.
Risks and decisions for conservation and environmental management ²⁰	This book discusses the theory of risk management and describes technical tools for environmental risk assessment.
Conducting social and economic impact assessment: A practical guide for regional NRM bodies in Queensland ²¹	This document is a clear and practical guide on how to undertake a social and economic impact assessment including steps in the process, what to do in practice, and how to incorporate results in regional NRM plans.
Integrating economic and social issues in regional natural resource management planning: A framework for regional bodies ²²	This is a thorough guide that covers many topics of interest to CMAs in the area of social and economic issues (prepared for the QLD Government). In particular, it covers regional profiling, scoping of resource targets, techniques and examples for assessing impacts, and other references.
Socio-economic assessment guidelines for river, groundwater and water management committees ²³	Although written for water management committees, this guide may be useful for CMAs. It details a simple step process for community-based socio-economic assessment.

¹⁹ Standards Australia (2004) *Australian/New Zealand Standard for Risk Management AS/NZS4360:2004*.

²⁰ Burgman, M. (2005) *Risks and decisions for conservation and environmental management*. Cambridge University Press, Cambridge.

²¹ Stanley, J., Clouston, B. and Binney, J. (2004) *Conducting social and economic impact assessment: a practical guide for regional NRM bodies in Queensland*, Queensland Department of Natural Resources, Mines and Energy. Available at <http://www.regionalnrm.qld.gov.au/planning/guidance/social.html>.

²² Cavaye, J. (2003) *Integrating economic and social issues in regional natural resource management planning: a framework for regional bodies*. Available at <http://www.regionalnrm.qld.gov.au/planning/guidance/social.html>.

²³ Independent Advisory Committee on Socio-economic Analysis (1998) *Socio-economic assessment guidelines for river, groundwater and water management committees*. Available at <http://www.dlwc.nsw.gov.au/care/water/wr/pdfs/!15broch.pdf>.

8 Monitoring and evaluation

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 results to guide improved practice.

The 'Monitoring and evaluation' component of the Standard requires CMAs to plan and implement monitoring and evaluation (M&E) programs that they will use to assess their progress towards regional targets and contributions to state-wide targets. It also requires them to incorporate the lessons learned through M&E into their planning and decisions making processes. In this way, they will close the adaptive management 'loop' and be able to achieve continual improvement.

8.1 What factors should CMAs consider when planning their M&E programs?

To comply with the Standard, CMAs need to develop M&E programs that will help them to:

- assess their own efficiency and effectiveness at organisational and project levels
- maintain internal and external accountability
- achieve continual improvement in their activities.

This will involve considering several factors. First, CMAs need to consider all of their desired outcomes and outputs. To a large extent, these will be embodied in their catchment targets and management targets, as well as in the more specific objectives of individual projects and activities. However, CMAs may also have goals related to their organisational performance and the way they conduct their business.

Second, CMAs need to consider how M&E can help them assess their progress against their CAP and other organisational goals. In the short term, they will generally need to monitor project implementation (what activities were conducted, where and how they were conducted, how much they cost) and the subsequent achievement of management targets (project outputs). However, in the longer term, CMAs will need to assess progress against their catchment targets and determine whether their actions are leading to the desired resource condition outcomes.

Third, CMAs need to determine the types of data they require to answer the following questions, for all of their short- and long-term assessments:

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

Clearly, CMAs will require many different types of data, because their desired outcomes and outputs will be many and varied. For example, they may need very detailed, quantitative water quality data to measure any significant change in groundwater salinity. But they may need qualitative or even anecdotal information to identify any shifts in the level of community willingness to participate in NRM activities.

Fourth, CMAs need to determine how they will obtain the data they require. In most cases, they will need to conduct their own monitoring of project implementation, outputs and progress against management targets and they have the capacity to do this. They will also need to obtain data for assessing resource condition and progress towards catchment and state-wide targets. State agencies, the MDBC, CRCs and other research bodies, industry groups and other organisations all collect data that CMAs could use for this purpose. Consistent with the Standard's requirement for 'Collection and use of knowledge', CMAs need to investigate this information. CMAs will need to collaborate with state agencies to obtain any additional data for assessing progress towards catchment and state-wide targets.

8.2 What are the features of quality M&E programs?

Irrespective of their specific purpose, quality M&E programs will have the following common features:

- clear and robust conceptual frameworks
- fit-for-purpose M&E programs for each target
- protocols to improve the quality and consistency of information from different sources
- quality assurance and governance arrangements.

Quality M&E programs are founded on robust conceptual frameworks. These describe the links between causes and effects that are relevant to each of their targets. CMAs can use these frameworks to assess whether their actions and investments are contributing to desired outcomes. For example, it may help CMAs to use information about their investments and outputs when considering progress against longer term catchment targets. With good conceptual frameworks, CMAs can assess the usefulness of different types of data. They can then avoid indiscriminately collecting large volumes of information without understanding how that information will be used. In addition, they will be able to identify information gaps and identify specific monitoring needs. Further, conceptual frameworks provide a basis for CMAs to evaluate effectiveness and respond to lessons learned.

Quality M&E programs are fit for their specific purpose. CMAs will need to develop different types of programs to monitor and evaluate progress against different targets and organisational goals. In designing these programs, they will need to identify:

- appropriate performance indicators
- spatial and temporal scales of existing information and future programs
- baselines (or plans to collect baseline data)
- sampling design and frequency of measurements
- inferences that can be drawn from the information gathered
- mechanisms for using data to evaluate progress against targets.

Quality M&E programs have clear protocols for key M&E activities, including data collection, data management and evaluation methods. By developing and adopting these protocols, CMAs can ensure that the information they collect from different sources is of sufficient quality and compatibility to augment other data sets. For example, data collection protocols will ensure the use of appropriate and qualified personnel, methodology, experimental design and so on. CMAs should consider the range of protocols for M&E which already exist at national and state

scales, as well as the work completed for the National Land and Water Resources Audit. They will also need to consult and negotiate with other data collectors and users, particularly other CMAs and state agencies.

Finally, quality M&E programs include appropriate quality assurance and governance arrangements. CMAs need to establish and regularly review these arrangements, to ensure their programs are high-quality, cost-effective and fulfil their purpose. CMAs need to define clear responsibilities for collecting data, and for maintaining and improving data sets so that they are credible and support rigorous analysis. Where CMAs obtain data from, or supply data to, other organisations they should develop clear service level agreements with sufficient detail to clarify each party's roles and responsibilities.

Box 8.1: Evaluation framework developed for the Hunter-Central Rivers CMA

DNR (formerly DIPNR) developed an evaluation framework for the Hunter Central Rivers CMA and is now leading a project to help other CMAs develop their M&E programs. If adopted by all CMAs, this will help to achieve a consistent, high-quality and logical approach to M&E across all CMAs.

This framework provides guidance on the following:

1. Establishing the evaluation context
 - a) Evaluation design considerations
 - b) Understanding the logic and defining specific evaluation questions
2. Monitoring to inform the evaluation
 - a) Defining sources of evidence
 - b) Managing and documenting sources of information
3. Undertaking evaluations
 - a) Evaluation design
 - b) Testing the hypothesis
4. Reporting
 - a) Using evaluation findings
 - b) Reporting evaluation findings

For further information on this, CMAs could refer to the report on *Integrated monitoring, evaluation and reporting framework for Hunter Central Rivers Catchment Management Authority* which DIPNR prepared as part of this project (see Section 8.4 for reference details).

8.3 How should CMAs use M&E to achieve continual improvement?

CMAs should use their M&E programs to 'close the loop' in the adaptive management cycle and thus achieve continual improvement. The NRC's pilot systems review identified situations in which CMAs had contributed to monitoring programs but had not evaluated the results, nor incorporated them into decision-making and planning. This highlights the need for CMAs to have systematic evaluation processes for assessing progress against targets and organisational goals and using the results to improve their practices.

When CMAs conduct well-designed M&E, they can use the results to:

- better understand NRM issues in their catchment
- assess and manage risk
- review and improve management strategies and actions
- enhance the efficiency and effectiveness of project implementation
- clearly demonstrate the returns on their NRM investment.

CMAs need to plan for continual improvement in their CAPs. The CMA Act (s26) requires that they keep their CAPs under regular and periodic review. During the 10-year CAP cycle, each CMA will need to revise and improve its CAP to incorporate:

- its own monitoring and evaluation results
- other regional and state-wide monitoring and evaluation results
- findings of the NRC audits
- new knowledge (biophysical, socio-economic or cultural)
- any changes in legislation.

Box 8.2: Illustration of monitoring and evaluation - Self-evaluating progress in the Murrumbidgee CMA

As a component of their monitoring and evaluation program Murrumbidgee CMA has commissioned an independent audit firm to audit projects of significant importance or significant risk. This will provide them with a range of benefits including:

- meeting due diligence requirements
- providing the CMA with an understanding of the level of project success
- allowing the CMA to compare the relative effectiveness and efficiency of different methods of project delivery (collaborative approach with an agency, use of a contractor, or delivered in house).

The first due diligence audit has been completed on a bio-diversity project, Protect and Enhance Native Vegetation, which was delivered by a contractor. The Murrumbidgee CMA also plans to audit projects being delivered by an agency and community groups in the near future. Board members have skills in due diligence and probity through Australian Institute of Company Directors training.

Murrumbidgee CMA is also using modelling to predict outcomes to audit against. One example involves entering land use change information into CATSALT (which is calibrated against actual sub catchment-specific salt and water yield figures) to estimate the change in water yield and salt load.

8.4 Sources of additional information for 'Monitoring and evaluation'

Table 8.1: Other references for 'Monitoring and evaluation'

Title	Relevance
Integrated monitoring, evaluation and reporting framework for Hunter Central Rivers Catchment Management Authority ²⁴	Provides an example of one CMA's monitoring and evaluation program.
National natural resource management monitoring and evaluation framework ²⁵	This document provides information on what CMAs should consider when developing M&E programs that are consistent with obligations. It also suggests indicators (under review).
Engaging Queenslanders: evaluating community engagement ²⁶	This document provides guidance on the evaluation of community engagement processes.

²⁴ DIPNR (2005) *Integrated monitoring, evaluation and reporting framework for Hunter Central Rivers Catchment Management Authority*, NSW Department of Infrastructure, Planning and Natural Resources.

²⁵ Natural Resource Management Ministerial Council (2003) *National natural resource management monitoring and evaluation framework*. Available at <http://www.nrm.gov.au/publications/evaluation/index.html>.

²⁶ Johnson, A.L. (2004) *Engaging Queenslanders: evaluating community engagement*, Queensland Government Department of Communities. Available at http://www.getinvolved.qld.gov.au/share_your_knowledge/resources/documents/pdf/guide_evaluation.pdf.

9 Information management

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

The 'Information management' component of the Standard requires that CMAs develop information management systems that will make it easy for them to access and use this information, and maintain transparency, accountability and continuity. Most CMAs have identified information management as one of the key areas in which they need to improve. Establishing good information systems is a challenging task for any new organisation, whether it is establishing completely new systems or modifying inherited systems. CMAs will need to work collaboratively with each other and DNR to apply this component of the Standard.

9.1 What are CMAs' information management needs?

CMAs require better information systems that will help them to more efficiently conduct their own business. They need good information management systems to properly develop CAPs, manage investment, and deal with NRM agencies and the broader community. In addition, CMAs need information systems that will facilitate information sharing with other natural resource managers and will support their external reporting requirements.

CMAs need to specifically describe their own information management needs, as well as external needs for the CMA's information. In doing so, they should define:

- the types of information they hold and are likely to require in the future
- the format of this information
- the current holders of information (internal and external)
- the users of information (internal and external)
- information sharing requirements
- the current and potential uses of information
- the roles and responsibilities for information collection, capture, storage, custodianship, access, use, protection and archiving
- reporting requirements.

9.2 How can CMAs develop good information management systems?

CMAs need to collaborate with each other and with other organisations to design information systems that meet the needs of all users and support the 'Collection and use of knowledge' component of the Standard. These systems should be able to:

- manage the many types of data and information CMAs need to support their decision-making (as listed in Section 3.1)
- accommodate information from multiple sources (internal and external)
- capture information from their own monitoring and evaluation programs
- support internal and external reporting requirements
- maintain data integrity over the long term.

CMAs can also take steps to ensure that the information contained in their systems is current, is of high quality, and is used appropriately. For example, they should:

- identify roles and responsibilities for information collection, capture, storage, custodianship, access, use, protection and archiving
- use the ANZLIC metadata format to document data in a way that allows users to easily determine the suitability of information for their purposes
- make information available to potential users in an easily accessible form and at an appropriate cost for the extent and importance of its potential use.

At present, CMAs depend on state agencies for information and technical support, so it is sensible to work closely with those agencies. They should carefully negotiate their service level agreements with the agencies, so that information needs, roles and responsibilities are clearly understood and documented by both parties. CMAs could view these service level agreements in the same way as they would view a contract with a consultant, and ensure that they contain adequate detail.

Box 9.1: Illustration of good information management

The role of the Sydney Catchment Authority (SCA) is to supply bulk water and manage and protect Sydney's drinking water catchments. Under its operating licence, it is obliged to meet standards for (among other things) bulk water quality and catchment management. Audits are conducted to assess its compliance with the licence, including the effectiveness and efficiency of its catchment activities.

To support its ongoing decision-making (and ultimately to demonstrate its compliance with its licence requirements), the SCA has developed strategies to address information management. These strategies aim to:²⁷

- develop and implement an integrated Knowledge Management System, including a Catchment Information System
- develop and implement a GIS strategy supporting the Knowledge Management System
- establish review processes to encourage evidence-based decision-making
- provide training on how to use information systems and procedures
- document relevant procedures, such as those for accessing expertise
- educate staff on a methodology to incorporate information into decision-making in a transparent manner.

The SCA reviews these strategies on a regular basis to monitor progress and to respond to any new issues. It has developed performance indicators and targets for each strategy to measure progress towards intended outcomes and it reports on these annually.

²⁷ Sydney Catchment Authority, *Sydney Catchment Authority Business Plan 2002 – 2007*, version 3 September 2004. Available at <http://www.sca.nsw.gov.au/publications/52.html>.

9.3 Sources of additional information on 'Information management'

Table 9.1: Other references for 'Information management'

Title	Relevance
Natural resources information management toolkit: Building capacity to implement natural resources information management solutions ²⁸	This toolkit was developed to assist regional NRM groups access, visualise and manage their data and information. Modules 2, 4, 5 and 9 are particularly relevant to CMAs.

²⁸ *Natural Resources Information Management Toolkit: Building capacity to implement natural resources information management solutions*, Version 1.0. Available at <<http://www.nlwra.gov.au/toolkit/>>.

