



**Audit Report
Hunter-Central Rivers
Catchment Management Authority**

March 2009



AUDIT REPORT

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List of acronyms

ASS	Acid Sulfate Soils
CAP	Catchment Action Plan
CMA	Catchment Management Authority
DECC	Department of Environment and Climate Change
MER	Monitoring, Evaluation and Reporting
NRC	Natural Resources Commission
NRM	Natural Resource Management
NSW	New South Wales
NVAT	Native Vegetation Assessment Tool
SCaRPA	Site and Catchment Resource Planning and Assessment decision support system

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Document No. D08/4863

ISBN: 978 1 921050 45 9

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1 Introduction

The Natural Resources Commission (NRC) has a statutory role to audit whether the state's 13 Catchment Action Plans (CAPs) are being implemented effectively – that is, in a way that complies with the *Standard for Quality Natural Resource Management* (the Standard) and will help achieve the state-wide targets.

The NRC has completed audits of seven of these CAPs, one of which was the Hunter-Central Rivers CAP. Preparing for and conducting the audits involved significant research, development and innovation, as natural resource management auditing is a new and challenging field. We greatly appreciate the patience and cooperation of all the CMAs involved. We made many refinements to our audit process along the way, and are confident that future audits will be more efficient and provide a more comprehensive picture of CMAs' performance in implementing CAPs.

The conclusions of our audit of the implementation of the Hunter-Central Rivers CAP, the actions we suggest Hunter-Central Rivers CMA take to improve this implementation and a summary of the CMA's response to our draft report are provided in full in Attachment 1. The purpose of this report is to promote greater understanding of the Hunter-Central Rivers CMA's performance and to guide the CMA Board in continued improvement. The report explains:

- the audit conclusions and their significance
- how the NRC used the Standard in reaching the conclusions.

The NRC has used these conclusions, along with those of other audits and additional information, to prepare a consolidated report to the NSW Government on progress in implementing CAPs to date.¹

1.1 Focus of the audit

Although a range of government agencies have a role in implementing CAPs, the NRC focused the initial audits on the actions of the CMA. This is because CMAs are the lead agencies responsible for implementing CAPs.

In addition, while state-wide and CMA-level monitoring and evaluation programs are being implemented, data from these programs are not yet available. As a result, our initial audits were not able to test the contribution of CMA actions against accurate measurements of landscape-scale changes in natural resource condition that help achieve the state-wide targets. Instead, the audits focused on whether CMA's planning, project implementation and other CAP-related activities, and the business systems that guide and support these activities, are reaching the quality benchmarks set by the Standard.

To do this, we focused on four lines of inquiry:

1. Is the CMA effectively prioritising its investments to promote resilient landscapes that support the values of its communities?

¹ Natural Resources Commission (2008) *Progress report on effective implementation of Catchment Action Plans – November 2008*. NRC, Sydney. Available at www.nrc.nsw.gov.au.

2. Are the CMA's vegetation projects contributing to improved landscape function?
3. Is the CMA actively engaging its communities?
4. Is the CMA effectively using adaptive management?

For each line of inquiry, we assessed not only whether the CMA is doing the activity, but whether it is doing it effectively – that is, by applying the most relevant elements of the Standard and achieving the required outcomes of the Standard. The NRC believes a CMA that is doing each of these four activities in a way that reaches the quality benchmarks set by the Standard has the greatest chance of achieving multiple NRM outcomes and making the highest possible contribution towards the state-wide targets.

Finally, in pursuing each of the four lines of inquiry, we focused on CMA projects that use vegetation to improve landscape function. It was not practical to look at all CMA programs and projects, given the timeframe for the audits. The NRC considers that focusing on vegetation-related projects was the best option, as in general these have most potential to contribute to multiple NRM targets across more than one biophysical theme (for example, improvements in river health, soil function and native species habitat).

1.2 Summary of audit findings

To conduct the audit, the NRC identified what we would expect to find if the CMA was doing each of the four activities listed above effectively. For each line of inquiry, we identified three or four criteria we would expect the CMA to be meeting. We also identified the elements of the Standard that are most relevant and important to that line of inquiry, and the CMA behaviours and other outcomes we would expect to find if the CMA is properly applying those elements of the Standard.

We then assessed the CMA's performance against these expectations by interviewing a sample of CMA Board and staff members, landholders and other stakeholders; reviewing a range of CMA and public documents; and visiting projects.

Finally, we identified the actions the CMA should take to improve its performance in implementing its CAP in compliance with the Standard.

The sections below summarise the audit findings for the Hunter-Central Rivers CAP, including our expectations, our assessment of the Hunter-Central Rivers CMA's performance against these expectations, and the actions we suggest the CMA take to improve its performance. As noted above, the full audit conclusions and suggested actions for Hunter-Central Rivers CMA are provided in Attachment 1.

1.2.1 Prioritising investments to promote resilient landscapes

If a CMA is effectively prioritising its investments to promote resilient landscapes that support the values of its communities, we would expect to find that it has a commonly understood definition of what constitutes resilient landscapes in its region. For example, its Board members and staff would be able to consistently explain the main natural resource assets in the region, and the interactions that characterise healthy landscape function. They would know the main threats to the assets and landscape function, and the environmental, economic, social and

cultural value the community places on those assets. In addition, they would also agree on the options for action and how they promote resilient landscapes.

We would also expect to find that the CMA has a system for ranking investment options that uses a wide range of information about the assets and threats, and can identify the projects that will contribute to multiple NRM targets across more than one biophysical theme. This system would be transparent, consistent and repeatable. In addition, we would expect to find that the CMA has a system to ensure its short- and long-term investments are consistent with each other and with the catchment-level targets in the CAP.

Our audit of Hunter-Central Rivers CMA's implementation of the CAP found that:

- The CMA's Board demonstrated an understanding of what is meant by healthy functioning landscapes that are resilient and how the CMA's actions promote this goal. Its staff demonstrated wide variation in their understanding of this concept, which was not always consistent with the Board's. This was hindering the CMA's ability to clearly and consistently communicate how it prioritises investments to key community stakeholders, particularly urban and mining stakeholders.
- The CMA had well-structured and transparent systems for ranking investment options at the sub-catchment scale, and for ensuring its short-term and long-term investments were consistent with each other. However, a less structured and transparent approach was evident at the project scale. The CMA believes its planned application of the modelling software SCA² will address this limitation.
- While the CMA used spatial analysis in some investment decisions, it was not applied in a consistent manner at both the sub-catchment and project scales. Therefore, it was not clear that the CMA's investment decisions were consistently informed by the role of vegetation in landscape function and resilience.
- Further, in taking account of investment options' alignment with the targets in the CAP, project assessment appeared to rely heavily on the Native vegetation Assessment Tool (NVAT). This focused the CMA's vegetation investments largely around vegetation 'scarcity' rather than its role in landscape function and resilience. While the NVAT is a useful tool, this reliance on the NVAT may limit the CMA's ability to make maximum progress towards the targets in the CAP.

The NRC suggests the CMA Board take a range of actions to address these issues and so improve the extent to which its implementation of the CAP complies with the Standard. These actions include:

- accelerating the implementation of evaluation tools that use spatially explicit data and permit modelling of benefits across two or more themes at the project *and* sub-catchment scales.

1.2.2 Delivering projects that contributed to improved landscape function

If a CMA is effectively delivering vegetation projects that contribute to improved landscape function, we would expect its Board and staff to have a common understanding of how the short-term outcomes of its projects are expected to lead to long-term improvements in natural resource condition, and that the expected long-term outcomes are documented. We would also

² Site and Catchment Resource Planning and Assessment decision support system

expect to find that its projects are achieving the expected short-term outcomes, and that the CMA has a system for identifying opportunities to further leverage the experience of its project partners to add value to the initial projects.

In addition, we would expect to find that the CMA is attracting additional funding and in-kind contributions to match government investments in projects. And that it has systems in place to monitor and evaluate project outcomes over time.

Our audit of the implementation of the Hunter-Central Rivers CAP found that:

- The CMA's projects were well-designed and there is a logical relationship between the expected short-term project outcomes and the expected long-term improvements in natural resource condition. Although the expected long-term outcomes were not consistently documented, Board and staff members demonstrated a common understanding of the relationship between the short-term and long-term outcomes. Landholders also demonstrated this understanding, which suggests the CMA had effectively communicated this relationship to stakeholders.
- The CMA's projects were achieving their expected short-term outcomes. In some cases, they were achieving, or were likely to achieve improvements in resource condition at both the project and sub-catchment scale. For example, evidence suggests the CMA's management and investment in native vegetation through the Hunter River Works projects had improved in-stream health and reduced the impact of recent flooding on the local environment and regional economy. This success seemed to be largely due to the continuity of funding and the CMA's improved understanding over time of the role of native vegetation in promoting river function.
- The CMA was attracting additional funding and in-kind contributions from partners and other stakeholders, but did not have a system for recording the value of these contributions. As a result, it could not measure this value, or understand the true level of investment in NRM in the catchment and how costs were being shared between government and non-government stakeholders.
- The CMA had a system for monitoring the outcomes of projects, but did not appear to use the system properly. For example, it did not seem to fully monitor potential changes in resource condition as a result of projects, or collect and make full use of relevant data from project partners.

The audit team noted the CMA's view that state agencies' failure to provide scientific data on resource condition was partly responsible for the shortcomings in its use of the project monitoring and evaluation system described above.

The NRC suggests the CMA take a range of actions to address these issues, including:

- review the current Monitoring, Evaluation and Reporting (MER) strategy to ensure it is appropriately monitoring performance indicators associated with each hierarchical level in its program logic.

1.2.3 Effectively engaging its communities

If a CMA is effectively engaging its communities, we would expect it to have identified the key community groups and stakeholders it should consider in planning and undertaking its work. We'd expect its Board and staff to have a shared understanding of these groups, including their knowledge, capacity and values, and the socio-economic and cultural opportunities and threats they pose to the successful implementation of the CAP.

In addition, we would expect the CMA to be implementing an appropriate engagement strategy for each key group in its community, which is designed to build trust in the CMA, promote two-way knowledge sharing, and ultimately achieve outcomes. The CMA would also be implementing a communication strategy that promotes collaboration, sustainable behavioural change and feedback. These strategies would be based on its knowledge of the interests, capacities and values of each group, and their communication preferences.

Our audit of Hunter-Central Rivers CMA's implementation of the CAP found that:

- The CMA demonstrated a good understanding of its community, but had not systematically identified the key community groups and stakeholders it should have considered, or analysed their capacity to help deliver NRM outcomes.
- The CMA was implementing a range of engagement strategies that were appropriate for some groups, including landholders and urban groups. However, there were mixed views within the CMA on the importance of urban populations and the mining sector in respect to the CAP goals and how best to engage these groups. Without a cohesive policy on this issue going forward, the CMA is at risk undermining progress towards achieving the targets in the CAP, as these groups are rapidly changing and have significant potential to influence NRM outcomes in the Hunter-Central Rivers catchment.
- The CMA was implementing a communication strategy that promotes collaboration, feedback and sustainable behaviour change. It had developed communication networks and tools after working with community groups to understand their interests, capacities and values.

The audit team noted the CMA's concern that inconsistencies between native vegetation clearing rules (and therefore decisions made) under different regulations reduced its credibility. In some parts of the region, the CMA is required under the *Native Vegetation Act 2003* to apply transparent rules in making decisions on native vegetation clearing and offsets for development. However, in other parts of the region (particularly coastal areas) other land-use decision-makers decide on vegetation clearance and development offsets under the *Environmental Planning & Assessment Act 1979*, which involves applying a different, less transparent and sometimes more lenient set of rules.

The NRC suggests the CMA take a range of actions to increase the effectiveness of its community engagement, including:

- developing a cohesive policy on engaging peri-urban and mining groups to help achieve the targets in the CAP.

1.2.4 Effectively using adaptive management

If a CMA is effectively using adaptive management, we would expect it to have documented how it will apply the principles of adaptive management in its planning and business systems. We would expect its Board and staff to be able to explain how the CMA uses adaptive management to promote continuous learning at both an individual and institutional level. They would also be able to explain the key knowledge gaps and uncertainties related to the assets and threats in the catchment, and how the CMA manages these.

In addition, we would expect the CMA to use monitoring and evaluation systems that test the assumptions underlying its investments in improving landscape function and resilience, and use appropriate experts to assess the planned and actual outcomes of these investments. There would also be an organisational focus on applying new knowledge (gained from monitoring and evaluation or other sources) to increase the effectiveness of investments. Finally, we would expect the CMA to have and maintain information management systems that support its adaptive management processes.

Our audit found that:

- Hunter-Central Rivers CMA demonstrated a fundamental understanding of the concept of adaptive management and how to apply it. It also demonstrated that in some instances, it was applying the Standard to drive adaptive management. For example, it had commissioned studies to provide knowledge for planning purposes. In addition, it is developing further systems to improve and extend its adaptive management processes.
- However, the CMA had not documented how it applies the principles of adaptive management in its planning and business systems. As a result, its staff demonstrated an inconsistent understanding and application of this critical concept.
- The CMA had a documented monitoring and evaluation system, but this system focused on whether a project had been implemented as intended (i.e. on project outputs) rather than testing whether the underlying assumptions were correct (for example, whether the project led to the intended changes in landscape function). Nor had it consistently used appropriate experts to assess the planned and actual outcomes of these investments. As a result, the CMA is at risk of not being able to adaptively improve its project design or apply new knowledge to increase the effectiveness of its investments.
- The CMA had a series of information management systems, but these were not well integrated and the quality of the information they contained was highly variable.

The audit team noted that the CMA was in the process of upgrading its information management systems. It also noted the CMA's view that the poor performance of third parties in implementing service-level agreements had hindered its ability to operate effective information management systems.

The NRC suggests that Hunter-Central Rivers CMA take the following actions to more effectively use adaptive management:

- developing a business procedure to operationalise the adaptive management principles described in the CAP
- reviewing the performance of its MER strategy and its systems to meet the adaptive management needs of the CMA and other reporting requirements.

1.3 Structure of the report

The rest of this report explains the audit conclusions and how we used the Standard in reaching those conclusions in more detail. It is structured around each of the four lines of inquiry as follows:

- Chapter 2 describes our assessment of whether the CMA is effectively prioritising its investments to promote resilient landscapes that support the values of its communities
- Chapter 3 focuses on whether the CMA's vegetation projects are contributing to improved landscape function
- Chapter 4 discusses our assessment of whether the CMA is effectively engaging its communities
- Chapter 5 looks at whether the CMA is effectively using adaptive management.

The attachments provide the full audit conclusions, suggested actions, the CMA's response, more detailed information about the audit, and an overview of the context for the audit conclusions including a summary of the key features of the Hunter-Central Rivers region and CMA.

2 Prioritising investments to promote resilient landscapes

The audit's first line of inquiry was to assess whether the CMA is effectively prioritising its investments to promote resilient landscapes that support the values of its communities. This line of inquiry focused on planning – the first step in the adaptive management cycle. Its aim was to assess whether the CMA has established the knowledge, understanding, systems and procedures required to undertake this step effectively, in line with the Standard.

Although the CAP itself documents the priorities in the region, the NRC recommended approval of each CAP on the basis that the CMA would continue to improve the plan's quality and potential to contribute to the state-wide targets. Therefore, the CMA cannot simply spend its funds in line with the CAP. Rather, it needs to continue to apply the Standard in implementing the CAP. This will enable it to continually refine its investment priorities as its knowledge of the landscapes and communities in its region improves, and its understanding of best-practice NRM evolves.

The NRC identified three criteria that we would expect a CMA to meet in order to effectively prioritise its investments in compliance with the Standard. These criteria included that the CMA had:

- a commonly understood definition of what constitutes resilient landscapes in its catchment
- a system for ranking investment options that took account of factors such as scientific and local knowledge; socio-economic information; community and investor preferences; potential for partners to contribute matching funds or in-kind support, and potential to achieve maximum outcomes, for example, by contributing to multiple NRM targets across more than one biophysical theme.
- a system that ensured that its short-term and long-term investment priorities are consistent with each other, and with the catchment-level targets in the CAP.

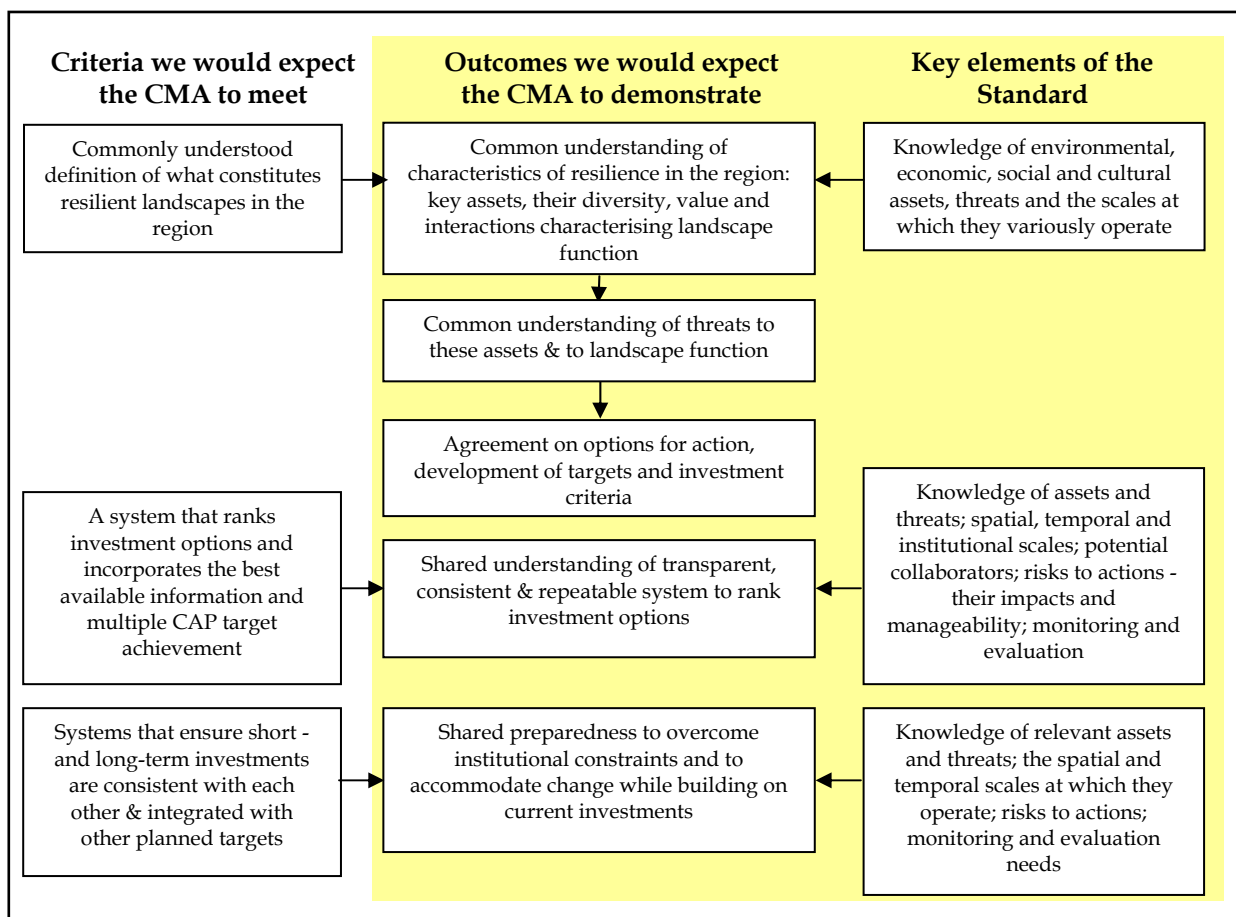
We identified the elements of the Standard that are most relevant and important for meeting these criteria. We also identified the behaviours and other outcomes we would expect the CMA to demonstrate if it is properly applying these elements of the Standard, and thus meeting the criteria to a level of quality consistent with the Standard.

For example, if the CMA is meeting the first criterion (having a commonly understood definition of what constitutes resilient landscapes in its region) in a way that complies with the Standard we would expect it to be collecting and using the best available knowledge on the natural resource assets and threats in its region, and on the economic, social and cultural values its community places on those assets. We would also expect it to be considering the scales at which the assets and threats operate, and determining the optimal scale at which to manage them to achieve multiple NRM benefits and integrated outcomes.

As a result, we would expect to find that its Board members and staff can consistently explain the main natural resource assets in the region, and the interactions that characterise healthy landscape function. We would also expect them to understand the main threats to the assets and landscape function, and the environmental, economic, social and cultural value the community places on the assets. In addition, they would agree on the options for action to address the threats and maintain or improve the quality of the assets, and the criteria for deciding the actions in which the CMA should invest.

Figure 2.1 provides an overview of this assessment framework. The criteria we would expect the CMA to meet are shown in the left hand column, the most relevant and important elements of the Standard for meeting these criteria are in the right hand column, and the behaviours and other outcomes we would expect the CMA to demonstrate if it is applying these elements of the Standard are shown in the centre column.

Figure 2.1: The framework NRC used to assess whether CMA was effectively prioritising investments to promote resilient landscapes



The sections below discuss each criterion, including why it is important and what our audit found in relation to it.

2.1 Commonly understood definition of resilient landscapes

NSW's aspirational goal for natural resource management is resilient landscapes – that is, “landscapes that are ecologically sustainable, function effectively and support the environmental, economic, social and cultural values of our communities”.³ At its simplest, a

³ *Healthy landscapes and communities – managing natural resources in NSW*, information brochure published by the NRC. A full definition of NSW's aspirational goal, including an explanation of landscape function and resilience can be found in NRC (2005) *Recommendations – State-wide standard and targets*. Further discussion on these concepts can also be found in NRC (2007) *A landscape approach to vegetation management – Final Report*. All documents can be accessed at www.nrc.nsw.gov.au

CMA's role is to coordinate investment to improve NRM across its region and deliver outcomes that make the greatest possible contribution to the achievement of this goal. To do this, the CMA must have a commonly understood definition of what constitutes resilient landscapes in its catchment – its Board and staff members need a consistent understanding of what the goal means for the particular landscapes and communities in its region.

The NRC's audit found that Hunter-Central Rivers CMA had a vision for its region: "healthy and productive catchments through the ecologically sustainable management of our natural resources and environment for the benefit of present and future communities". This vision was documented in the CAP⁴, including references to landscape resilience. It closely aligned with NSW's aspirational goal, which incorporates the concept of landscape resilience. In addition, the CMA Board demonstrated an understanding of the concept of landscape function and resilience and could describe the contribution the CMA's work made to improve the resilience of the landscapes in its region.

It did not appear to use the concept of landscape function and resilience in a consistent way in developing its investment criteria, catchment-level targets and investment options. As a result, CMA staff demonstrated varied understandings of landscape function and resilience, and how the CMA used this concept in prioritising investment options. This had led to unclear and sometimes ambiguous external communication with key stakeholders, particularly urban and mining stakeholders.

The CMA considers that current NRM policy (such as *Native Vegetation Act 2003* and the E4 Priorities in the State Plan) emphasises the goal of 'maintaining or improving' natural resources rather than landscape function and resilience.

In respect to the Standard, the CMA:

- demonstrated it had an understanding of the concept of landscape function and resilience (*Collection and use of knowledge*)
- could not demonstrate how it would ensure this concept is used in a consistent manner to effectively develop investment criteria, targets and options for action (*Collection and use of knowledge and Determination of scale*).

2.2 Systems for ranking and investment options and aligning short-term and long-term priorities

Our knowledge of biophysical and natural systems is incomplete and evolving. People's interactions with natural systems are also dynamic, and community values evolve over time. Because of this, CMAs need to continually seek out improvements in knowledge and adjust their focus accordingly. Their systems for ranking their investment options need to use a wide range of information – such as scientific and local information on the assets and threats in the catchment, as well as information on the values the community places on the assets, and on potential collaborators and their capacity.

CMAs have received limited government investment and have an enormous amount to achieve if we are to realise the goal of resilient landscapes. This means they need to invest these funds in ways that will make the greatest possible contribution towards as many catchment-level and

⁴ Hunter-Central Rivers CMA, *Hunter-Central Rivers Catchment Action Plan*, January 2007, p.9

state-wide targets as possible. To do this, they need a system for ranking investment options that takes account of the options' potential to contribute to multiple targets.

In addition, the lead time between changes in the management of natural resources and resulting improvements in the function of natural systems can be significant. In the interim much can change and CMAs need to accommodate this change without losing focus on the long-term objectives set out in their region's CAP. To do this, CMAs need systems to adaptively manage towards long-term targets as they learn what works and what doesn't, and as the environmental, economic, social and cultural landscapes change around them.

The NRC's audit found that Hunter-Central Rivers CMA had a well-documented and transparent system for ranking investment options at the sub-catchment planning level, such as in its investment strategies and annual implementation plans. This system used good information and some analysis of the options' potential to help to achieve multiple catchment-level targets. Box 2.1 provides more detail of model developed by the CMA to allocate funding over the life of the CAP and to ensure synergies between different management actions are maximised.

At the project scale, the CMA's system ensured short-term and long-term investment priorities were consistent and integrated with each other and could be modified as inputs change. However, there were less structured and transparent systems in place to ensure that in ranking projects, their potential to generate multiple benefits across the themes in the CAP was consistently considered. The CMA believes the application of SCarPA modelling in the future will address this gap.

At the catchment scale, the CMA used a model to rank management targets based on their relative degree of influence on the CAP's resource condition targets. This model considered the synergies, or landscape function, of biophysical systems by calculating the magnitude of multiple environmental benefits between actions under each management target. Then, using input from this model, the CMA used its *Catchment Activities Development Procedure* to recommend four investment options for meeting each target.

The CMA's current process for ranking investment options:

- ensured there was a clear connection between the projects the CMA invests in and its catchment-level management targets
- demonstrated the CMA's commitment to using the best available biophysical knowledge to contribute to decision-making
- involved consultation and collaboration with agencies and local government on proposed investments in catchment activities
- ensured consideration of risk when determining investment options in the catchment activities procedure.

While the CMA used spatial analysis in making some investment decisions, it did not do this in a consistent way. In particular, the audit team noted inconsistencies in how the CMA used spatial analysis to understand landscape function between biophysical parameters, and to inform investment prioritisation at both the sub-catchment and project scales. There was evidence the CMA is seeking to make improvements in this area, particularly in areas where

mapping resolution was unsuitable for decision making or quality was poor, such as vegetation mapping.

The CMA appeared to have over-relied on the Native Vegetation Assessment Tool (NVAT), formerly the PVP Developer, to determine its vegetation incentives which may have limited its ability to make the best decisions. For example, the NVAT may have focused the CMA on vegetation scarcity, rather than the role of vegetation in landscape function and resilience. In addition, the CMA had not consistently integrated socio-economic information and any additional investment beyond CMA funds with the components of the NVAT. This is significant because such information can be relevant when considering the risk that the project will not be implemented as intended, or will not achieve its intended outcomes.

In respect to the Standard, the CMA:

- demonstrated it had used a structured and transparent process to incorporate knowledge at the sub-catchment planning scale and evaluate past performance in its annual program development process (*Collection and use of knowledge* and *Monitoring and evaluation*)
- demonstrated it had used good knowledge as part of a structured and transparent process at the sub-catchment planning scale (*Collection and use of knowledge*)
- demonstrated analysis of scale to determine synergies and landscape function between management targets at the sub-catchment planning scale (*Determination of scale*)
- could not demonstrate that mechanisms were in place to ensure investment decisions are consistently informed by the role of vegetation in landscape function and resilience (eg, the use of spatially explicit data) (*Collection and use of knowledge* and *Determination of scale*).

The CMA has been working with the Department of Environment and Climate Change (DECC) to develop modelling software known as SCaRPA which will allow it to better understand the application of landscape function at the catchment and project scales. However, it considers the delayed delivery of SCaRPA has inhibited its ability to better apply the concept of landscape function and resilience to its investment decisions.

Box 2.1: Capturing synergies across NRM priorities

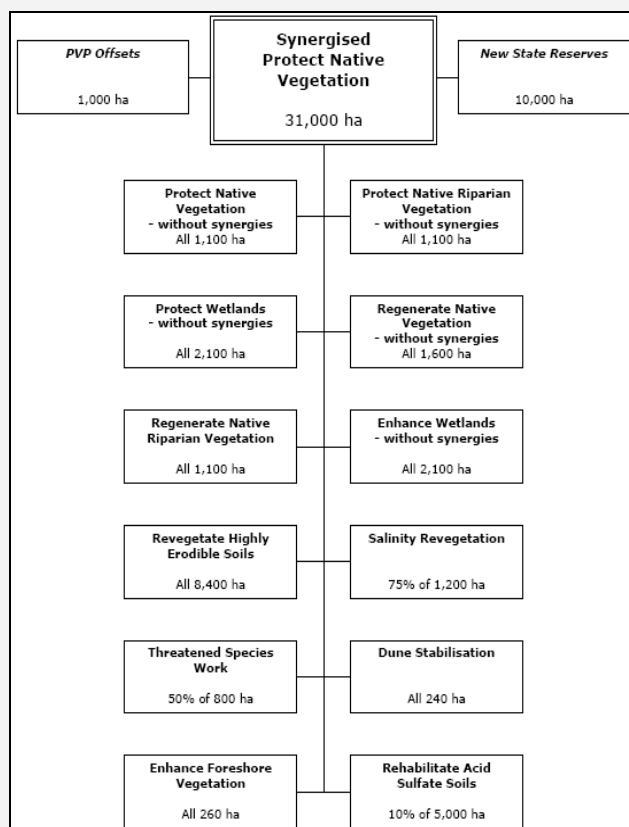
Hunter-Central Rivers CMA developed a model to prioritise its investments over the CAP period of 10 years and capture synergies between the resource condition management targets its Board considered important in addressing the identified threats to catchment health.

To take account of the benefits generated by activities that contribute to more than one management target, it gave scores for activities that were expected to have secondary and tertiary influences on catchment health. It multiplied these two scores to provide a *Logical Hierarchy Sum* and, from this, a ranking of management targets. The system produced a system of scores that approximated the values of the State and Federal funding partners.

It then calculated a 'market value' for each expected output from an activity based on its previous experience, and provided program managers with an approved budget linked to 'Synergy Maps' that identified the management targets that gave the highest score by land system and likely area.

This transparent system is published in the CAP to guide applicants and potential investors. It has proven to be helpful in enabling the CMA to resist external pressures. It has also enabled it to 'average' the funding allocated to management targets over each three year period to account for funding 'surges' due to the changing priorities of its funding partners.

The CMA's next challenge is to ensure the conceptual frameworks (including logic assumptions) that underpin this investment prioritisation model remain appropriate for the range of complex and changing landscapes within the region. For example, some of the cause and effect relationships (both within biophysical and social systems) operating in a peri-urban landscape will be different to those in a predominately rural landscape.



Many natural resource management actions will have multiple benefits. For example the HCR has used a synergy map (left) to illustrate the many actions that will contribute to the CAP's goal of protecting 31,000 ha of native vegetation by 2015. Without taking these synergies into account, the HCR predicted only 1,100 ha would be conserved (table below).

management target	LH Sum ¹	LH Rank ²	Final Rank ³	Adjusted 10 year Predicted Investment ⁴	Percent of CAP Budget	Cost per Unit of Management Actions ⁵	10 year Predicted Output Without Synergies ⁶	10 year Predicted Output With Synergies ⁷	3 year Predicted Output With Synergies
MT 01 Protect Native Vegetation	172	9	10	\$3,161,923	4.2%	\$2,800	1100	31000	9300

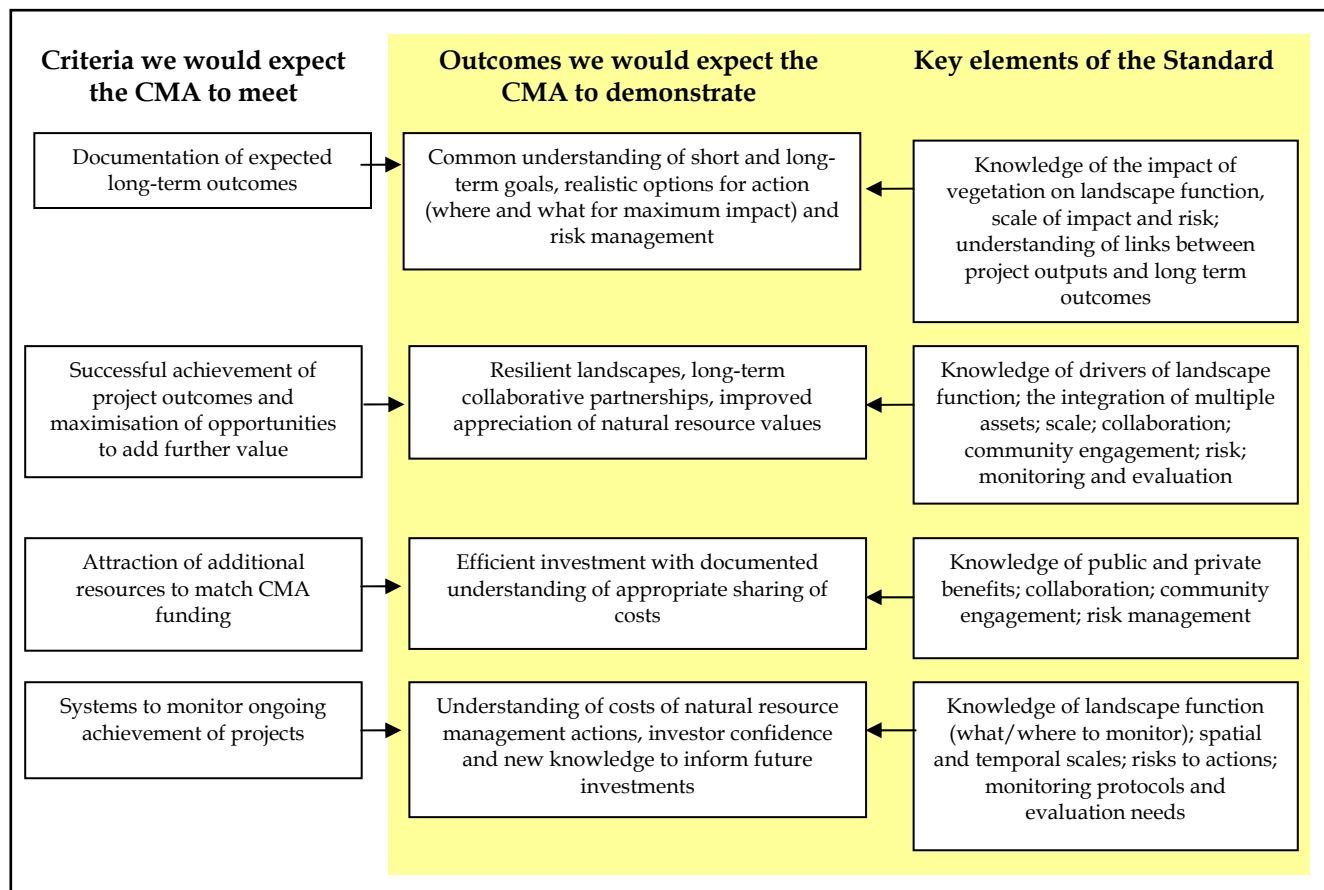
3 Delivering projects that contribute to improved landscape function

The audit's second line of inquiry assessed whether the CMA's vegetation projects are contributing to improved landscape function. CMAs should promote short-term improvements in the management of natural resources in their regions that will contribute to long-term improvements in natural resource condition. To understand whether they are pursuing this aim in a way that meets the quality benchmarks set by the Standard, we assessed whether they were meeting four criteria. These were that the CMA:

- documented the expected long-term outcomes of projects it invests in
- successfully achieved short-term project outcomes, and maximised further opportunities to add value
- attracted additional resources to match its funding in projects
- had a system to monitor achievement of ongoing project outcomes.

As for all lines of inquiry, we also identified the elements of the Standard that are most relevant to meeting these criteria effectively, and the behaviours and other outcomes we would expect to see if the CMA is using those elements of the Standard. These are shown in Figure 3.1.

Figure 3.1: The framework NRC used to assess whether CMA was effectively delivering projects that contribute to improved landscape function



The sections below discuss each criterion, including why it is important and what our audit found in relation to it.

3.1 Documentation of expected long-term outcomes

Natural resource management is a long-term process, and it can take many years to achieve intended improvements in landscape function. In addition, our knowledge of natural systems and best practice in managing them continues to evolve, so natural resource managers need to continually adapt their actions to take account of new knowledge. The documentation of projects' expected long-term outcomes is important to help ensure projects stay on track over time. For example, it can help landholders and CMA field staff in continually managing towards those outcomes in the longer term as circumstances change.

Our audit found that Hunter-Central Rivers CMA did not consistently record projects' long-term expected outcomes in project contracts other than PVP contracts. The NRC considers that this creates a risk that the CMA and its project partners will not be guided by a common, stable vision of what needs to happen to improve landscape function, and select the best management actions to realise this vision over time.

However, the CMA's projects were supported by 'program logic' that sets out how projects were intended to contribute to longer term improvements in landscape function. The CMA Board and staff members demonstrated a strong grasp of the relationship between projects' long-term expected outcomes and their outputs. Landholders also appeared to understand projects' long-term expected outcomes, which suggests that CMA staff had been effective in engaging with and raising the awareness of its project partners about these outcomes.

In respect to the Standard, the CMA:

- demonstrated a good understanding of the logical relationships between project outputs and long-term expected outcomes (*Determination of scale*)
- demonstrated that it had engaged with its project partners and raised their awareness about the projects' intended long-term outcomes (*Community engagement*)
- could not demonstrate that it had documentation in place to ensure its vision of the long-term outcomes required to achieve resilient functioning landscapes guided it in selecting the best possible management actions with investors at the project scale (*Risk management and Community engagement*).

3.2 Successful achievement of project outcomes

CMAs' projects need to successfully achieve short-term changes in the way natural resources are managed in their region to maintain credibility with their communities, and create confidence in their investors. However, as CMAs often engage with their communities on the community's terms (at least initially), they also need to seek opportunities to add greater value to the projects proposed by landholders or other stakeholders.

Hunter-Central Rivers CMA appeared to be successfully achieving most of its projects' short-term outcomes. For some projects, it was achieving or was likely to achieve short-term improvements in resource condition at multiple scales. For example, the audit team saw

evidence that suggested the CMA's Hunter River Works projects had led to improved in-stream health and had reduced the impact of recent flooding on the local environment and the regional economy. (Box 3.1 provides more detail on these projects and their outcomes.) In addition:

- all 11 of the projects we inspected were supported by strong logic assumptions, linking inputs, outputs and expected resource condition change
- 73% had achieved project outputs, such as fencing riparian zones
- 82% demonstrated improved resource condition change, such as increased ground cover and density (based on audit observations and review of field monitoring, such as step-point photos).

Even in the absence of evaluated trend data, the NRC considers it is highly likely that the CMA's investments in native vegetation had promoted the state-wide target to improve vegetation condition and extent. The NRC also considers it likely that the CMA's native vegetation investments had promoted other state-wide targets, notably improvements in the health of riverine ecosystems and increasing the capacity of the community to make informed NRM decisions.

The CMA also appeared to have built effective relationships with project partners, including drawing on their local knowledge. The CMA's contract reporting system provides information about the experiences of its partners and identifies lessons that the CMA can carry forward into future work.

There was also some uncertainty about the durability of the improvements its investments had led to, particularly at the project scale, because neither the CMA nor landholders had factored in the cost of achieving this durability in the post-contract payment period.

In respect to the Standard, the CMA:

- demonstrated it had built meaningful 'on-ground' relationships with project partners, including drawing on local knowledge (*Community engagement and Collection and use of knowledge*)
- in some cases, demonstrated an understanding of the linkages between project-scale activities and resource condition change at the sub-catchment scale (although this could be improved at the project planning stage, including through documentation) (*Determination of scale*)
- could not demonstrate it had mechanisms in place to analyse the costs and benefits of possible collaborations (*Opportunities for collaboration*).

The CMA considers NSW public sector requirements to commit and spend funds within a financial year means it cannot structure contracts for long-term retention payments.

The CMA also considers it is not responsible for monitoring compliance with incentive PVP contracts under the *Native Vegetation Regulations 2003*.

3.3 Attraction of additional resources

To make the most of the small amount of funding CMAs have to invest in their regions, they need to look for opportunities to attract matching funding. They also need to encourage private landholders to make ongoing in-kind contributions, as this promotes resource stewardship and can increase the likelihood of landholders remaining committed to the success of the project over time.

Our audit found that Hunter-Central Rivers CMA had attracted additional resources to match CMA funding. For example, it required landholders to contribute to on-site improvements and had entered into arrangements with local councils to continue to maintain rehabilitated streams and roadsides. Its principal strategy was to use market-based approaches to deliver the most competitively priced outputs. In 2007-08, the CMA reported in-kind contributions to be \$2.5 million from landholders and \$1 million from local councils. No cash contributions were recorded against these stakeholders.

However, the accuracy of these stated contributions was uncertain, as the CMA had only tracked in-kind contributions raised through its incentive program. We saw no evidence that it had systematically collected information about cash and in-kind contributions at the project level. In addition, most co-contributions were held by the contributors or in third party hands and did not pass through the CMA's accounts. It may be that the CMA had attracted higher levels of additional resources than reported.

In respect to the Standard, the CMA:

- demonstrated it had used analysis to estimate the costs of contract activities and potential risks of project partner ability to contribute additional resources (*Collection and use of knowledge and Risk Management*)
- demonstrated it had monitored project costs, and where necessary, had revised cost schedules (*Monitoring and evaluation*)
- could not demonstrate that it had mechanisms in place to systematically record the additional resources it attracted, to ensure a comprehensive understanding of the appropriate sharing of costs (*Risk Management and Opportunities for collaboration*).

3.4 A system to track ongoing achievement of projects

Long-term projects to encourage resource stewardship need monitoring – particularly given the significant time lapses between investments and resulting improvements in resource condition, the gaps in our understanding of how to manage dynamic natural systems, and the unavoidable flux in social, economic and climatic conditions. Investors require reliable information that short-term targets have been met, and progress towards longer term objectives is being made.

The NRC's audit found that Hunter-Central Rivers CMA had a system to monitor ongoing achievements of projects. For example, it used the NREMSS software to track project inputs and outputs, and calculate achievement against management targets. It also used the Land Management Database to gather and store spatial data for planning and evaluation. In addition,

the CMA had commissioned studies to evaluate the success of its current and past investments in promoting resilient landscapes.⁵

There was some evidence that the CMA collected natural resource condition data at the project scale. But there was no indication that it had a clear strategy for using this information to inform its evaluation of progress towards the resource conditions targets in the CAP. In addition, the audit found that the CMA was not collecting and making full use of relevant data (including resource condition data) from project partners.

Section 5.2 provides further discussion of the effectiveness of the CMA's monitoring and evaluation activities.

In respect to the Standard, the CMA:

- demonstrated it had implemented approaches to monitor and evaluate progress towards project objectives and some of its targets (*Monitoring and evaluation*)
- in some cases, could not demonstrate it had adequately involved project partners in planning for project evaluation to ensure multiple benefits and reduced costs (*Opportunities for collaboration*).

⁵ For example, the Hunter-Central Rivers CMA (2007), *Upper Hunter River Flood above Maitland* - June 2007, internal publication.

Box 3.1: Hunter-Central Rivers CMA's River Works program

The Hunter-Central Rivers CMA's River Works program aims to reduce the costly impacts of periodic flooding on weakened landscapes. Extensive vegetation clearing and grazing has allowed flood surges to cut banks and flood plains, causing damage to the land and threatening town infrastructure. The program was established in 1950 by the Hunter Valley Conservation Trust, and was continued by the Hunter Catchment Management Trust and more recently the CMA.

The Hunter Valley Conservation Trust used community levies and state investments to stabilise riverbanks and reduce flood impacts by clearing debris and strengthening banks. The Trust's initial approach aimed to promote rapid flood water clearance by repairing damaged banks. However, it was costly and often shifted the problem to new points of weakness. Although damage was repaired, the natural resilience of the river system did not improve.⁶

With time the Trust's and subsequently the CMA's understanding of the role of vegetation in promoting river function improved. There were obvious linkages between vegetation clearing in the upper Hunter catchment and erosion, nutrient runoff and habitat pressures in downstream estuary areas. Based on the best available science, the CMA identified a suite of short-term management targets that would cumulatively improve the resilience of the landscape in response to flood surges, while also improving soils and water resources.

The CMA now uses native vegetation at critical river reaches to slow flood flows, re-establish in-stream vegetation obstructions and gradually re-establish the essential features of the pre-clearance riparian zone. These new management approaches have attracted increased community participation in vegetation maintenance along river banks in rural areas and towns, improved social and biophysical resilience, and reduced maintenance costs for the state. The CMA has developed ways to use periodic funding 'surges' supplemented by ongoing community levies to address program needs.

The CMA has estimated the benefits of the River Works projects, in terms of saved bank repairs between major flood events in 1955 and 2007, at "tens of millions" for these river reaches.⁷ Detailed assessments of the costs and benefits of the projects using the 2007 flood as a benchmark are being prepared by agencies and the CMA.

The River Works program provides a good example of:

- evolution from 'reactive' adaptive management (that is, trial and error) to a more 'active' adaptive management approach (that is, a more structured process of planning to reduce uncertainty using the best available information)
- the benefits of considering landscape function when planning and implementing 'paddock-scale' activities
- a successful and continuing large-scale rehabilitation of a biophysical system
- the long-term benefits of committed funding and sustained effort at a regional scale over time, and
- tangible progress towards NSW's aspirational goal of resilient landscapes that supports the social, economic and environmental values of the community.

⁶ Cook, N & Schneider, G 2006, *River Styles® in the Hunter Catchment*, Department of Natural Resources, NSW.

⁷ Hunter-Central Rivers CMA Information Sheet *Upper Hunter River Flood above Maitland June 2007*.

4 Effectively engaging its community

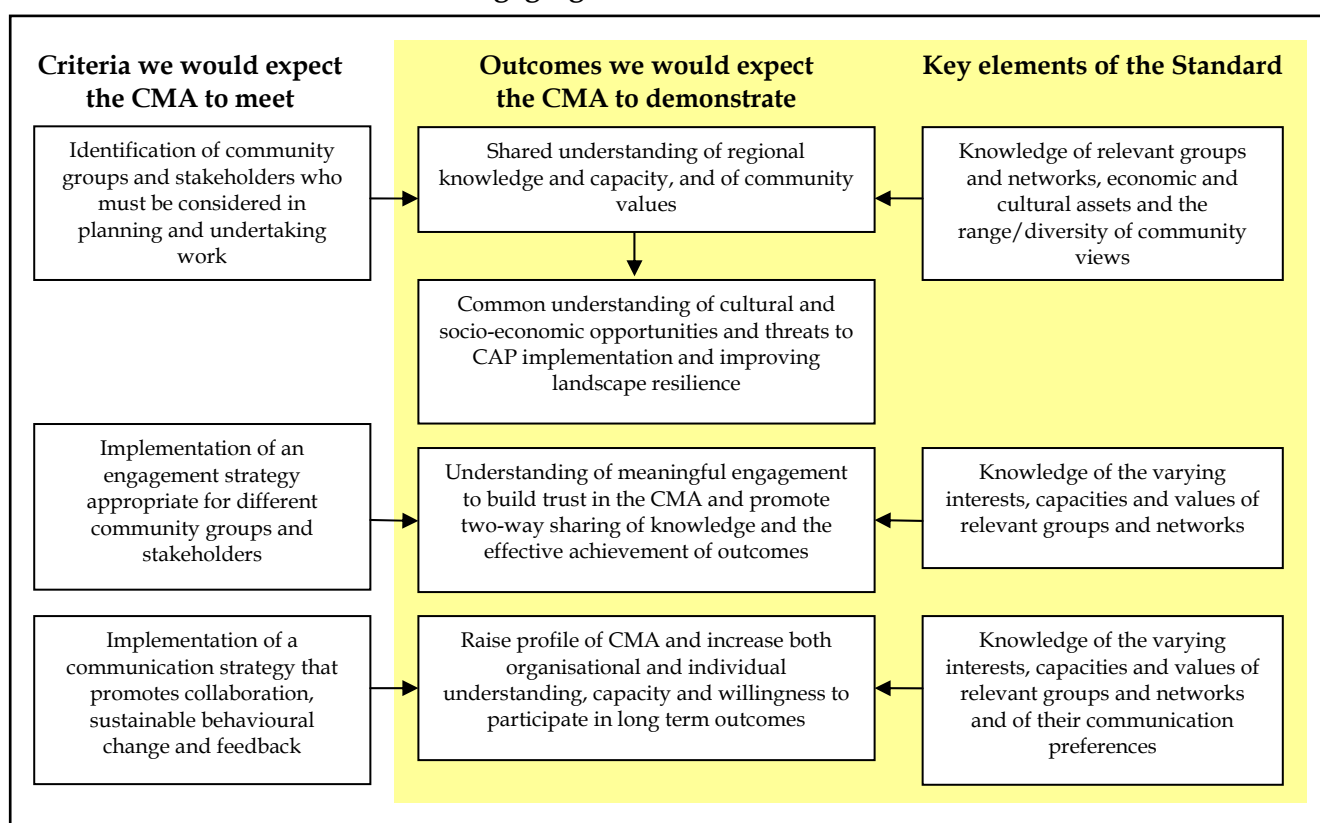
The NRC's third line of inquiry was whether the CMA is effectively engaging its communities. Given that 89 per cent of land in NSW is in private management, it is critical for CMAs to engage private landholders and other stakeholders who manage the natural resources on this land. This allows CMAs to access the local knowledge of their communities, and understand the values placed on the natural resource assets in their region. It also enables them to influence how natural resources on private land are managed, and to maximise the effectiveness of government investment in NRM by establishing collaborative partnerships with landholders and other stakeholders, and strengthening the capacity of their communities.

To assess this line of inquiry, we looked for evidence that the CMA:

- had identified the community groups and stakeholders it must consider in planning and undertaking its work
- was implementing engagement strategies appropriate for different community groups and stakeholders
- was implementing a communications strategy that promotes collaboration, sustainable behaviour change and feedback.

Each of these criteria is shown on Figure 4.1, along with the key elements of the Standard for meeting it effectively, and the CMA behaviour and other outcomes we would expect to see if the CMA was using those elements of the Standard.

Figure 4.1: The framework the NRC used to assess whether the CMA was effectively engaging its communities



The sections below discuss each criterion in more detail, including why it is important and what our audit found in relation to it.

4.1 Identification and analysis of community groups and stakeholders

A CMA's logical first step in engaging the community is to identify the key community groups and other stakeholders it must consider in planning and undertaking its work. To be effective, it also needs to understand these groups – for example, what they know about the natural resource assets and threats in the region, what is important to them, and to what extent they have the capacity to participate in NRM designed to improve landscape function. In addition, it needs to understand how these groups might present opportunities or pose threats to its ability to effectively implement the CAP and meet the catchment-level targets in the CAP. Developing and maintaining this kind of understanding requires systematic research and analysis.

The audit found that Hunter-Central Rivers CMA appeared to have a good understanding of its community. For example, the CMA had developed engagement strategies for different parts of the region and structured its service delivery arrangements to meet local conditions. Thus while its own technical officers provided landholders with on-site advice, local councils were used to deliver educational programs in urban areas. The CMA also demonstrated responsiveness to new sub-populations. For example it had started to target landholders located in proposed vegetation corridors and hobby farmers in peri-urban areas.

However, the CMA's understanding of its community largely relies on the experience and skill of the Board and staff rather than an approach based on systematic analysis and research to identify the capacity of community groups to deliver NRM outcomes, or the potential costs and benefits of any such collaboration. Continuing this current approach leaves the CMA at risk of not:

- making the best decisions about who to collaborate with in different circumstances
- determining appropriate collaboration approaches
- identifying and minimising risks associated with collaborative partnerships
- ensuring internal knowledge is captured and transferred to other staff (particularly important if senior staff and board members leave the organisation).

In respect to the Standard, the CMA could not demonstrate that it used systematic analysis and research (such as stakeholder analysis) to identify the capacity of community groups to deliver NRM outcomes and the potential costs and benefits of any such collaboration (*Collection and use of knowledge*).

4.2 Appropriate engagement strategies for different community groups and stakeholders

Most regions of NSW include a variety of communities, community groups and other stakeholders which the CMA should consider in planning and undertaking its work. These groups have different knowledge and capacity for NRM, and value the region's natural resources in different ways. For example, they might include rural communities, farmers and graziers, urban communities, Landcare groups, mining companies, tourism operators, local councils, relevant government agencies and other government institutions.

To effectively engage these diverse groups, a CMA needs to use its understanding of each group to develop an appropriate strategy for productively engaging it. This requires strategic thinking, risk management and processes to identify and fill knowledge gaps.

We found that Hunter-Central Rivers CMA was implementing a range of strategies that are appropriate for different community groups and stakeholders. For example, after reviewing landholders' needs in rural areas, the CMA started to employ staff with more technical qualifications to better engage property owners at their own level. In urban locations, where populations are large and education and awareness training are the main tasks, the CMA had sought to engage intermediaries to deliver services, including Landcare groups, councils and natural resource networks. Importantly, we found evidence that the CMA recognised the need to be flexible in its approach to community engagement, that community groups are dynamic, and that it needs to be open to new or emerging networks.

The CMA had developed and maintained a range of committees, associations and forums to widen its contact base and influence. For example, the CMA had established and/or participated in:

- the Hunter Community Reference Group, which advised it on the use of catchment levies
- the Aboriginal Cultural Environment Network, which advised it on Aboriginal cultural heritage (Box 4.1)
- the Hunter Councils and Hunter Coal Environment Group, to represent its position on catchment issues and influence outcomes, and
- regular two-day Board meetings in various locations across the catchment, to gain a better understanding of local communities and their issues.

While the CMA had demonstrated that it had implemented strategies to engage urban and mining groups, the NRC found mixed views within the CMA on both the importance of engaging these groups in respect to the CAP goals, and how best to engage them. Without a cohesive policy on this issue going forward, the CMA is at risk undermining progress towards the targets in the CAP as these groups are rapidly changing and have significant potential to influence NRM outcomes in the catchment, both positively and negatively.

During the audit, the CMA put the view that its ability to more effectively engage its communities (and promote targets in the CAP) was compromised by matters that were outside its control. For example, the CMA noted that:

- The community expected it to manage and improve the health of natural resource assets, but other parts of government could make land-use decisions that degrade the health of

these assets. These decisions included, for instance, allowing the clearance of native vegetation for development and damming rivers for water security.

- The CMA was required to apply a set of rules for native vegetation clearance that are inconsistent with other legislation. In some parts of the region, it is required under the *Native Vegetation Act 2003* to apply transparent rules in making decisions on native vegetation clearing and offsets for development. However, in other parts of the region (particularly coastal areas) other land-use decision-makers decide on vegetation clearance and development offsets under the *Environmental Planning & Assessment Act 1979*, which involves applying a different, less transparent and sometimes more lenient set of rules.

In respect to the Standard, the CMA:

- demonstrated it had developed and maintained engagement networks and strategies with a range of relevant and interested community groups and individuals (*Community engagement*)
- could not demonstrate that it had clear strategies in place to mitigate its exposure to risks associated with external regulatory controls (*Risk management*).

Box 4.1: Aboriginal Communities Environment Network

Aboriginal communities are key stakeholders in building social resilience in the long term. Hunter-Central Rivers CMA established the Aboriginal Communities Environment Network (ACEN) as a CMA sub-committee to ensure Aboriginal issues and related management targets (such as those for landscapes of cultural significance) are fully integrated in project assessment and implementation processes.

The ACEN comprises 12 Aboriginal members, who are selected through public invitation and on the basis of their individual expertise. The ACEN also has one CMA Board member, who acts as a 'champion' and is the sub-committee's Chairperson.

The CMA relies on input from the ACEN to ensure it considers cultural heritage issues of importance in a strategic way. It provides targeted funding for assessments and reports on site-impacts for other developments, and the development of Aboriginal projects (which are subject to ACEN approval).

The CMA is also involved in a long-term targeted education initiative, through which a local Aboriginal Land Council has involved 19 primary schools in cultural heritage studies. The CMA has provided around \$32,000 for this important initiative. The Land Council and schools participate in the education and the money raised goes back to the schools to sponsor Aboriginal children in sport. Plans are now in place to expand the project to more schools.

The CMA has also sponsored a project – Illustrating successful engagement -- through the Land Council to demonstrate the benefits of this long-term strategic approach.

The CMA sees this long-term approach at the regional level where face-to-face accountability is possible as necessary to ensure that Aboriginal issues are seen as part of the mainstream approach to building resilient landscape in the region. The role of the ACEN within the CMA's decision-making processes should also give confidence to local Aboriginal communities that regional Aboriginal issues are duly considered and integrated into local NRM issues.

4.3 Communication promoting collaboration, behavioural change and feedback

CMAs are also required to lead their diverse communities in understanding natural resource management. To do this, they need sophisticated approaches to communicating their messages, and for hearing and responding to the messages sent by communities. To capture the attention of diverse stakeholders such as Aboriginal communities, landholders, industry sectors, and urban and environmental organisations, their communication strategies need to reflect the varied values of their communities. This broad focus also helps to attract the widest possible funding and support across the region.

The NRC's audit found that Hunter-Central Rivers CMA had implemented a communication strategy and associated activities to promote collaboration, sustainable behavioural change and feedback. This strategy targeted a diverse range of stakeholders, including landholders, families, schools and peri-urban populations (although the CMA needed a more cohesive policy to guide communication and engagement with the latter group going forward). Its aims included increasing the community's awareness of the CMA, its work and the support it could provide to those who manage natural resources.

In respect to the Standard, the CMA demonstrated it had developed communication networks and tools with community groups to increase both individual and organisational understanding and capacity, and increase communities' willingness to participate in achieving NRM long-term outcomes (*Collection and use of knowledge* and *Community engagement*).

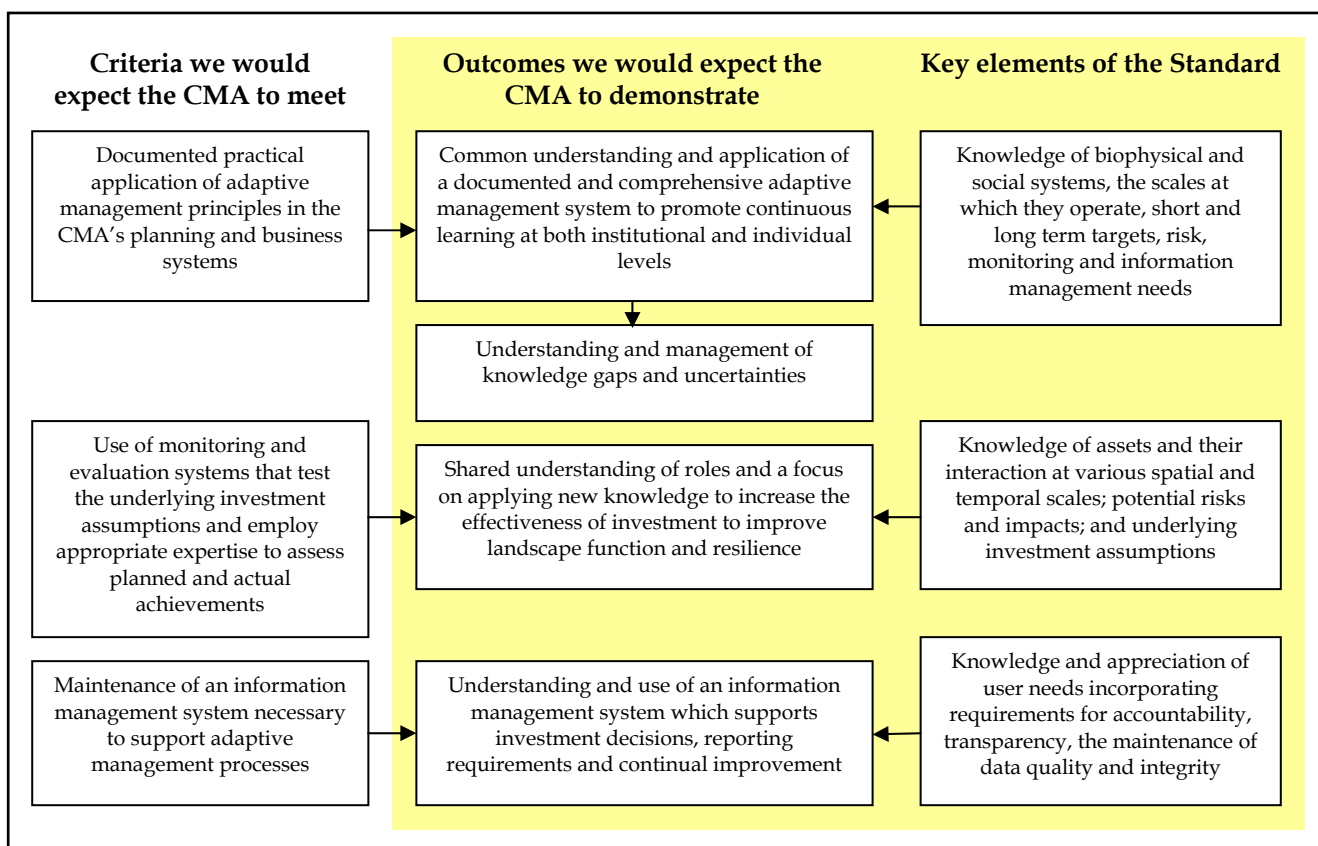
5 Effectively using adaptive management

In the fourth line of inquiry, the NRC assessed whether the CMA is effectively using adaptive management. It looked at whether the CMA:

- had documented the practical application of adaptive management principles to its planning and business systems
- had monitoring and evaluation systems that test its underlying investment assumptions and use appropriate experts to assess planned and actual achievements
- maintained an information management system necessary to support the adaptive management process.

Each criterion is shown on Figure 5.1, together with the elements of the Standard that are most relevant to meeting it effectively, and the CMA behaviour and other outcomes we would expect to see if the CMA is using those elements of the Standard.

Figure 5.1: The framework NRC used to assess whether the CMA is effectively using adaptive management



The sections below discuss each criterion in more detail, including why it is important and what our audit found in relation to it.

5.1 Adaptive management principles in planning and business systems

Adaptive management is 'learning by doing'. It is a structured, iterative process of decision-making that is intended to gradually reduce uncertainty and improve performance through monitoring, evaluation and response. It adds transparency and accountability to decision-making and the allocation of resources, while providing a framework for learning and ongoing improvement.

At a practical level, it is important that CMAs document within their planning and business systems how staff can apply adaptive management principles. This will help ensure their staff and collaborators can readily apply those principles in the many, diverse circumstances in which they work.

The Hunter-Central Rivers CAP states that the CMA will use an adaptive management framework to ensure the CAP is continually improved. Our audit found that the CMA demonstrated a fundamental understanding of adaptive management principles and is well-placed to continue to implement further practices to support adaptive management. In addition, it appeared to be applying components of the Standard to drive the various phases of the adaptive management cycle in the organisation. For example, it was using monitoring and evaluation to drive its internal audits, and was collecting and using knowledge to bridge knowledge gaps to improve its programs.

However, the CMA had not documented within its systems how adaptive management principles were applied in planning and undertaking its work. As a result, the extent to which staff understood and applied adaptive management principles was not consistent across the organisation. In addition, the CMA seemed to lack a clear and consistent vision of how adaptive management would drive continual improvement.

The CMA is developing further systems to improve its adaptive management processes and facilitate multi-sourced feedback loops. For example, as part of this process the CMA had:

- adjusted some of its programs, practices, delivery methods, resource allocations and relationships with other organisations where appropriate and feasible
- practiced hypothesis testing, data recording, examination and review at the project level
- established a systems audit sub-committee of the Board to examine selected business systems for efficiency and effectiveness
- commissioned significant studies and evaluation reports to provide knowledge for planning purposes (notably a study of river styles and an evaluation of its River Works program in the Hunter River)
- established linkages with regional networks to gain access to new knowledge (for example, potential climate change impacts in the region).

Box 5.1 provides an example of how the CMA is applying adaptive management principles in the field. Box 3.1, in Chapter 3, also illustrates how the CMA has used adaptive management to improve its management approaches and understanding of how the landscape functions over time.

In respect to the Standard, the CMA:

- demonstrated that it had applied components of the Standard to drive adaptive management in the organisation -- for example, it had undertaken internal audits (*Monitoring and evaluation*) and collected and used knowledge to bridge knowledge gaps (*Collection and use of knowledge*)
- could not demonstrate a clear and consistent vision in how adaptive management will drive continual improvement in the organisation to meet internal and external needs (*Information management*).

5.2 Monitoring and evaluation system

To effectively apply adaptive management principles, CMAs' programs need to be designed and delivered in ways that facilitate structured learning. For example, investment programs need to record what changes to defined indicators are expected to result from the management actions within the program. Only then can CMAs undertake quantitative monitoring of these actions, and evaluate how successful they were in producing the expected changes.

It is not enough for a CMA to monitor and evaluate whether its projects have delivered the expected outputs (for example, that the expected quantity of native grasses were planted, or that the expected kilometres of fencing was installed). It also needs to test whether or not the assumptions about how each management action would lead to changes in landscape function were correct and so resulted in these changes (for example, whether fencing or revegetation of a riparian zone resulted in improved water quality and riverine ecosystem health). In addition, it needs to use experts with appropriate skills and knowledge in assessing its planned and actual results. This will allow it to apply new knowledge - gained from the monitoring and evaluation process and other sources - to increase the effectiveness of ongoing and future projects in improving landscape function and resilience.

Our audit found that Hunter-Central Rivers CMA had a documented MER strategy and had implemented monitoring and evaluation systems for assessing progress towards project objectives and some of its targets. At the time of the audit, the CMA could not demonstrate that it had systematically tested the underlying assumptions of its projects, or consistently used appropriate experts to assess the planned and actual results of its project. This means there is a risk that the CMA's monitoring and evaluation efforts will not provide the new knowledge and understanding required to continually improve the design and effectiveness of its projects, and adaptively manage towards its long-term targets. However, the CMA indicated it plans to test some investment assumptions at key project sites in the future.

In respect to the Standard, the CMA:

- demonstrated it had implemented approaches to monitor and evaluate progress towards project objectives and some of its targets (*Monitoring and evaluation*)
- could not demonstrate that it had strategies in place to minimise continued risks of poor performance in third party service level agreements (*Risk Management*)
- could not demonstrate that it had systematically used new knowledge to test investment assumptions in project planning (*Collection and use of knowledge*).

The CMA considers that the implementation of its MER strategy and systems was constrained by:

- the poor performance of third parties in implementing service level agreements
- continued uncertainty about responsibilities for monitoring resource condition change in NSW.

5.3 Information management system that supports adaptive management

CMAs need relatively sophisticated information management systems to support adaptive management. For example, these systems need to keep track of the changes in landscape function expected as a result of the management actions within a project, and provide ready access to this and other necessary information when the project is being evaluated and decisions on improving its effectiveness are being made. These systems also need to keep track of new knowledge that is derived from the monitoring and evaluation process and other sources, so this can be used in making decisions.

Our audit found that Hunter-Central Rivers CMA had implemented information management systems that met some of the needs of the CMA and external parties. However, many of the components were not integrated and the depth and extent of information contained in them was highly variable. The CMA's information management systems were still being developed through on-going review by CMA staff. As this review process continues, and further staff training occurs, data quality and consistency should improve and the CMA's capacity for adaptive management practices should become stronger.

The NRC also notes that the CMA considers its difficulties in operating efficient and effective information management systems were partly due to poor performance of third parties in implementing service level agreements. Our auditors observed that the CMA could not demonstrate that it had strategies in place to minimise continued risks of poor performance in third party service level agreements.

In respect to the Standard, the CMA:

- demonstrated it had implemented information management systems that met some of the needs of the CMA and external parties (*Monitoring and evaluation*)
- could not demonstrate that it had safeguards in place to ensure the quality and integrity of data was maintained (*Information management*)
- could not demonstrate that it had strategies in place to minimise continued risks of poor performance in third party service level agreements (*Risk Management*).

Box 5.1: Learning to address Acid Sulfate Soils

The CMA has collaborated in a sequence of activities, improved over time, to address the serious acid sulfate soils (ASS) problems due to long-term drainage of delta and swamplands for agriculture in the Taree area.

In 1996, the CMA's predecessor, the Catchment Management Committee, sought support to preserve wetlands and biodiversity. It successfully found partners in local environmental community groups. The Federal Government then funded a \$55 million state-wide mapping and strategy development program for implementation by councils.

More recently, the CMA became involved in this problem again, when the local Council's initial activities to address ASS were resisted by the farming community whose living was significantly impacted. The CMA proposed a solution that would involve farmers and community conservation groups working together. The activities included:

- forming an ASS project implementation group of stakeholders
- resurveying the land and drain works to include the interest of the rural land holders and enable finer control of water movements over farm paddocks
- implementing works to enable better control of tides and more accurate drainage of land after rain
- improving bund walls and undertaking experimental 'wet pasture' works with land holders
- improving water control in wetlands and enhancing vegetation in wetland areas.

Overall, the activities are treating 2002 ha of ASS underlying both dairy farming land and significant remaining wetlands. The project has made encouraging progress and the relevant stakeholders are now engaged in a collaborative adaptive learning process that is highly likely to achieve a solution over time, provided they receive continued support as funds become available.

Feedback from the farmer community indicates they consider the project will improve landscape function and resilience by improving farm land productivity and social cohesion, and reducing acid leaching that impacts on aquatic habitats in nearby waterways.



Biodiversity outcomes were also sought as part of the project. In the adjacent figure, native vegetation was planted in remnant wetlands overlaying potential acid sulfate soils

Attachment 1 Conclusions, suggested actions and CMA response

This Section provides a table summarising conclusions of our audit of the implementation of the Hunter-Central Rivers CAP, the actions we suggested the CMA take to improve this implementation and a summary of Hunter-Central Rivers CMA's response to these suggested actions. The NRC expects the CMA Board to monitor the completion of these actions and may review these activities in future audit work.

CONCLUSION	SUGGESTED ACTIONS	CMA RESPONSE
Line of inquiry 1 - Prioritising investments to promote resilient landscapes		
<p>Criterion 1.1: <i>Commonly understood definition of resilient landscapes</i></p> <ul style="list-style-type: none"> ▪ The CMA's vision for the Hunter-Central Rivers region, articulated in its CAP closely aligns with NSW's aspirational goal (which in itself incorporates the concept of resilience). The CMA Board understood the concept of landscape function and its resilience and could describe the contribution of the CMA's work to catchment resilience. However, their concept is not well articulated within the CMA and staff demonstrated a mixed understanding of the concept and how it might be applied to deliver desired outcomes. This has lead to unclear and sometimes ambiguous external communication with key stakeholders, particularly those from urban and mining environments. ▪ The CMA considers that current NRM policy (for example the <i>Native Vegetation Act 2003</i> and the E4 Priorities in the State Plan) has an emphasis on maintain or improve rather than the concept of landscape function and its resilience. 	<p>The NRC suggests that the CMA take the following actions:</p> <ol style="list-style-type: none"> 1. Further develop the concept of landscape function and its resilience as an explicit principle for prioritising investment options and communicate the meaning and relevance of the definition to the community. 	<p>Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>The CMA will further develop the concept of resilience and landscape function within the CAP at the 5 year review.</p> <p>Hunter-Central Rivers CMA intends to continue to use logic hierarchies to ensure that its current (and future) concepts of landscape function and its resilience underpins its investment decisions.</p> <p>The CMA will document a strategy, into the CMA's Capacity Building and Engagement Strategy, that allows the concept of 'resilience and landscape function' to be communicated in away that are meaningful to different target audiences.</p> <p>Hunter-Central Rivers CMA will complete this action by December 2009.</p>

CONCLUSION	SUGGESTED ACTIONS	CMA RESPONSE
<p>Criterion 1.2: <i>A system for ranking investment options</i></p> <ul style="list-style-type: none"> ▪ The CMA had a well documented and transparent system that ranked investment options at the sub-CAP planning using good information and some analysis of multiple CAP target achievement. However, a less structured and transparent approach was evident at the project scale.. The consistent use of spatially explicit data to inform its decision-making at both levels of prioritisation was not evident. The CMA's reliance on the Native Vegetation Assessment Tool, formerly the PVP Developer, may limit the CMA's ability to make the best decisions to promote landscape function and its resilience ▪ The CMA considers the delayed delivery of SCaRPA has inhibited its ability to better apply the concept of landscape function and its resilience to its investment decisions. 	<p>The NRC suggests that the CMA take the following actions:</p> <ol style="list-style-type: none"> 2. Accelerate the implementation of evaluation tools that use spatially explicit data and permit modelling of benefits across two or more themes at the project and sub-catchment scales. 3. Reassess the use of the Native Vegetation Assessment Tool (in its ability to contribute to the CAP catchment targets) and develop an enhanced methodology that works with the NVAT to better align the investment ranking system to the CAP targets. 	<p>The CMA intends to continue to use its current assessment processes to consider benefits across two or more themes at the project scale.</p> <p>Hunter Central Rivers CMA notes that it continues to wait for the delivery of SCaRPA software modelling, and believes this will improves its ability to consider benefits across multiple themes.</p> <p>The CMA will continue to advocate the development of evaluation tools such as SCARPA through the Chairs Council and the NRC.</p> <p>The NRC considers that the CMA Board should monitor and assess the risk in delays to the delivery of and support for SCaRPA.</p> <p>The CMA has not indicated how it intends to reassess the use of the Native Vegetation Assessment Tool (in its ability to contribute to the CAP catchment targets) and develop an enhanced methodology that works with the NVAT to better align the investment ranking system to the CAP targets</p> <p>Hunter Central Rivers CMA notes that it will continue to apply the Native Vegetation Assessment Tool to assess relative values of alternate vegetation protection proposals.</p>
<p>Criterion 1.3: <i>A system that ensures consistent short-and long-term investment priorities</i></p> <ul style="list-style-type: none"> ▪ The CMA has a prioritisation system that ensures short and long term investments are consistent and integrated and can be modified as inputs change. 	<p>There are no suggested actions for this criterion.</p>	<p>-</p>

CONCLUSION	SUGGESTED ACTIONS	CMA RESPONSE
Line of inquiry 2 - Delivering projects that contribute to improved landscape function		
<p>Criterion 2.1: <i>Documentation of expected long-term outcomes</i></p> <ul style="list-style-type: none"> ▪ Intended long term project outcomes contracts were not consistently recorded in all project contracts, however, projects are supported by program logic and the CMA board and staff members demonstrated a strong understanding of the relationship between long-term expected outcomes and project outcomes. Landholders are too, aware of long-term outcomes suggesting effective communication by CMA staff. 	<p>The NRC suggests that the CMA take the following actions:</p> <ol style="list-style-type: none"> 4. Revise all project contract templates to provide for the recording of long term outcomes for each project. 5. Communicate with existing contract counterparties of the long term outcomes for their projects. 	<p>The Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>Since the audit, the CMA has advised the NRC they have incorporated long-term contract outcomes within contracts for all new, large scale projects.</p> <p>The CMA will review contract templates as part of their currently ongoing review of the CMA's Monitoring as Evaluation Procedure.</p> <p>The Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>The CMA will use project inspections to communicate its expected long-term outcomes to its project partners.</p>

CONCLUSION	SUGGESTED ACTIONS	CMA RESPONSE
<p>Criterion 2.2 : <i>Successful achievement of project outcomes</i></p> <ul style="list-style-type: none"> ▪ The CMA was successfully achieving most project outputs, and in some cases, was achieving, or likely to achieve improved resource condition change at multiple scales. <p>In the absence of evaluating hard data, it is highly likely that the CMA's investment in native vegetation had promoted the State-wide target to improve vegetation condition and extent. The NRC also concludes that CMAs native vegetation investments was likely to promote other State-wide targets, notably improvements in the health of riverine ecosystems and increasing the capacity of the community to make informed NRM decisions.</p> <ul style="list-style-type: none"> ▪ There is some uncertainty, particularly at project scales, in the durability of some investments because neither the CMA nor landholders had acknowledged the cost of maintaining project outcomes in post contract payment period. <p>The CMA considers NSW public sector requirements to commit and spend funds within a financial year, means the CMA cannot structure contracts for long-term retention payments.</p> <ul style="list-style-type: none"> ▪ The CMA also considers it is not responsible to monitor compliance of incentive PVP contract s under the Native Vegetation Regulations 2003. 	<p>The NRC suggests that the CMA take the following actions:</p> <ol style="list-style-type: none"> 6. Review its contracts and its resources needed to supervise on-going maintenance of investments (including PVP contracts) with the view of improving these to better safeguard the achievement of long term outcomes. 	<p>The CMA does not agree with the NRC's suggested action to review its approach to ongoing monitoring of contract (including PVP) compliance monitoring.</p> <p>Hunter Central Rivers CMA notes it applies a risk management approach to define its inspection schedule for contracted works to ensure long term maintenance.</p> <p>The NRC considers that the CMA Board should continue to monitor the effectiveness of the current approach, including the adequacy of resourcing, and the degree that expected DECC compliance monitoring will effectively lower CMA risk.</p>

CONCLUSION	SUGGESTED ACTIONS	CMA RESPONSE
<p>Criterion 2.3: <i>Attraction of additional resources</i></p> <ul style="list-style-type: none"> ▪ The CMA was attracting additional resources to match (and above) CMA funding but, except for the incentive program, has no systematic approach to capture, analysis and report this information made by stakeholders and partners. 	<p>The NRC suggests that the CMA take the following actions:</p> <p>7. Develop and implement a policy for attracting additional inputs for all CMA investments, setting out the principles for attracting additional resources, including the analysis of potential funding sources, the administrative controls to be applied to holding and use of those funds, and the formal reporting practices to be adopted in regard to those funds.</p>	<p>Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>Since the audit, the CMA has advised the NRC they are developing a sponsorship policy that will identify principles for attracting additional resources to achieve CAP targets.</p> <p>The Hunter-Central Rivers CMA will complete this action by June 2009.</p>
<p>Criterion 2.4: <i>A system to track ongoing achievement of projects</i></p> <ul style="list-style-type: none"> ▪ The CMA has a system to monitor ongoing achievements of projects but does not fully track potential changes in resource condition. There is evidence that the CMA is not collecting and fully utilising relevant data from project partners. ▪ In other cases, the CMA had commissioned studies to evaluate the success of its (and past) investment in promoting resilient landscapes. While there was some evidence of condition data collected at project at the scale, how this information was used to evaluate performance against catchment targets is unclear. There was also evidence that the CMA is not collecting and utilising relevant data (including condition data) from project partners. ▪ The CMA is having difficulty in operating efficient and effective monitoring and evaluation systems. The CMA 	<p>The NRC suggests that the CMA take the following actions:</p> <p>8. Review the current MER strategy to ensure it is appropriately monitoring performance indicators associated with each hierarchy level in its program logic (for example from foundational activities to long-term outcomes)</p>	<p>Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>The CMA's theme teams will define assumptions within the program logic and recommend appropriate monitoring to test those assumptions.</p> <p>The CMA is also investigating opportunities to collaborate with other CMAs to test assumptions. DECC has committed to co-ordinate the prioritisation of program logic assumptions for individual CMA-funded testing and to collate and distribute the information and knowledge gained from these projects.</p> <p>The Hunter-Central Rivers CMA will complete this action by June 2010. The CMA will also review the</p>

CONCLUSION	SUGGESTED ACTIONS	CMA RESPONSE
<p>considers that this is partly due to poor performance of third parties in implementing service level agreements.</p>		<p>performance of the MER strategy by December 2009.</p>
<p>Line of inquiry 3 - Effectively engaging its community</p>		
<p>Criterion 3.1: <i>Identification and analysis of community groups and stakeholders</i></p> <ul style="list-style-type: none"> ▪ The CMA demonstrated a good understanding its community but has not systematically identified the capacity of critical community groups and stakeholders it must consider in its planning and implementation. 	<p>The NRC suggests that the CMA take the following actions:</p> <ol style="list-style-type: none"> 9. Record all community groups and stakeholders in a central database, along with a policy/procedure for maintaining its currency. 10. Assess and document the capacity of these community groups and stakeholders to deliver NRM outcomes with the support of CMA funding. 	<p>The Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>The CMA will prepare a business procedure to ensure maintain the currency of community groups and stakeholders in its central database</p> <p>The Hunter-Central Rivers CMA will complete this action by December 2009.</p> <p>The Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>The CMA will review its Engagement and Capacity Building strategy to ensure that appropriate strategies are identifies for each target group. Since the audit, the CMA has advised the NRC they are undertaking a stakeholder analysis to document appropriate stakeholders</p> <p>The Hunter-Central Rivers CMA will complete this action by December 2009.</p>

CONCLUSION	SUGGESTED ACTIONS	CMA RESPONSE
<p>Criterion 3.2: <i>Appropriate engagement strategies for different community groups and stakeholders</i></p> <ul style="list-style-type: none"> ▪ The CMA is implementing a range of strategies that are appropriate for different community groups and stakeholders. In rural areas they emphasis on-ground land owner works supported by technical officers. In urban areas the CMA’s emphasis has been on education, awareness and training, and more recently, network development ▪ While the CMA had demonstrated that it had implemented strategies to engage urban and mining groups, the audit found mixed attitudes within the CMA towards these groups; some expressed ambivalence while others noted a more effective approach to engagement is needed. Without a cohesive policy on this issue going forward, the CMA is at risk undermining progress towards their CAP targets as these groups are rapidly changing and have significant potential to influence NRM outcomes in the catchment, both positively and negatively. ▪ The CMA considers its ability to more effectively engage its communities (and promote its CAP targets) is being impacted by: <ul style="list-style-type: none"> - planning decisions that degrade the health of natural resources in the region (for example native vegetation clearing for development and damming rivers for water security) that the community expects the CMA to be managing for improvement - its role in native vegetation regulations, where the CMA is required to apply a set of transparent decision rules for native vegetation offsets (NV Act 2003) for development in some sections of its catchment but less transparent, and often more lenient offset decision rules are applied (under the EP&A Act 1979) to development in other sections of the catchment. 	<p>The NRC suggests that the CMA take the following actions:</p> <p>11. Develop a cohesive policy (that will influence current and future engagement strategies) in engaging peri-urban and mining groups towards achieving the CAP targets as they pertain to their values for their particular landscape within the region.</p> <p>12. As part of the CAP review, review the risks (and management) of decisions made under NSW’s planning framework have on achieving the goals set out in the regions CAP</p>	<p>The CMA agrees to <i>document</i> its approaches to engaging with the mining sector and peri-urban communities, within the current review of the Communication and Engagement Strategy.</p> <p>The NRC considers that the CMA Board should monitor the effectiveness of this documentation to draw together a cohesive policy towards engagement with urban and mining groups.</p> <p>Hunter-Central Rivers CMA agrees with the NRC’s suggested action.</p> <p>The CMA will review the risk that decisions made under NSW planning framework have on the region’s CAP (As part of the CMA Risk management Strategy)</p> <p>Hunter-Central Rivers CMA will complete this action at its next CAP review.</p>

CONCLUSION	SUGGESTED ACTIONS	CMA RESPONSE
<p>Criterion 3.3: <i>Communication promoting collaboration, behavioural change and feedback</i></p> <ul style="list-style-type: none"> The CMA has implemented a communication strategy and activities that promotes collaboration, feedback and sustainable behavioural change. 	<p>There are no suggested actions for this criterion.</p>	<p>-</p>
<p>Line of inquiry 4 - Effectively using adaptive management</p>		
<p>Criterion 4.1: <i>Adaptive management principles in planning and business systems</i></p> <ul style="list-style-type: none"> The CMA's CAP states it will use an adaptive management framework to ensure the CAP is continually improved. The CMA demonstrated a fundamental understanding in adaptive management and its application and is developing further systems to grow their adaptive management processes. However, in the absence of a documented adaptive management system the understanding and application is not consistent across the organisation. There were no external constraints that impacted on this criterion. 	<p>The NRC suggests that the CMA take the following actions:</p> <p>13. Develop a business procedure to operationalise the adaptive management principles as described in the CAP.</p>	<p>The Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>The CMA will develop a Business Procedure to describe adaptive management principles and how they are applied within the organisation.</p> <p>The Hunter-Central Rivers CMA will complete this action by December 2009.</p>
<p>Criterion 4.2 :<i>Monitoring and evaluation system</i></p> <ul style="list-style-type: none"> The CMA had a documented MER strategy and monitoring systems. At the time of the audit, the CMA had not implemented an approach to test underlying investment assumptions consistent with the strategy. It also had not consistently employed appropriate expertise to assess planned and actual achievement. The CMA had plans to test investment assumptions at a number of key sites. The CMA expects that once the CMA's Theme Teams become fully operational, the CMA will be better placed to develop a shared understanding 	<p>The NRC suggests that the CMA take the following actions:</p> <p>14. Review the performance of the MER strategy and its systems to meet the adaptive management needs of the CMA and other reporting requirements</p>	<p>The Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>The CMA will to review the performance of the MER strategy.</p> <p>The Hunter-Central Rivers CMA will complete this action by December 2009.</p>

CONCLUSION	SUGGESTED ACTIONS	CMA RESPONSE
<p>of the role of investment assumptions and apply new knowledge to increase the effectiveness of investment to improve landscape function and resilience.</p> <ul style="list-style-type: none"> ▪ The CMA considers that the implementation of its MER strategy and systems is impacted by the: <ul style="list-style-type: none"> - poor performance of third parties in implementing service level agreements - continued uncertainty about who is responsible to monitor resource condition change and at what scale. 	<p>15. Review the risk of continued poor performance in service provision by third parties</p>	<p>The Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>The CMA will review the risk of continued poor performance in service provision by third parties.</p> <p>The Hunter-Central Rivers CMA will complete this action by December 2009.</p>
<p>Criterion 4.3: <i>Information management system that supports adaptive management</i></p> <ul style="list-style-type: none"> ▪ The CMA had no integrated information management system suitable for adaptive management processes at this stage. It is noted that whilst the CMA operated a suite of information management systems that were not well integrated and the extent and depth of information contained in them is highly variable. The systems were being upgraded to contain the critical information needed to adaptively manage the CMA. ▪ The CMA is having difficulty in operating efficient and effective information management systems. The CMA considers that this partly due to poor performance of third parties in implementing service level agreements. 	<p>The NRC suggests that the CMA take the following actions:</p> <p>16. Develop a standard protocol to ensure a consistent approach to improve information collection and storage for the CMA and their project partners for the purpose of adaptive management.</p>	<p>The Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>The CMA will develop a standard approach to information management using systems provided by third parties.</p> <p>The Hunter-Central Rivers CMA will complete this action by June 2010.</p> <p>Hunter Central Rivers CMA notes it has limited ability to specify the types of information systems as they are selected and provided by third parties.</p>
	<p>17. Review the risk (and management) to effective adaptive management from poorly integrated information management systems.</p>	<p>The Hunter-Central Rivers CMA agrees with the NRC's suggested action.</p> <p>The CMA will review the risk of poor performance by third parties and evaluate the effectiveness of its current management response.</p> <p>The Hunter-Central Rivers CMA will complete this action by June 2010.</p>

Attachment 2 About this audit

Audit mandate The NRC is required to undertake audits of the effectiveness of the implementation of (CAPs) in achieving compliance with those state-wide standards and targets as it considers appropriate.⁸

The NSW Government has adopted an aspirational goal to achieve resilient landscapes that support the values of its communities.⁹ It intends to achieve this by encouraging natural resource managers, such as each Catchment Management Authority (CMA), to make high quality decisions, focused through a coherent set of targets.¹⁰ The NSW State Plan¹¹ establishes the state-wide targets for natural resource management (NRM).

CMAs have developed Catchment Action Plans (CAPs) that express how each specific region can contribute to the aspirational goal and the state-wide targets. The *Hunter-Central Rivers Catchment Action Plan*¹² identifies the key natural resource issues (or themes) that need to be managed in the region, including biodiversity, aquatic and soil health. Within each of these themes, the CMA has identified:

- resource condition targets, for longer-term improvements in resource condition that will contribute to achievement of the state-wide targets
- management targets, which identify shorter-term investment priorities, such as specific sub-catchments or particular types of projects, that will contribute to achievement of the resource condition targets.

Audit objective This audit assessed the effectiveness of Hunter-Central Rivers CMA in promoting resilient landscapes that support the values of its communities, within the scope of the CAP.

Hunter-Central Rivers CMA is now implementing the CAP, through a mix of programs and projects that simultaneously contribute to more than one management target, and more than one resource condition target. Many of these integrated programs and projects use vegetation to enhance landscape function, to lead to the aspirational goal of resilience.

Lines of inquiry In order to assess the effectiveness of CMA work, the NRC sought to answer the following questions:

1. Is the CMA effectively prioritising its investments to promote resilient landscapes that support the values of its communities?
2. Are the CMA's vegetation projects contributing to improved landscape function?
3. Is the CMA effectively engaging its communities?
4. Is the CMA effectively using adaptive management?

⁸ *Natural Resources Commission Act 2003, Section 13 (c)*

⁹ As recommended by the NRC in *Recommendations – State-wide standard and targets, September 2005*.

¹⁰ *Ibid.*

¹¹ See Priority E4 in, NSW Government (2006) *A new direction for NSW, NSW Government State Plan*, November 2006

¹² Hunter-Central Rivers Catchment Management Authority, 2007

The NRC identified that these four key aspects of CMA work should strongly influence effectiveness in achieving resilient landscapes and promote maximum improvement for Hunter-Central Rivers CMA at this stage in their development.

Audit criteria To help answer each line of inquiry, the NRC used the criteria identified below in Table A2.1, the audit plan summary.

These criteria address:

- expected documentation of the particular key aspect of CMA work
- expected implementation of plans and decisions
- expected evaluation and reporting of the performance of the CMA work.

The criteria were derived from the elements of each line of inquiry, and from the general criteria of the Standard and state-wide targets.

The NSW Government adopted the *Standard for Quality Natural Resource Management* (the Standard), which identifies seven components that are commonly used to reach high quality natural resource decisions. CMAs must comply with the Standard¹³, using it as a quality assurance standard for all planning and implementation decisions.

Audit scope As a sample of the entire range of NRM investments, the audit work was focussed on CMA programs and projects that use vegetation to improve landscape function.

The NRC considered this to be the appropriate focus as vegetation remains a key tool for CMAs to use to achieve integrated NRM outcomes. This is due to a number of factors, including the lack of certainty in the management framework for other aspects of NRM such as water.

As most NRM programs and projects contribute to more than one NRM target, the NRC expects audited projects to also contribute to other targeted outcomes, such as river health and threatened species.

Audit methodology To plan and conduct this audit, the NRC audit team followed the methodologies set out in the *Framework for Auditing the Implementation of Catchment Action Plans*, NRC 2007.

Acknowledgements The NRC gratefully acknowledges the cooperation and assistance provided by Hunter-Central Rivers CMA and landholders in the Hunter-Central Rivers region. In particular we wish to thank the Chair, Dr W.E.J. Paradise, General Manager, Glenn Evans, and other CMA Board members and staff who participated in interviews, provided information and accompanied the audit team on site inspections across the region.

¹³ Section 20 (c), *Catchment Management Authorities Act, 2003*

Table A2.1: Audit plan summary

Line of Inquiry 1	Is the CMA effectively prioritising its investments to promote resilient landscapes that support the values of its communities?
This line of inquiry was tested against the following criteria:	
Criterion 1.1	The CMA has a commonly understood definition of what constitutes resilient landscapes in their region.
Criterion 1.2	The CMA has a system that ranks investment options, which incorporates factors including scientific and local knowledge, socio-economic information, community and investor preferences, leverage of investment and multiple CAP target achievement.
Criterion 1.3	The CMA has a system that ensures short and long term investment priorities are consistent with each other and integrated with other planned NRM targets.
Line of Inquiry 2	Are the CMA's vegetation projects contributing to improved landscape function?
This line of inquiry was tested against the following criteria:	
Criterion 2.1	The CMA has documented expected long-term project outcomes.
Criterion 2.2	The CMA is successfully achieving project outcomes, and maximising opportunities to add further value.
Criterion 2.3	The projects are attracting additional resources to match CMA funding.
Criterion 2.4	The CMA has a system to monitor ongoing achievements of projects.
Line of Inquiry 3	Is the CMA effectively engaging its communities?
This line of inquiry was tested against the following criteria:	
Criterion 3.1	The CMA has identified community groups and stakeholders it must consider in planning and undertaking work.
Criterion 3.2	The CMA is implementing an engagement strategy appropriate for different community groups and stakeholders.
Criterion 3.3	The CMA is implementing a communication strategy that promotes collaboration, sustainable behavioural change and feedback.
Line of Inquiry 4	Is the CMA effectively using adaptive management?
This line of inquiry was tested against the following criteria:	
Criterion 4.1	The CMA has documented the practical application of adaptive management principles in its planning and business systems.
Criterion 4.2	The CMA has monitoring and evaluation systems that test underlying investment assumptions and employ appropriate expertise to assess planned and actual achievement.
Criterion 4.3	The CMA maintains an information management system necessary to support adaptive management processes.

Attachment 3 The CMA and its region

CMAs have a challenging task to encourage communities across their particular regions to improve how they manage natural resources on private land for the benefit of the landholders, the broader community and future generations.

This section provides context for the audit by summarising key features of the Hunter-Central Rivers region, the Hunter-Central Rivers CMA,¹⁴ and some unique challenges of the broader operational context for all CMAs in NSW. This context is important in considering both the way in which a CMA's effectiveness should be assessed and the options for improving that effectiveness.

The region at a glance

The Hunter-Central Rivers region covers 37,000 square kilometres from Taree in the north, to Gosford and the coastal waterways of the Central Coast in the south, and from Newcastle in the east to the Merriwa Plateau and Great Dividing Range in the west.

The region's landscapes range from estuarine lakes and mangroves, coastal sands and rich alluvial floodplains to rural hinterland, forests and the dissected sandstone of the Great Dividing Range. The region's major waterways are the Manning, Karuah and Hunter Rivers and the coastal waterways of Wallis Lake, Port Stephens, Lake Macquarie, Tuggerah Lakes and Brisbane Waters.

Hunter-Central Rivers region is home to nearly one million people and supports growing population centres. Approximately 85% of the population lives along the coastal fringe. The region has twenty-one Local Government Areas¹⁵ and twenty Regional and Local Aboriginal Land Councils.

The region supports a range of land uses including coal mining, quarrying, power generation, heavy industry, urban development, tourism and recreation, forestry, aquaculture and a wide range of agricultural industries.

The CMA has described the expansion of the coal industry and growth in the urban population, particularly along the coast, as the most significant challenges going forward.¹⁶ The other key natural resource management issues found in each of the CMA's 'sub-regions' include:¹⁷

- Central Coast – stormwater management, loss of biodiversity and native vegetation, erosion and sedimentation, riparian zone management, rural land management and wetland degradation and loss
- Hunter – degradation of the riparian zone, loss of biodiversity and native vegetation, salinity (rivers, groundwater and soil) and soil degradation; and

¹⁴ Key information source: Hunter-Central Rivers Catchment Action Plan 2006-2016.

¹⁵ Cessnock, Dungog, Gloucester, Gosford, Great Lakes, Greater Taree, Hawkesbury, Lake Macquarie, Liverpool Plains, Maitland, Mid-Western Regional, Muswellbrook, Newcastle, Port Macquarie-Hastings, Port Stephens, Singleton, Tamworth Regional, Upper Hunter, Walcha, Warrumbungle and Wyong.

¹⁶ Hunter-Central Rivers CMA, 2006/07 Annual Report.

¹⁷ As described in the regions' previous catchment *Blueprints*. The CAP incorporates the works of these *Blueprints*.

- Lower North Coast - loss of biodiversity and native vegetation, water quality, Acid Sulfate Soils, riverbank instability, wetland decline and declining soil health.

The CMA at a glance

Hunter-Central Rivers CMA was established in 2003, built on the previous work of the Central Coast and Lower North Coast Catchment Management Boards and the Hunter Catchment Management Trust.

The CMA has seven Board members and approximately sixty-three staff, including thirty-nine project positions and secondments from the Department of Education and Training and the Department of Environment and Climate Change. Its operations are divided between its offices in Paterson, Gosford, Muswellbrook and Taree.

Unlike other CMAs, Hunter-Central Rivers CMA has flood mitigation responsibilities under the *Water Management Act 2000*. It levies Hunter Catchment Contributions in the Hunter sub-region that contribute to flood mitigation as well as other NRM activities. Approximately 20% of the CMA's operating budget is funded through Hunter Catchment Contributions.

In 2007/08 the CMA invested \$20.7m across the themes of biodiversity, water, land and community. The majority of this was delivered through individual landholders, primarily on vegetation-related projects.

Figure A3.1 provides a map illustrating some of the key characteristics of the region and sites visited by the NRC in its audit.

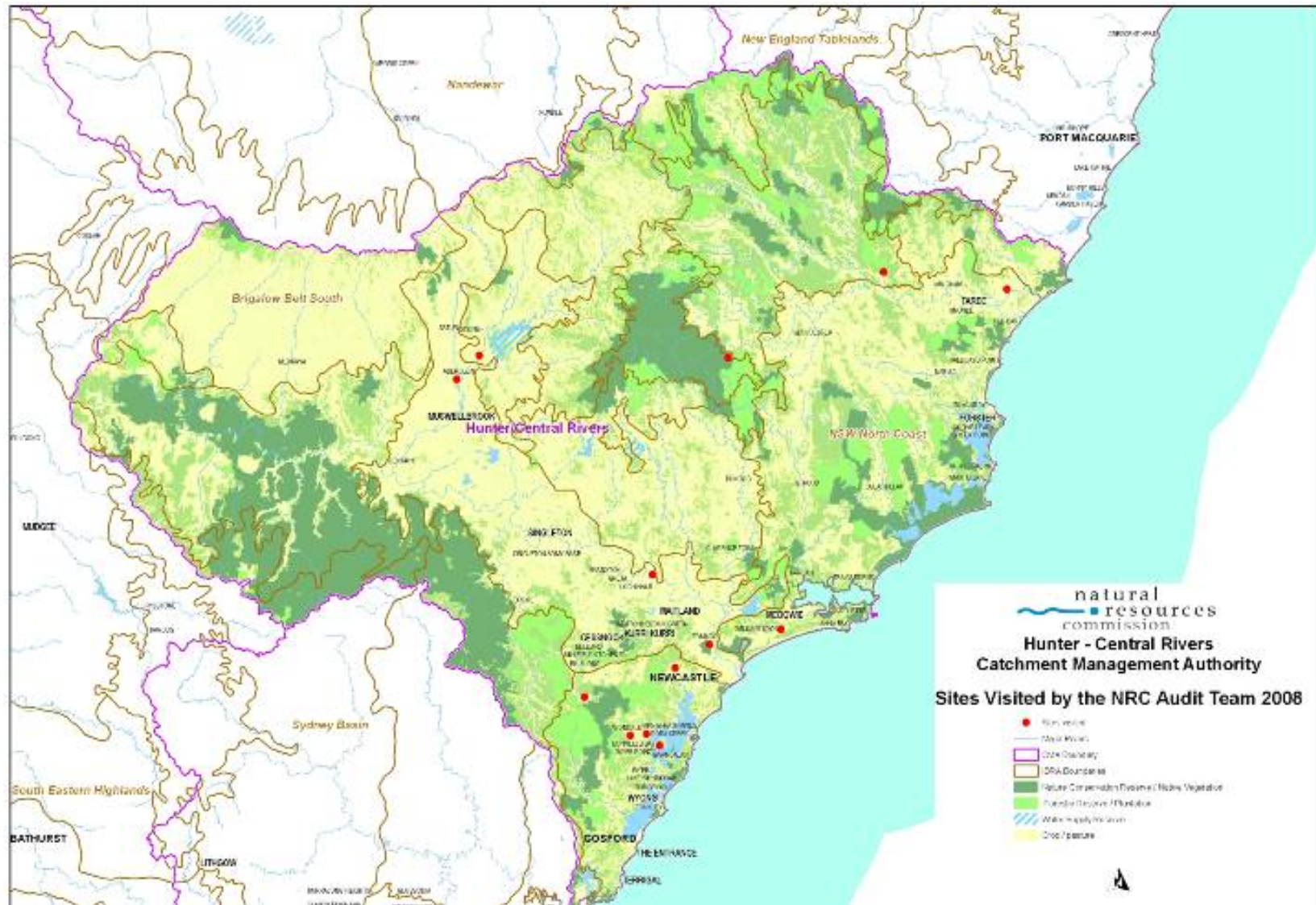


Figure A3.1: Hunter-Central Rivers region and sites visited by the NRC