natural resources commission

A LANDSCAPE APPROACH TO VEGETATION MANAGEMENT

FINAL REPORT

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List of acronyms

CAP	Catchment Action Plan
CMA	Catchment Management Authority
CSIRO	Commonwealth Scientific and Research Organisation
DEC	Department of Environment and Conservation
DNR	Department of Natural Resources
LPLMC	Liverpool Plains Land Management Committee
NRC	Natural Resources Commission
NRM	Natural Resource Management
NSW	New South Wales
PAMS	Property Administration and Management System
PVP	Property Vegetation Plan

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Introduction

The Natural Resources Commission (NRC) was asked to advise government on whether it would be practical and beneficial for Catchment Management Authorities (CMAs) and private landholders to develop native vegetation management plans at the 'landscape scale' and covering multiple properties. This would be a change to the current system, in which CMAs and landholders develop vegetation plans at the scale of single properties or parts of properties.

The NRC believes that in some important instances, the site-specific focus of the methodology developed to support the *Native Vegetation Act 2003* prevents CMAs from making sound natural resource management decisions. CMAs need to have more flexibility and capacity to consider the broader landscape functions of vegetation when they assess the 'improve and maintain environmental outcomes' test under the *Native Vegetation Act 2003*.

The purpose of this final report is to explain the NRC's recommendations that government:

- explicitly adopt a landscape approach as underpinning its natural resources policies and legislation (including the *Native Vegetation Act 2003*) and CMAs' regional delivery of natural resource management in NSW
- encourage CMAs and natural resource management agencies to proactively use existing processes to refine the current Property Vegetation Plan (PVP) Developer over time so it can accommodate more elements of a landscape approach, including the capacity to appropriately assess proposed multi-property plans
- give CMAs greater flexibility (with appropriate accountability) to build on the strengths of the PVP Developer, but be better able to engage private landholders and regional communities in managing landscapes to deliver agreed environmental, economic and social values expressed in catchment and state-wide targets.

The NRC has recommended specific steps to implement these recommendations (Section 4.6). They are not definitive, but serve as road map as to how the Government, agencies and CMAs can engage and move forward. If implemented, these recommendations should better support CMAs to work with regional communities and other organisations to improve or maintain the health and (environmental and economic) productivity of landscapes in their regions and across NSW.

1.1 Context and terms of reference for the review

In December 2005, NSW commenced a completely new system governing how private landholders can manage native vegetation, based on the policy of ending the clearing of native vegetation unless it improves or maintains environmental outcomes. Central to this new system are voluntary property vegetation plans developed for individual properties using a computer-based decision-support tool called a PVP Developer.

Government established several committees and reviews[1] to help it fine-tune the new system during its first year. Among these, the government asked NRC to provide advice on:

- whether vegetation plans developed at larger scales and covering multiple properties could produce greater environmental and economic outcomes than those developed at the scale of individual properties
- how landholders and CMAs might develop robust 'landscape designs' for sustainable management of large areas or landscapes, and
- any improvements in the current system necessary to implement such a landscape approach to vegetation management under the *Native Vegetation Act 2003* and consistent with the policy to end clearing unless it maintains or improves environmental outcomes.[2]

1.2 The review process

As part of this review, the NRC has:

- released an issues paper and received twenty six submissions
- met with stakeholders and held an expert workshop to explore the potential benefits of managing vegetation at the landscape scale
- released a draft report and received a further six submissions
- conducted a case study to review how CMAs might assess multi-property plans
- met with stakeholders and held workshops to discuss the draft report. [3]

The NRC would like to acknowledge the valuable contributions to this review made by all those who participated, including CMA staff, landholders, agency staff, and independent scientists.

Each of these stakeholders acknowledged the crucial importance of continuing to improve how native vegetation and other natural resources are managed in NSW.

1.3 Structure of this report

The remainder of this report outlines the NRC's advice and recommendations in more detail:

- Chapter 2 explains the potential benefits, costs and pitfalls of a landscape approach to managing vegetation and other natural resources (Attachment 3 summarises some previous experience with landscape approaches in NSW)
- Chapter 3 reviews opportunities to better reflect a landscape approach in the current PVP Developer
- Chapter 4 reviews opportunities to build on the strengths of the PVP Developer and continue to evolve natural resources policy and legislation in NSW.

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1 Government established an expert committee headed by Dr Denis Saunders of the CSIRO to review the ecological data and decision-rules the PVP Developer uses to assess land affected by so-called Invasive Native Scrub (INS) or woody weeds. In addition, the relevant agencies have reviewed and improved the various other ecological databases that support the PVP Developer.

2 See Attachment 1 for a full copy of the NRC's terms of reference.

3 A list of submissions is included in Attachment 2. See also NRC, *Draft Report, Managing Vegetation at the Landscape Scale, September 2006,* NRC, *Issues Paper, Review of Landscape and Multi-Farm Vegetation Plans*, December 2005 and links to all submissions received at www.nrc.nsw.gov.au.

2 A landscape approach to natural resource management

Vegetation plays a key role in maintaining landscape processes and resources such as: water and nutrient cycling; providing habitat for native fauna; and supporting economic production and other human uses.[4] Understanding that role is fundamental to maximising the environmental, economic and social values that can be achieved in particular landscapes.

In this chapter, the NRC introduces the underlying concept of a 'landscape approach' to vegetation management (and natural resource management generally). The NRC believes this concept should be the frame of reference for deciding whether any proposed changes to the NSW vegetation management system are moving in the right direction.

In chapter 3, the NRC suggests some technical changes to the PVP Developer to make it easier for CMAs to use the tool on very large scale properties or plans that span multiple properties. These technical changes should allow the tool to capture some of the potential benefits of a landscape approach. Chapter 3 also outlines some more wide-ranging improvements which would allow the tool to capture significantly more of those benefits.

2.1 What is a landscape approach?

At its most fundamental, a landscape approach to natural resource management is one in which management decisions are designed to ensure that underlying biophysical processes can support the environmental, economic and social values that society identifies for that landscape over time (see Box 2.1 for a more comprehensive definition).[5] In a landscape approach, vegetation is not managed for its own sake, but as a key tool for ensuring biophysical landscape processes and resources continue to function well, for example, through strategic revegetation conservation and rehabilitation to address multiple outcomes such as biodiversity, soil health and water quality.

In advocating a landscape approach the NRC has in mind an approach of sufficiently broad application that it can be applied across NSW 'landscapes', from the driest inland grazing areas, through the wheat-sheep belt, the slopes and tablelands, urban, peri-urban and coastal areas, national parks and recreation areas, and the coastal zone out to the 3 mile limit.

Importantly, a landscape approach requires information on biophysical landscape processes and resources,[6] but also information on the values society seeks to realise in and from that landscape.[7]

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4 See for example Eamus, D., Hatton, T. , Cook, P. and Colvin, C. (2006) *Ecohydrology: vegetation function, water and resource management*, CSIRO Publishing, Victoria, and Burgman, M.A.; Lindenmayer, D.B. (1998) *Conservation Biology for the Australian Environment*, Beatty and Sons, Chipping Norton, Sydney and Eamus, D., Macinnis-Ng, C.M.O., Hose, G.C., Zeppel, M.J.B., Taylor, D.T. and Murray, B.R. (2005) Turner Review No. 9, Ecosystem services: an ecophysiological examination. *Australian Journal of Botany*, 53, 1-19.

5 See Cresswell (ed), (2004) *Heartlands: Planning for sustainable land use and catchment health – a report of the Heartlands initiative*, CSIRO and MDBC. See also Brunckhorst, D.J. (2000) *Bioregional Planning – Resource Management Beyond the New Millennium*, Hardwood Academic Publishers, Amsterdam.

6 The NRC also considers that the interaction between land and atmosphere or climate is important and should be considered in a landscape approach (for example, planning for potential climate shift).

To understand and manage biophysical landscape processes requires analysis of different natural resources such as water, vegetation, soil and their interaction at various scales to form an integrated understanding of a particular landscape.

Institutionally, a landscape approach requires mechanisms to identify and resolve conflicting societal values for particular landscapes. Typically this is done by state or regional planning, local-scale zoning and development controls, and the interaction of markets and other social institutions. By 'societal values' the NRC has in mind a wide spectrum of values including: species preservation for intrinsic value; biodiversity preservation for future option value; economic production; and social amenity, cohesion and wellbeing.

In submissions to the review, CMAs emphasised the importance of spatial scales,[8] vegetation types,[9] or biophysical features[10] in distinguishing between different landscapes. Others emphasised the importance of 'communities of interest' in distinguishing landscapes.[11]

There is no single, ideal scale at which to understand and manage landscape processes and resources, but for practical purposes a particular spatial scale is typically chosen as the predominant scale to analyse and manage a landscape process in a particular landscape. For example, water cycling might best be understood at a catchment scale, bio-regions might be the best scale to assess some habitat functions, and soil health and nutrient cycling might require a comparatively finer scale.

To implement a landscape approach, the NRC believes it will be important for CMAs to develop spatial maps and other tools to: express their catchment targets at sub-catchment, sub-bioregional or 'landscape' scales; demonstrate how the relevant landscapes function; help visualise future landscapes; and explicitly link landholders' on-ground actions to catchment targets.[12]

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7 Ludwig et al (Eds) (1997) *Landscape Ecology, Function and Management - Principles from Australia's Rangelands*, CSIRO Publishing, Melbourne.

8 For example, see the submission from Southern Rivers CMA at page 2 suggests landscape units should consist of one or more sub-catchments.

9 For example, see the submission from Western CMA at page 3.

10 For example, see the submission from Northern Rivers CMA at page 2 emphasising features such as lithology, geomorphology and vegetation.

11 For example, see the submission from Future of Australia's Threatened Ecosystems at page 5. See also Institute for Rural Futures (2006) *Coping with Sea Change: Understanding Alternative Futures for Designing More Sustainable Futures, Northern Rivers Case Study* – Info. sheet, UNE, Armidale.

12 For examples of similar approaches see, Hill, P., Cresswell, H. & Hubbard, L. (2006) *Spatial prioritisation of NRM investment in the West Hume area (Murray CMA region)*. Technical report, CSIRO Water for a Healthy Country National Research Flagship Canberra.; Brunckhorst, D., P. Coop & I. Reeve (2006) ''Eco-civic' optimisation: A nested framework for planning and managing landscapes' in *Landscape and Urban Planning* 75: 265-281; *Australian Farm Journal* BUSH, eFarmer targets catchment planning, July 2006 and the Landscape Management Units and investment approach implemented by the Liverpool Plains Management Committee (and currently being implemented by Namoi CMA).

Box 2.1: What is a landscape approach?

The NRC considers that a landscape approach to natural resource management:

- recognises underlying biophysical processes and their importance in supporting the environmental, economic and social values that society identifies for that landscape into the future
- understands vegetation as a key tool for ensuring all biophysical processes continue to function well and satisfy the improve and maintain environmental outcomes test
- recognises relevant spatial scale for each process and resource under consideration
- requires spatial maps and other tools to: express NRM priorities; demonstrate landscape processes and functions; help visualise future landscapes; and link on-ground actions to catchment targets and priorities.

2.2 What are the potential benefits of a landscape approach?

Experience suggests there are a range of benefits from adopting a landscape approach to vegetation management. This is in contrast to a more traditional NRM approach in which native vegetation is managed in isolation from other natural resources issues, and without explicit analysis of community values.

These benefits are summarised in Table 1.1, which includes references to relevant submissions to the review and academic literature. In general terms these potential benefits arise because a landscape approach helps land managers to better understand the (biophysical and human) context of issues, and to identify and implement management actions which maintain biophysical processes and resources and minimise conflicts between different management responses.

Table 2.1: Potential Benefits of a Landscape Approach to Vegetation Management

Potential benefit	Explanation	References & submissions
Recognising the value of environmental assets	Understanding landscape processes helps value environmental assets by the ecosystem services they provide such as: regulating water and nutrient cycling; habitat for plants and animals; grazing and cropping; recreation and aesthetic experience; and space and land to support development.	deGroot, R. (2006) Costanza *et. al.* (1997)
Managing different landscape processes at appropriate scales	A landscape approach gives more capacity to separately understand landscape processes at the appropriate scale by allowing managers to see, for example, the: ▪ the links between recharge and discharge areas in relation to dryland salinity ▪ shared community norms and social drivers, and ▪ options to retain or revegetate better configurations	Briggs, S. (2001) McIntyre et al (2000) Brunckhorst (2006) Sapin (2003) Coasts and Wetlands Soc. submission p 2.

Potential benefit	Explanation	References & submissions
	of vegetation in fragmented landscapes	
Integrated management	Explicitly considering the biophysical and social context should help identify actions that will improve different landscape processes simultaneously, achieve multiple benefits, and recognise resource competition and tradeoffs.	CSIRO (2004) Brunckhorst (2006) Ive & Nicholls (2001) DEC submission, p 3.
Aligning land-use with biophysical capacity and landscape processes	Understanding landscape processes and inherent capabilities helps inform the best mix of land use in an area. Biophysical components of landscapes such as soil, topography, hydrology and vegetation combine to determine constraints and opportunities for productive and environmental uses.	CSIRO (2004) WWF (accessed 2007) - Land Management Units developed by the Liverpool Plains Mgt Comm.
Realise economies of scale in productive land use	Since management practices on properties within the same landscape will be similar, there is greater scope for realising economies of scale. The larger the geographic area, the more likely landholders are to adopt sustainable practices because of economies of scale.	Cary et al (2002) Curtis et al (2000) NSW Farmers sub p 2.
Optimise outcomes by creating greater choice	A landscape approach can provide more choice for both use of land developed after any permitted clearing and for the public good uses of uncleared and replanted land.	IUCN (2000) NSW Farmers sub p 3.
Increase environmental stewardship and community ownership	A landscape approach can create greater engagement, learning and environmental stewardship as science and the practical knowledge of land managers needs to be reconciled. The learning can provide a framework for: monitoring environmental condition; building collective responsibility; and self-regulation, evaluation and adjustment.	Brunckhorst, D. (2002) Marshall (2001) Wilson (2002) DNR submission p 1. DEC submission p 3.
Better align management with catchment, state and national targets	Natural Heritage Trust programs have been criticised for failing to demonstrate significant, measurable improvements at state and national scales. A landscape approach will help target investments to better achieve regional, state and national targets.	ANAO (1998) & (2001) Lower Murray Darling CMA submission p 3.

2.3 What are the potential costs and pitfalls?

The potential costs and pitfalls of a more integrated landscape approach to natural resource management arise from the inherent complexity in simultaneously analysing all natural resources issues and their interactions with economic and social issues in a particular landscape.

NSW has had some successful experience with landscape approaches at local and regional scales, but has also had some less successful experience with, for example, regional planning under the former *Native Vegetation Conservation Act 1997* (see Attachment 3).

Table 2.2: Potential Costs and Pitfalls of a Landscape Approach to NRM

Potential Cost or Pitfall	Explanation	References & submissions
Lack of appropriate data	Traditional scientific expertise and NRM decision-support models are built around silos of knowledge on particular resource themes. Often there is a lack of data on how to integrate these issues, which undermines confidence in the resulting plans.	Productivity Commission (2004)
Difficulty in identifying and incorporating clear societal values into decision-making	It can be difficult to reconcile conflicting values desired from the same landscapes. What may be seen as a benefit from a national or state perspective may be seen as a significant cost by a local or regional community (and visa versa). This is exacerbated when planning and natural resources policy and legislation are not well aligned.	Nicholls (2001) Hajkowicz et.al. (2002) check Sapin (2003) MacLeod et.al (2002)
Additional time to develop plans	Plans developed at landscape scales and over larger areas can take significantly longer to resolve, creating uncertainty for all participants.	Productivity Commission (2004) Community Ref. Panel 2001
Higher costs to develop plans and govern their operation through time	A landscape approach may: ▪ require greater collaboration across landholders ▪ require more complex contractual arrangements ▪ create higher risks of change within the plan These costs may be partially offset by economies of scale.	Adhikari (2001)
Inconsistency between decisions Need for external review and audit	Potential risk of inconsistent decisions on access and use of resources in different landscapes. Risk of inconsistency where resource access and use decisions are made on a landscape-specific basis. These can be addressed by external review and audits, but external reviews of locally-negotiated outcomes can undermine the success of the ultimate plan in harnessing community acceptance and implementation.	MacLeod et al (2002)

Overall, the information in Tables 2.1 and 2.2 suggests that a landscape approach is an ideal to work towards, but we need to find pragmatic ways of addressing the inherent complexity and potential costs of such an approach. NSW has adopted the NRC's recommended *Standard for Quality Natural Resource Management*, which gives CMAs and others a practical framework for avoiding many of these pitfalls and bringing the appropriate depth of analysis to the issue.

3 Improving the landscape focus of the PVP Developer

In its current form, the PVP Developer is essentially a site-specific assessment tool. However, vegetation-dependent landscape processes and resources are not constrained to individual holdings. Management actions taken on individual holdings will have on-and off-farm impacts, now and into the future. As a consequence, without a landscape approach it is very difficult to make sound vegetation and natural resource management decisions and determine whether environmental outcomes will be improved or maintained.[13]

The *Native Vegetation Regulation 2005* establishes processes for CMAs (and others) to propose improvements to the PVP Developer. CMAs should use these to propose ongoing changes to the PVP Developer to improve its landscape focus as they gain more experience in its use.

CMAs have already proposed a range of changes, many of which have been implemented.[14] The proposed multi-property plan in the Walgett area is also leading the Namoi CMA to propose some further changes.

3.1 Existing processes to improve the PVP Developer over time

The PVP Developer is a significant step forward in making high quality science available to support CMAs. It addresses some of the traditional key weaknesses in how NSW has used science in natural resource management by, for example:

- providing high quality ecological data on key natural resource themes across NSW
- imposing common data formats, quality standards and mapping interfaces, and
- aligning NSW agency roles in supporting how the tool is used and improved.

Government has also established systems to ensure the PVP Developer is amended over time as scientific knowledge continues to improve and CMAs become more experienced in its use.[15] Clause 25 of the *Regulation* allows the Minister to change the assessment methodology and PVP Developer after taking advice from the NRC and seeking the agreement of the Minister for the Environment. The Department of Natural Resources has established systems to train and support CMAs in using the PVP Developer and to consider their suggestions for improving the databases in the tool or how the computer program operates. In turn, CMAs have established working groups to coordinate their proposals to government.

3.2 Possible changes to better assess multi-property plans

It is important that the PVP Developer be able to assess plans submitted by individuals and groups of landholders as this has always been part of the Government's vision for PVPs and is provided for in the Act.[16] However, the current PVP Developer was primarily designed as a

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13 While the PVP Developer does have the ability to consider a 'landscape context', the NRC believes there are some significant technical limitations in using it to assess larger scale and multi-property plans (see section 3.2)

14 See Ministerial Review Committee, *Consolidated Report to the Ministers for Natural Resources and the Environment, Native Vegetation Reforms*, October 2006.

15 Hansard extract, NSW Legislative Council, 15 November 2005, page 25 (article 22).

16 See Clause 26 and reference to this in the second reading speech, Hansard Extract, NSW Legislative Council, 4 December 2003 (article 52), page 2.

site-specific assessment tool, and there are some technical difficulties in using it to assess larger scale and multi-property plans. For example the:

- Biometric tool's 'landscape value assessment' considers the relative scarcity of a vegetation type at the 10 ha, 100 ha and 1,000 ha scales, but not at the 10,000 ha scale necessary to operate at the sub-catchment scale. The site-specific data required to operate the tool also makes it very time consuming to collect sufficient data across larger areas
- standard PVP contracts and negotiation processes are set up to deal with one landholder who assesses their own farm production issues, and are not set up to help groups come together and assess more complex group plans where the costs and benefits are unevenly distributed
- PVP Developer does not link to catchment targets or help CMAs coordinate PVPs with NRM being undertaken in the region by other industry groups, local governments, rural lands protection boards, or other organisations.

3.2.1 Possible changes arising from a proposed multi-farm plan at Walgett

A group of 13 landholders at Walgett have formed the Lower Pian/Pagan Creek Conservation Group and developed a coordinated plan to manage vegetation across the 40,000 ha of their combined properties. It contains a range of proposals ranging from clearing for permanent cultivation, management of invasive native scrub, and conservation management. Central to the plan are proposals to clear for cultivation some currently heavily grazed woodlands but to offset this with management for conservation of riparian areas and wildlife corridors.

The NRC has been working with the Walgett group and Namoi CMA to test some proposals from its draft report.[17] As part of this process, Namoi CMA applied the PVP Developer separately to each of the 13 properties covered by the group's proposals. Table 3.1 summarises the aggregate results.

Table 3.1: Results of PVP Developer assessments of proposed multi-farm plan at Walgett

Proposal	PVP result	Comments
Clearing native vegetation for permanent cultivation	Not approved	Vegetation is Coolabah-Box Woodland community and so is: ▪ native vegetation not in low condition and occurring in a landscape that is >70% cleared, and ▪ a native vegetation type not in low condition that is >70% cleared, and ▪ a native vegetation community listed under the *Threatened Species Conservation Act 1997 (NSW)* and *the Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)* and is not of low condition.
Clearing native vegetation for rotation between pasture and cropping	Not approved	
Clearing of isolated paddock trees	Approved	▪ Each property has sufficient area to cover their own offset requirements
Management of invasive native scrub	Approved	▪ No offsets required

17 Natural Resources Commission, *Draft Report: Managing Vegetation at the Landscape Scale*, September 2006.

Proposal	PVP result	Comments
to restore degraded open native woodlands		▪ Coolabah species are listed as invasive in Namoi region ▪ Minimal access to 3 in 15 year cropping treatment because vegetation not in low condition and is an endangered ecological community ▪ Blade ploughing or cropping can't be used in endangered ecological communities.
Thinning woodlands	Approved	▪ Thinning to benchmark densities is permitted

A significant proportion of the land proposed to be cleared for cultivation contains an endangered ecological community, which has an over-storey of Coolabah and Blackbox trees and a heavily degraded under-storey of native grasses and herbs. The plan proposes clearing this land and offsetting it with preservation of high quality areas of the same community. Both of these areas are subject to ongoing grazing pressures. However the degraded areas cannot be cleared and offset because they are not classified by the tool as 'low condition', and hence 'red lights' the tool. While the under-storey is well below the threshold 50%native grasses, the over-storey is not less than 25% of the benchmark stem-density.

In practice, this means that an endangered ecological community with little future prospects under current land use, cannot be cleared and offset by preservation of the same type of vegetation in higher quality condition. However, in the face of grazing pressure there is no positive incentive for the landholders to set aside and preserve the still high quality vegetation community. The high quality vegetation cannot be used as an offset because it cannot be improved from its current 'high' condition.

This leaves the landholders with no land use options beyond ongoing grazing, which under current climatic and economic conditions prevents the trees from recruiting and any indigenous grasses from regrowing. The *Regulation* effectively prevents any practical management response to a poorly functioning landscape. Without some cropping option, the landholders will struggle to restore the land affected by invasive native scrub back to a native woodland. While CMA funding may be available to help with this, it is not clear what ongoing source of funds can be accessed to maintain these landscapes into the future.

The Namoi CMA is continuing to work with the landholder group to develop proposals for amending the assessment methodology and PVP Developer to resolve these issues, and will bring these to Government for consideration shortly. A practical way forward will require the PVP Developer to be refocussed on the sustainable management of these landscapes over time.

3.2.2 Developing and enforcing multi-property vegetation plans

Some of the key practical challenges to developing multi-property plans involve how to bring groups of landholders together in a way that enables them to develop sound plans and reliably deliver those plans through time.

Chapter 2 outlined the concept to be applied and the scientific knowledge which needs to inform development of landscape plans. If Government accepts the NRC's recommendation to adopt a landscape approach, NRM agencies and CMAs will need to extend current assessment methodologies, decision-support tools, and standard contract documents to make a landscape approach a practical reality.

From the case studies NRC has reviewed in Attachment 3, there appear to be two approaches that have been used to tackle this issue. In for example the Southern Mallee Guidelines case study, a representative group developed a **'top down' landscape design** for the region which then provided the context for individual landholders to realign their property management under site-specific plans.

Alternatively, in case studies such as the Tilbuster Commons example, a group of landholder formed a private company to develop a **'bottom up' plan** to manage their properties as if they were under common ownership. Similarly, in the case of Land and Water Management Plans, the irrigation corporations formed the legal entity that negotiated the plans with Government on behalf of their members and enforces or amends them through time. Other business structures that landholders could adopt to manage multiple properties include partnerships, trusts and co-operatives.

Both approaches have merit, and ideally CMAs should be able to use the approach that suits their own and their communities' needs. Both should be able to 'plug in' to information systems and scientific data that agencies and CMAs can provide on biophysical processes and community values expressed in targets.

Where landholders are willing to form appropriate legal structures to manage the interests in developing and governing the plan through time, this will be a robust structure. It is critical that any multi-property vegetation plan is underpinned by robust and appropriate governance arrangements that provide business efficacy and legal stability.[18] From a practical perspective, it may still be necessary for a group plan that proposes clearing and offsets to still be backed up by individual PVPs so that government can assist more readily in enforcing obligations as a number of individual contracts with transparent 'off-farm' offsets.

Where the landscape being managed is not one where a clear 'community of interest' can be identified and coordinated via a legal structure, a 'top down' landscape design may be more practical, particularly if the intended landscape design does not involve clearing, or the properties concerned are sufficiently large that any clearing is offset on the same property (as in the Southern Mallee Guidelines).

3.3 Implications from the Cobar Peneplain vegetation plan

The Cobar Peneplain Vegetation Management Committee developed a plan for managing invasive native scrub in their region.[19] The document provides:

- a historical perspective of vegetation change, its causes and management for the area
- analysis of how the current balance of native trees, shrubs and grasses is affecting biodiversity values and the community's capacity to generate income from the land
- a proposed range of best management practices for improving vegetation condition.

The document is focussed on management of invasive native scrub on individual properties, rather than proposing methods to negotiate vegetation management plans at landscape scale.

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18 Williamson, S., Brunckhorst, D. and Kelly, G. (2003) *Reinventing the common: cross-boundary farming for a sustainable future*, The Federation Press, Sydney.

19 *'A Vegetation Management Plan for areas invaded by native trees and shrubs in the Cobar Peneplain'*, developed by the Cobar Vegetation Management Committee. This plan was submitted to the NRC in March 2006 in response to its Issues Paper, *Review of landscape or multi-farm plans.*

The NRC forwarded the plan to an interagency scientific team who conducted a review of the invasive native scrub module of the PVP Developer in 2006. Since then, government has taken a range of actions to address invasive native scrub issues including:

- implementing changes to the invasive native scrub module of the PVP Developer as recommended by the interagency scientific team[20] and endorsed by the NRC[21]
- two scientific research projects further investigating invasive native scrub treatments and ecological impacts in the Central West and Western regions.

The NRC believes that this recent set of changes should be given time to be tested, with CMAs looking for appropriate opportunities to invest in managing invasive native scrub, and monitoring landholders' feedback on the practicality of sustaining the resultant farm management into the future. Similarly, when the results of the research projects are available, the current Invasive Native Scrub module of the PVP Developer should again be reviewed to determine if it remains appropriate.

The NRC recommends that government should continue to keep the issue of invasive native scrub under review. If, after a suitable testing and review period, the current settings are assessed to not be working sufficiently well, consideration should be given to regulating invasive native scrub as a Routine Agricultural Management Activity (RAMA) under the *Native Vegetation Act 2003*.

Such a RAMA could permit clearing and management of invasive native scrub without a PVP, subject to appropriate limitations and conditions. Limitations and conditions could be expressed in CMA-developed 'top down' landscape designs and codes of practice for managing invasive native scrub in different landscapes across their region.

3.4 Other opportunities to improve landscape focus

The PVP Developer is part of a vegetation management system which includes the *Act, Regulation* and assessment methodology. This section suggests further opportunities to improve the extent to which that system as a whole can deliver the potential benefits of a landscape approach.

Properly valuing environmental assets in terms of the biophysical processes and societal values they support is essential if the tool is to guide CMAs to improve and maintain the health and (environmental and economic) productivity of landscapes.

The NRC believes that government should review the potential to improve the landscape focus of the current PVP developer by revising the assessment methodology to:

1. integrate the assessment of all environmental outcomes
2. value environmental assets by their role in supporting landscape processes and values

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20 Saunders et. al (2006) *Review of the Invasive Native Scrub Assessment Methodology and Decision Support Tool of the Property Vegetation Plan Developer under the Native Vegetation Act 2003- 4 August 2006*.

21 NRC (2006) *Advice to the Minister, Amendments to the Environmental Outcomes Assessment Methodology, Chapter 7 Invasive Native Scrub – September 2006*. These changes occurred on 24 November 2006.

3. incorporate Catchment Action Plan priorities and targets into the assessment of environmental outcomes
4. assess the social and economic sustainability of proposed PVPs
5. better support realignment of land-use with biophysical capacity and landscape processes

Table 3.2 highlights some of the possible ways in which this might be achieved and explains why these changes would be an improvement on the current PVP Developer.

Table 3.2: Possible improvements to the landscape focus of the PVP Developer

Possible improvements	Rationale for changes	Scope for improvements in the PVP Developer
Integrating the assessment of all environmental outcomes Valuing environmental assets by their role in supporting landscape processes and identified values	CMAs and landholders could better plan sustainable land-management if the PVP Developer produced integrated assessments of: ▪ biodiversity value in line with CAP targets ▪ water yield against water sharing plans, and riverflow and water quality objectives ▪ groundwater sharing against sustainable yield and support for dependent ecosystems as per water sharing plans ▪ nutrient cycling, soil health and (environmental and economic) productivity	The Biometric tool does not measure the impact of vegetation on water balance and nutrient cycling; does not value soil biodiversity; and does not identify synergies between biodiversity and productive soil health across landscapes. Riparian buffer zones are a loose proxy for water cycling and hydrologic balance, (and chiefly another proxy for biodiversity value). The biometric and threatened species tools undervalue past good management of native vegetation since value is awarded for the improvement in ecological condition only The soil assessment and salinity tool (in the west of the state) are state-scale hazard filters, and do not readily discriminate between alternate management regimes based on their relative impact on landscape processes. None of the tools explicitly link assessments to regional-specific targets. Separating assessment modules makes it difficult to optimise land management, and identify the on-ground actions that will best improve multiple landscape process.
Incorporating CAP priorities into the assessment	Priorities expressed in CAPs should be used to weight potential offsets and value different environmental outcomes.	In the first nine months of the new system 87% of CMAs' vegetation incentive payments were paid under mechanisms other than the PVP Developer (Ministerial Review Committee 2006). The tool does give region-specific values to environmental assets.
Assessing the social and economic sustainability of proposed PVPs	Integrating an assessment of social and economic factors is critical in determining if proposed environmental improvements can be sustained over time.	No consideration is currently given to the likely contributions of the social or economic components of landscapes to achieving improved environmental outcomes despite the integral links between them. Where the status quo land use is not sustainable, the tool does not allow CMAs to generate creative solutions to reconfiguring vegetation within a landscape.

Possible improvements	Rationale for changes	Scope for improvements in the PVP Developer
Better supporting realignment of land-use with biophysical capacity and landscape processes	Flexibility to offset clearing in other (off-farm) parts of the same landscape would help realign land use over time and potentially harness development pressure to boost regional and state-scale environmental outcomes by requiring larger offsets than the areas cleared.	The PVP Developer 'red lights' any significant changes in land-use, but permits minor realignment of land-use at the property scale with offsets on the same property. Many PVPs have been to clear paddock trees or thin vegetation to benchmark levels in grazing areas. A proportion of PVPs permit treatment of INS in grazing areas, some of which permit 3 rotation crops in 15 years which is a temporary change in land-use.

4 Refocussing the Native Vegetation Act

The *Native Vegetation Act 2003* has delivered a framework to restrict the clearing of remnant native vegetation. It has effectively put a regulatory 'fence' around remaining native vegetation, markedly restricting any changes in land-use.

However, the Act needs to do more if it is to deliver its intended broader purposes of creating a framework for CMAs to manage native vegetation on a regional and catchment basis in the social, economic and environmental interests of the State.

Achieving this broader purpose will require refocussing the Act within the joint NSW and Australian Government approach to NRM. This will include treating native vegetation as one tool for managing all natural resources in an integrated way to ensure landscape processes can support the desired environmental, social and economic values over time.

4.1 The regional approach to natural resource management

The current regional approach to delivery of natural resource management was conceived in 1999 by a national NRM task force[22] and underpins the National Action Plan for Salinity and Water Quality, the Natural Heritage Trust, and the subsequent intergovernmental agreements.

This approach centres around three strategies for improving natural resource management by:

- investing strategically in the regional delivery of NRM programs
- partnering with regional communities to plan and deliver NRM programs, and
- harnessing economic instruments, incentives and innovation.

Along with reports by the Wentworth Group of Concerned Scientists[23] and the Native Vegetation Reform Implementation Group[24], this same approach informed the current NRM framework in NSW. The *Native Vegetation Act 2003* was passed with a package of reforms[25] intended to ensure CMAs manage native vegetation on a regional and catchment basis[26] in the social, economic and environmental interests of the State.[27]

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22 National Natural Resource Management Task Force, *Managing Natural Resources in Rural Australia for a Sustainable Future: a discussion paper for developing national policy*, December 1999. See also National Natural Resource Management Task Force, *Steering Committee report to Australian governments on the public response to 'Managing Natural Resources in Rural Australia for a Sustainable Future: a discussion paper for developing a national policy'*, July 2000.

23 The Wentworth Group (2003) *A New Model for Landscape Conservation in New South Wales – the Wentworth Group of Concerned Scientists report to Premier Carr*. WWF Australia, Sydney.

24 Native Vegetation Reform Implementation Group (2003) *Native Vegetation Reform Implementation Group – Final Report*. NSW Department of Infrastructure, Planning and Natural Resources, Sydney.

25 See also the *Catchment Management Authorities Act* and the *Natural Resources Commission Act 2003.*

26 See *Catchment Management Authorities Act 2003*, Section 3 generally and sub-clause (a) in particular: 'to establish authorities for the purpose of devolving operational, investment and decision-making natural resource functions to catchment levels'.

27 See *Natural Resource Commission Act 2003*, Section 3 generally and sub-clause (a) in particular: 'establishing a sound scientific basis for the properly informed management of natural resources in the social, economic and environmental interests of the State'. See also *Catchment Management*

In introducing the new bills the Minister emphasised (among many things) broad sustainability concepts such as the need for:

- integrated natural resource management given the interrelated and integrated contexts for different environmental issues
- management of vegetation as part of the agricultural and forestry systems in NSW to deliver an end to broadscale clearing along with maintaining productive landscapes
- real environmental improvements that are recognisable and measurable, and above all acknowledged by the communities that did the work to make them happen, and
- greater involvement of the people of regional NSW in the management of their landscapes.[28]

As implementation of this approach has progressed the NRC has observed some tensions between these strategies and the way in which the *Native Vegetation Act 2003* has been implemented. The following three sections discuss these tensions, outlining the opportunities to refocus the *Native Vegetation Act 2003* to better support the strategies, and the risks of not doing so.

In section 4.5, the NRC proposes a practical way forward to increasingly rely on CMAs to reconcile these inherent tensions using the *NSW Standard for Quality Natural Resource Management* with appropriate technical support from NSW agencies, and auditing by the NRC.

4.2 Investing strategically in the regional delivery of NRM programs

A majority of expenditure under the *Natural Heritage Trust* and *National Action Plan for Salinity and Water Quality* is intended to be invested strategically in achieving region-specific targets, developed by regional organisations and jointly approved by the Australian and relevant state or territory government.[29]

Governments believe (rightly) that there is not enough available public money to fix all natural resource problems. They want to invest in those priority actions that will bring the most significant, widest-ranging and most permanent improvements to the issues that are agreed as being most important to local, regional, state and national communities. They have agreed that the primary geographic scale to negotiate, reach agreement on, and coordinate investment in these priority actions is the regional scale.[30]

Authorities Act 2003, Section 3 (f) 'to ensure the proper management of natural resources in the social, economic and environmental interests of the State'.

28 Second reading speech, Hansard extract NSW Legislative Council, 4 December 203 (article 52), pages 5897, 5903 and 5906. See also the objects of the *Native Vegetation Act 2003* which include: (a) to provide for, encourage and promote the management of native vegetation on a regional basis in the social, economic and environmental interests of the State; (b) to prevent broadscale clearing unless it improves or maintains environmental outcomes; (c) to protect native vegetation of high conservation value having regard to its contribution to such matters as water quality, biodiversity, or the prevention of salinity or land degradation; (d) to improve the condition of existing native vegetation, particularly where it has high conservation value; (e) to encourage the revegetation of land, and the rehabilitation of land, with appropriate native vegetation; in accordance with the principles of ecologically sustainable development.

29 See *National Framework for Standards and Targets*.

30 See *Agreement between Commonwealth of Australia and State of New South Wales relating to the National Action Plan for Salinity and Water Quality*. Regional organisations in each State and

In NSW, the Government has gone further than most other states and territories in implementing this approach. Since 2003 it has:

- established 13 statutory-based CMAs with independent boards, significant staff and resources, and technical support from NSW agencies
- adopted the NRC's recommended *Standard for Quality Natural Resource Management*[31] which is designed to promote accountability, rigour, and continuity in NRM within an adaptive management framework
- adopted (and including in the NSW State Plan) the NRC's recommended set of 13 state-wide targets[32] to better link region-specific targets to state-scale priorities and the 'national matters for targets'
- supported CMAs to engage with their communities to develop strategic Catchment Action Plans for their regions
- required the NRC to independently audit and publicly report on CMAs' successes in implementing their Catchment Action Plans, and
- refocused NRM agencies on a set of strategic roles including implementing the State Monitoring and Evaluation Strategy, providing technical and scientific expertise to CMAs, and compliance activities to enforce regulation.

CMA regions cover all of NSW, with authorities established for coastal and urban areas as well as the inland regions. The best performing CMAs already have well developed analytical frameworks for prioritising investments within their regions to jointly deliver on local priorities, state targets, and specific 'investor preferences' agreed between Australian and NSW Governments.[33]

The NRC sees Catchment Action Plans as continuing to develop into single, integrated whole-of-government plans for NRM action and investment in each region, and has recommended that government consider further administrative, policy and legislative changes to better support this.[34]

Taxpayer funded government contributions are likely to remain central to CMAs' funding because the broader regional and Australian communities enjoy the benefits of the biodiversity conservation and sustainable use of natural resources by industry. However, CMAs also hope to attract funding from other sources. This may include industry groups who want to invest in sustainable resource use across their region or offset other less sustainable activities they propose to undertake, such as mining.

Territory have developed regional investment strategies including targets, and these have been approved by joint steering committees formed between the Australian Government and each state or territory government.

31 As recommended by the NRC in Natural Resources Commission (2005) *Recommendations – State-wide Standard and Targets,* September 2005.

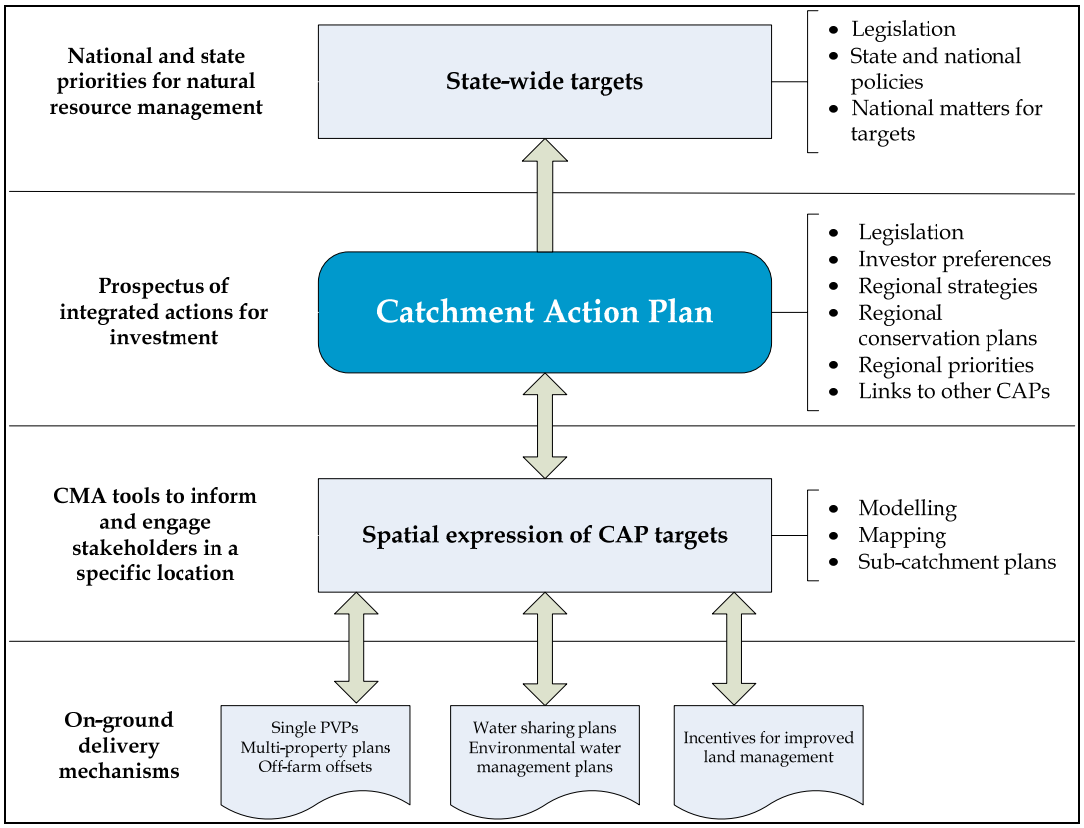
32 Ibid.

33 Separate reports are available on www.nrc.nsw.gov.au for each Catchment Action Plan submitted for review by the NRC.

34 Natural Resources Commission, *Progress of Catchment Action Plans: their place in current and future natural resource management in NSW*, September 2006.

Figure 4.1 illustrates how the NRC believes different elements of the NSW natural resources management framework should logically fit together.

Figure 4.1: Catchment Action Plans as an integrated investment prospectus



Ideally, the *Native Vegetation Act 2003* would apply to all of NSW[35], (rather than rural-zoned, privately-owned land only) the *Standard for Quality Natural Resource Management* would provide the quality assurance framework for the PVP Developer, and the PVP Developer would explicitly incorporate the state-wide and Catchment Action Plan targets as decision-making criteria with weightings to express the community's priorities for native vegetation management at the state and regional scales respectively.

However, different elements of this new NRM regional model were implemented concurrently, which has created some sequencing problems and weakened the links between them. In particular, the PVP Developer was developed under significant time pressure to allow the *Native Vegetation Act 2003* to commence. Consequently the PVP Developer was developed in parallel with (but without explicit linkages to) the *Standard for Quality Natural Resource Management*, the state-wide targets and Catchment Action Plan targets.

A key risk from this is not getting the balance between conservation and development right at the state and regional scales. With the *Native Vegetation Act 2003* so strongly focussed on preventing clearing at the property scale in rural-zoned land only, it misses many of the more strategic issues. Rezoning of rural land avoids the *Native Vegetation Act 2003*, which means urban, coastal and industrial development proposals are not required to maintain or improve environmental outcomes in their region. This has the potential to direct governments limited

35 The *Native Vegetation Act 2003* applies to privately owned, rural land only. The excluded areas comprise national parks, other conservation areas, state forestry land, and urban areas.

investment funds into less than optimal investments and to allow rezoning to undermine progress towards catchment and state-wide targets.

For example some of the strongest regulatory protections are against clearing heavily degraded native vegetation in remote parts of Western NSW. These protections have the potential to absorb a disproportionate share of available taxpayer funding as compensation for lost income and capital value. They also have the potential to attract a disproportionate share of CMAs' investment funding away from higher priority investments.

Native vegetation has important functional values in every type of landscape, and the most aggressive threats to biodiversity in NSW include housing and mining development pressures in urban and coastal areas. NSW is not requiring sustainable development across the state, and is forcing private conservation onto a small group of landholders, potentially missing the opportunity to prioritise its investment money to the most strategically important threats to sustainable resource use and the environment.

4.3 Partnering with regional communities to plan and deliver NRM programs

Australian natural resource management policies have long recognised the importance of participatory approaches and community engagement in planning and delivering natural resource management programs.[36] Improved engagement with regional communities was a key reason government established the CMAs in 2003.[37]

Meaningfully engaging key stakeholders and the broader community in planning natural resource management helps to:

- combine knowledge and experience from a number of sources so that no available understanding of ecosystems and society is overlooked or dismissed
- foster social learning through processes which frequently expose participants' lack of knowledge, challenge their beliefs and values, and hence build common understanding
- develop sufficient mutual trust so that trade-off decisions can be reasonably discussed and resolved in a stable way consistent with desired outcomes.[38]

Similarly, community engagement is increasingly recognised as essential to building the trust and common purpose needed to overcome the otherwise prohibitive transactions costs of delivering natural resource management policies.[39] Such policies are typically designed to change the behaviour of large numbers of people so that they better manage common property

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36 For example government support of the Landcare movement. From its origins as a community-based movement in the mid 1980s, the Australian Government supported the movement with its Decade of Landcare during the 1990 and continues to do so, spending $37 million on the National Landcare Program during 2006/07. See also for example *One Nation* statement (1992), *Intergovernmental Agreement on the Environment*.

37 Second reading speech for *Catchment Management Act 2003*, *Natural Resource Commission Act 2003* and *Native Vegetation Act 2003*, Hansard Extract, NSW Legislative Council, 4 December 2003 (article 52) pages 5894 and 5902.

38 Francis G, Models for Sustainability Emerge in an Open Systems Context, *The Integrated Assessment Journal* Vol 6, Iss. 4 (2006) pp 59-77.

39 Marshall G (2005), *Economics for Collaborative Environmental Management: renegotiating the commons,* Earthscan, London.

resources (such as air and water quality), or are willing to incur some measurable private costs to generate 'downstream' private benefits (such as reduced salinity load) or public benefits (such as improved biodiversity conservation).

Unlike point-source pollution issues which lend themselves towards legislated enforcement and compliance as the primary policy tools, natural resource management problems are diffuse and require change to a great number of small decisions across a wide range of unique circumstances.

Focussing on collaboration, building trust and partnerships helps to bring increased understanding, common purpose and behavioural change, without government needing to actively proscribe and enforce a myriad of changes peculiar to different circumstances. The role for compliance enforcement in this setting is as a back-up to reassure the majority who 'come on board' that their personal sacrifices will not be undermined by opportunistic 'cowboys' or 'freeloaders'.

Over time, collaboration and partnerships are also essential to make sure natural resource policies actively respond to changing community values, increased knowledge from all sources, and feedback on lessons learned from past projects.

4.3.1 The Native Vegetation Act constrains CMAs' engagement with communities

The centrepiece of the *Native Vegetation Act 2003* is the prohibition on broadscale clearing of native vegetation unless it improves or maintains environmental outcomes.[40] Effectively, the prohibition prevents virtually any disturbance[41] to any native vegetation[42] on rural-zoned land unless it has been previously cleared and regrown since 1990 (or 1983 in the Western Division).[43]

The *Native Vegetation Regulation 2005* prescribes the assessment methodology that the Minister or CMAs must use to assess if a development consent or proposed property vegetation plan

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40 *Native Vegetation Act 2003*, Section 12 and Section 29. There are a range of exemptions that allow: sustainable grazing; clearing of already heavily degraded, sparce groundcover; incidental clearing as part of routine land management such as installing fences; clearing under emergency services or planning legislation; continuation of current cultivation, grazing or rotational farming in regrowth vegetation.

41 *Native Vegetation Act 2003*, Section 7 defines clearing as 'cutting down, felling, thinning, logging or removing, killing, destroying, poisoning, ringbarking, uprooting or burning native vegetation. Section 8 defines 'broadscale clearing' as the clearing of any 'remnant native vegetation' or 'protected regrowth'. Section 9 defines 'remnant native vegetation' as all vegetation other than regrowth and sets the dates for defining 'regrowth'. 'Protected regrowth' is regrowth that is protected under a planning instrument in accordance with Section 10, or has been grown or preserved using public funds.

42 *Native Vegetation Act 2003*, Section 6 defines native vegetation as trees (including any sapling or shrub, or any scrub), understorey plants, groundcover (being any type of herbaceous vegetation), plants occurring in a wetland.

43 *Native Vegetation Act 2003*, Section 19 permits clearing of regrowth that is not protected regrowth, and Section 9 (1) defines regrowth as native vegetation that has regrown since 1990 (or 1983 in the Western Division), or such earlier date as set in a property vegetation plan based on a reasonable rotational farming practice that has existed on the land since an earlier date.

will improve or maintain environmental outcomes.[44] The assessment methodology sets out the principles, decision-rules and data sets to assess environmental outcomes.

Importantly, the assessment methodology gives CMAs virtually no discretion in how they use the PVP Developer program or whether they make a decision in line with its calculations. The only exceptions to the use of the assessment methodology are:

- Where the Minister has approved a 'clause 28' policy allowing minor clearing which will lead to long-term improvements in environmental outcomes. Examples could include temporary disturbance of ground cover to stimulate regeneration of native grasses.
- Where CMAs on the advice of an accredited expert make a minor change to a limited set of technical parameters within the PVP Developer in a particular instance. This exemption is strictly limited in the *Regulation* and assessment methodology.[45]

In effect, the assessment methodology and PVP Developer are designed to create a heavily prescribed, rule-based automated system which a CMA officer can use on a laptop computer out in the field to give landholders a rapid, consistent answer on clearing proposals.

The use of a standard tool ideally ensures consistent, repeatable assessments and makes available expert knowledge and data to the many CMA staff involved in developing and approving PVPs. However, it makes it much harder to respond meaningfully to local issues, to be flexible enough to reach sustainable outcomes, and to maintain the community confidence and engagement essential to the success of the overall model.

The PVP Developer is fundamentally designed to halt clearing and ensure remaining remnant vegetation stays where it is in the landscape (albeit subject to continued degradation through grazing or other pressures). In many fragmented landscapes, retaining all remnant native vegetation is a positive contribution to landscape function. However, in more heavily vegetated landscapes (such as parts of Western NSW) or landscapes subject to strong development pressures (such as the coast and many peri-urban areas), CMAs and others need to have a more sophisticated analysis of the way vegetation and groundcover generally should be reconfigured, retained and restored to support diverse uses and values in landscapes.

Further, even in highly fragmented landscapes, there are likely to be particular, localised circumstances where a CMA is able to negotiate an overall more positive environmental outcome, if it is able to permit some very selective clearing which would currently generate a red light under the PVP tool. Some such exceptional circumstances were drawn to the attention of the Ministerial Review Committee.

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44 *Native Vegetation Regulation 2005*, clause 26 requires the use of the Environmental Outcomes Assessment Methodology approved by the Minister and published in the government gazette from time to time.

45 *Native Vegetation Regulation 2005* clause 26 (1) (b) and clause 27. See also clause 2.4.3 of the assessment methodology which allows CMAs to substitute more appropriate local data where an accredited expert certifies the data better reflects local environmental conditions in respect of: vegetation density benchmarks; whether threatened animal species are likely to occur on the land; or the expected impact of management actions on increasing flora or fauna populations.

4.4 Harnessing economic instruments, incentives and innovation

Regional bodies such as CMAs present unique opportunities to develop region-specific innovative solutions to complex natural resource and environmental issues. The *Standard for Quality Resource Management* explicitly encourages a diversity of region-specific ways in which CMAs can develop and implement consistently high quality natural resource management plans and programs.

Similarly, regionally-based CMAs are well placed to collaborate closely with regional communities and key stakeholders to seek out and harness the social mores and economic drivers in their region that will support positive change.

These innovation and engagement benefits are extremely useful in improving the efficiency of grants-based government investment in natural resource management. As described in section 4.2 regional Catchment Action Plans identify those actions on the ground that have the best potential to help governments pay once for multiple environmental benefits. Increased scope for innovation and community engagement can help further leverage these investments and reduce government's transactions costs by boosting the uptake of new, more sustainable land management methods.

However, Catchment Action Plans and the new regional NRM model more generally also present some new opportunities to create economic instruments and incentives which will sustain improved environmental outcomes over time without the reliance on ongoing grant funding. For example, broad endorsement of catchment targets helps define 'sustainable' land use and management in that region. This is an invaluable reference point for governments who wish to require industry to invest in sustainability as an offset for other activities in a region. The NSW Government's biobanking legislation represents a significant move in this direction and would benefit from integration with catchment targets. Likewise, the Australian Government's apparently increased willingness to pay for ecosystem services[46] could readily be channelled through Catchment Action Plans to pre-determined high-value ends.

As interest grows in reducing greenhouse gas emissions, governments and industry will look for opportunities to invest in carbon sequestration in soil and vegetation. Catchment Action Plans provide a ready-made framework to work out where to make greenhouse-related investments without unexpected negative consequences for biodiversity, water cycling and other issues. These market based mechanisms are likely to be most useful where they facilitate net resource transfers to agricultural enterprises, such as through the provision of carbon credits or biodiversity offsets for urban development.

At the most fundamental, we need a system where private land managers have the incentive to seek out, preserve and derive value from the ecosystem services which their land provides to them and others. The precise mechanisms for this require careful thought as society should not subsidise private activities that generate sufficient private benefits to make them viable, even if there are some incidental public benefits. However, there is a good argument for public funding of activities that generate both on farm and public benefits where those activities are not financially viable on their own.

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46 For a succinct overview of ecosystem services see Eamus, D., Macinnis-Ng, C.M.O., Hose, G.C., Zeppel, M.J.B., Taylor, D.T. and Murray, B.R. (2005) Turner Review No. 9, Ecosystem services: an ecophysiological examination. *Australian Journal of Botany*, 53, 1-19.

However, with the extent of restrictions placed on CMAs by the current system, these opportunities may be missed. For example, the PVP Developer values proposed offsets according to the anticipated improvements in their condition, and so puts greatest offset value on areas that will be improved from currently poorer ecological condition. As a result, the tool does not value past actions that have resulted in native vegetation being well managed since value is awarded for the improvement in ecological condition only. Ironically, the landholder who has previously degraded native vegetation and is now willing to improve it is rewarded over the landholder who has previously managed vegetation well.

This may create an incentive for landholders to run down the condition of native vegetation by over using existing land uses such as grazing ahead of negotiating any PVPs. If this was to occur, it would be highly undesirable since ecological and biodiversity values are typically lost quite rapidly, but restored very slowly.

4.5 More flexibility for CMAs in how they use the PVP Developer

The NRC recognises that some of the opportunities outlined above may take some time to eventuate, and will require CMAs to increase the sophistication of their investment prioritisation and the scope and acceptance of their Catchment Action Plans and targets. However, the NRC is confident the required improvements will happen with the right technical support from NSW and Australian Government agencies, and ongoing audits of progress by the NRC.

As a practical way forward, the NRC recommends that the NSW Government should give CMAs more flexibility in how they operate to improve and maintain environmental outcomes within the *Native Vegetation Act 2003*. To do this, the Government should amend the *Native Vegetation Regulation 2005*, assessment methodology and PVP Developer to more clearly articulate the Government's policy setting and give CMAs more discretion in how they achieve these. This discretion would help them overcome instances where the PVP Developer does not adequately consider landscape function and promote sustainable land use and progress towards catchment targets.

This would allow the PVP Developer to operate as a decision-support tool, but would avoid the rigidity of the tool undermining the quality of CMAs' decisions as they seek to invest strategically, partner with local communities and create incentives for better outcomes.

4.5.1 Proposed changes to the Native Vegetation Regulation 2005

The Regulation should require any property vegetation plan to demonstrate that it:

1. complies with the *Standard for Quality Natural Resource Management*, including that is based on the best available scientific understanding of landscape processes
2. can 'improve or maintain environmental outcomes' by managing landscape processes and resources to support the environmental, economic and social values expressed in catchment targets and regulatory requirements, and
3. is feasible to sustain ecologically and economically in that landscape.

The *Native Vegetation Regulation 2005* should require CMAs to use the *Standard for Quality Natural Resource Management* and their catchment targets to develop and review proposed vegetation plans. It needs to outline the:

- processes for CMAs and landholders to follow
- decision-making criteria that CMAs need to apply
- the nature and type of evidence that must be retained
- peer review, auditing and reporting required to ensure the quality of decisions.

Supplementary guidance could also be given on templates the CMAs could use to complete the main steps in each process, but these would not be mandatory.

The Regulation needs to be sufficiently open to allow CMAs and landholders, supported by appropriate experts within agencies or elsewhere, to:

- conduct fieldwork and research, and use best available information, models, tools and datasets (including those in the PVP Developer) to better understand the landscape proposed to be covered, its natural resource assets, current pressures on these, and the land's productive capacity
- develop and iteratively test plan scenarios to optimise the configuration of land-use and management actions against landholders' objectives, landscape planning priorities and landscape processes, and the catchment targets and priorities.

4.5.2 More checks and balances if CMAs' flexibility is increased

If CMAs are given more discretion in vegetation management decisions, it would be appropriate for there to be greater outside scrutiny of their decisions and clear processes to hold them accountable for the quality of those decisions.

The original plan for the PVP Developer to be a 'one-stop-shop' to make rapid decisions in the paddock is so far not occurring as most CMAs take data back to the office to work on draft PVPs before returning to the property to begin discussions with the landholder. Formally requiring CMAs to have adequate internal review mechanisms and be subject to periodic auditing and reporting on performance would not slow the process substantially beyond the time currently taken. In practice, most CMAs are finding landholders wish to consider a draft PVP for some significant time, before deciding whether to accept it or not.

Appropriate checks and balances should be established by the CMAs, with peer review mechanisms and internal checks by other staff and board members. The NRC should be asked to audit and sign off on the quality of these business systems. The NRC should also be asked to conduct periodic audits of how CMAs have exercised their discretion, and should establish processes for landholders, agency staff and other stakeholders to lodge complaints about suspected breaches for investigation and reporting.

4.6 Next steps

In this report, the NRC has recommended refocussing the current regulation of native vegetation to bring it in line with the joint NSW and Australian Government framework for management of all natural resources.

If the NSW Government accepts the advice, the next steps would be for:

- the NSW Government to:
  - amend the *Native Vegetation Regulation 2005* to clarify their policy settings at a more strategic scale, give CMAs more discretion and flexibility in how they can. improve and maintain environmental outcomes and move towards state-wide targets for NRM
  - review how to implement a landscape approach across other relevant NRM legislation such as the *Water Management Act 2000, Soil Conservation Act 1938* and *Coastal Protection Act 1979*
- NRM agencies to take the lead in developing the new assessment methodologies, based on a landscape approach as outlined in chapter 2 and the opportunities to improve the PVP Developer outlined in chapter 3 and table 3
- NRM agencies to support CMAs in:
  - developing sub-catchment, sub-bioregional, or 'landscape' scale spatial expressions of their catchment targets to reflect community values in 'top down' landscape design for particular landscapes
  - developing business models, decision-support tools and standard contracts to support landholders in developing 'bottom up' multi-property plans
- CMAs:
  - continue to develop and propose improvements to the current PVP Developer including linkages to catchment and state-wide targets
  - improve their Catchment Action Plans and targets in line with the NRC's recommendations so they become more broadly accepted by all layers of government, industry and the community as the clear priorities for NRM in each region
  - establish or improve current internal business systems for transparently assessing proposed PVPs in line with the *Standard for Quality Natural Resource Management* and any changes Government makes to the *Regulation.*

Attachment 1 Terms of Reference

Landscape Vegetation Plans

Terms of Reference

When Catchment Management Authorities are asked to consider vegetation plans developed at the landscape scale (involving areas of large land and/or multiple landholders), they must assess whether the proposals will 'maintain or improve native vegetation'. However, Catchment Management Authorities should also be encouraged to promote plans which are designed in a way which optimises economic and productive outcomes.

A landscape approach to vegetation management offers many potential environmental, economic and productive benefits over property-scale management because individual farm plans can be aggregated into a single landscape unit, involving a review of corridors and habitat areas to ensure connectivity and biodiversity is maximised whilst achieving greater economic and productivity gains.

The Natural Resources Commission will provide advice to the Ministers for Natural Resources and Environment on the potential for Landscape Vegetation Plans to produce better economic as well as environmental outcomes than single-farm, or small-scale property vegetation plans, as part of the process to develop an approach for assessing landscape scale vegetation management that may be submitted by multiple landholders under the *Native Vegetation Act 2003* and its associated regulations.

For this task the Commission will provide advice on:

1. The scientific and economic viability of multi-farm Landscape Vegetation Plans, commenting specifically on the general issues and any case studies with regard to:

    a) biophysical characteristics and environmental assets;

    b) potential threats to environmental assets;

    c) sustainability of potential land management systems; and

    d) anticipated economic benefits and potential risks of the approach over single farm property vegetation plans.

2. A robust 'landscape design' for sustainable management of a project area, commenting specifically on general issues and any case studies with regard to:

    a) landscape and property scale actions necessary to manage threats which will improve or maintain environmental outcomes; and
    b) management options which would increase productivity and would be sustainable over the longer term.

3. Any improvements that should be made to the *Environmental Outcomes Assessment Methodology, PVP Developer* and Catchment Management Authority procedures to facilitate landscape scale Property Vegetation Plans consistent with the *Native Vegetation Act 2003.*

Timeframe for advice: to be received before 31 May 2006, or sooner as is reasonably possible.

Attachment 2 List of submissions

The NRC received public submissions to its December 2005 Issues Paper and September 2006 Draft Report from the organisations listed below. The submissions can be accessed at www.nrc.nsw.gov.au.

- Australian Plants Society NSW
- Border Rivers/Gwydir Catchment Management Authority
- Central West Catchment Management Authority
- Coast and Wetland Society Incorporated
- Cobar Vegetation Management Committee (x 2)
- Department of Environment and Conservation
- Department of Lands
- Department of Natural Resources
- Department of Primary Industries
- Environmental Research and Information Consortium
- Future of Australia's Threatened Ecosystems
- Greening Australia
- Hawkesbury-Nepean Catchment Management Authority
- Lower Murray Darling Catchment Management Authority
- Nature Conservation Council and Total Environment Centre
- Nature Conservation Trust of NSW
- New South Wales Minerals Council Limited
- Northern Rivers Catchment Management Authority
- NSW Farmers Association
- South West NSW Land Management Group
- Southern Rivers Catchment Management Authority (x 2)
- The Wilderness Society
- Western Catchment Management Authority
- Western Lands Advisory Council

Attachment 3 Some examples of landscape approaches

This section reviews some of the experience with landscape planning. Examples in NSW are reviewed from the small scale group farming of the Tilbuster Commons, to the larger scale Land and Water Management Plans, and Regional Vegetation Plans.

Example 1: Tilbuster Commons

Tilbuster Commons Pty Ltd was a registered private company of landholders who collaboratively managed approximately 1,300 ha of prime grazing land in the New England Tablelands.[47] The Tilbuster Commons were four adjacent farms located in the Tilbuster Creek sub-catchment 20 km north of Armidale. Their approach was to manage the four farms as if they were one property.

The landholders objectives included: freeing up of time; improving the environment; resilience of the resource base; and financial returns. The individual landholders contribute land, livestock, infrastructure and labour to the management of the Common.

The benefits the landholders experienced included:

- a 7-12% increase in income
- long-term conservation and maintenance of high conservation value ecosystems
- improved water quality of creeks (300%)
- improved pasture, weed, water and drought management
- more efficient accounting, book keeping and management practices
- farm diversification into organic certification and lavender oil production.

Some of the key characteristics of the Tilbuster Commons included:

- an ability to allocate available resources more efficiently across the larger area of land
- a core set of shared values across all landholders
- practical governance that defined how costs and profits were shared.[48]

Example 2: Furracabad Valley

Furracabad Valley is located outside of Glen Innes in the New England Tablelands. The Furracabad Landcare Group explored the practicality of managing a group of farms as one entity to achieve efficiencies and develop better employment, social and economic conditions for the landholders and their surrounding community.

Initiated in 2002, the process for developing the 'farm cluster' included: undertaking a resource audit of the valley; identifying the gains and outlining a structure for the cluster; and developing a business plan acceptable to landholders.

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47 The Tilbuster Common initiative was designed as a 3 year experiment, scheduled to finish in 2003. Due its success, the initiative continued until 2005 (pers com David Brunkhorst, Director Institute of Rural Futures, UNE Armidale).

48 Brunkhorst, D. (2002) *Creating a contemporary Common Property Resource management institution*, Final report to Land and Water Australia, Institute for Rural Futures, UNE, Armidale.

Although the valley consists of 25-30 farms, only 5 landholders ultimately expressed an interest in forming a cluster, which amounted to an area of approximately 2,500 ha. Additionally, as the process for developing the cluster progressed, fewer landholders were willing to commit to managing their property within a group farming company. Ultimately, it was concluded that the farm cluster was not a viable option for Furracabad Valley landholders.

The Furracabad Valley experience identified a series of key lessons for a successful multi-property plan. These included the need for:

- a critical mass of landholders within proximity to one another and with a willingness to commit to a group farming arrangement
- investment of time in changing the individualist attitude of landholders and building trust and confidence within a group in order to effectively negotiate equitable outcomes
- enshrining the social and environmental benefits in the group farming arrangement, including building children's skills to ensure long term sustainability of the 'family farm'.[49]

Example 3: Land and Water Management Plans

Land and Water Management Plans were established during the privatisation of the formerly NSW Government owned Irrigation Areas and Districts in the Murray and Murrumbidgee regions. Plans were negotiated between irrigators and government as part of the broader agreement by which the newly privatised entities took over managing the channels and other water supply and drainage infrastructure.

Land and Water Management Plans were designed to achieve multiple objectives across large areas of land and multiple properties. The objectives of the four plans are to achieve: sustainable agricultural productivity; protection and enhancement of the region's natural biodiversity; a stable community; and to avoid the creation of future downstream impacts.

The Murray plans are underpinned by a 30 year agreement between the local community and the NSW Government, under which government makes ongoing payments to fund aspects of the plans. The plans are set within an institutional framework that, according to Murray Irrigation Limited, "demands commitment and accountability by landholders, the implementation authorities and government."[50]

The plans are an integrated strategy of farm level and district scale works and education, monitoring and research and development programs. There are six main components of the strategy:

- improved community understanding involving education, research and development and monitoring and review
- increased adoption of better farm management practices
- enhancement of biodiversity
- managing stormwater runoff

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49 Marshall, G.R., Fritsch, S.J., and Dulhunty, R.V. (2005) Catalysing Common Property Farming For Rural Sustainability: Lessons from the Furracabad Valley, *Australasian Agribusiness Review Vol. 13.*

50 Murray Land and Water Management Plans, at www.murrayirrigation.com.au/lwmp/

- stabilising high watertable areas
- improving the efficiency of the irrigation supply system.[51]

Each plan took considerable time and resources to negotiate. Essential to their successful implementation has been the well-resourced management and strong Board governance that each privatised irrigation corporation had already created to operate the privatised legal entity.

Example 4: Southern Mallee Guidelines

In June 2000, the Southern Mallee Regional Planning Committee prepared the *Southern Mallee Regional Guidelines for the Development of Land Use Agreements*[52] (the Guidelines). The Guidelines cover approximately 47,000 square kilometres in the far south west of NSW (4.7% of the Murray-Darling Basin).

The Guidelines formed a planning context within which landholders entered individual land-use agreements. The land-use agreements contain explicit landscape scale contextual linkages on issues such as biodiversity connectivity and the regional significance of vegetation. Essentially, the property plans set aside land for conservation in exchange for the approval to develop other parcels of land for dryland cultivation.

Subsequently, the Southern Mallee Regional Planning Committee formalised a range of Best Management Practices for conservation and sustainable development and maintenance of cultural heritage interests under the Guidelines.

The Guidelines demonstrate the benefits of landscape scale vegetation planning even where this vision for the landscape is enforced by individual property agreements. The practicality of this system was also aided by the very large size of individual properties in the region. This made it comparatively easier to identify possible environmental improvements on individual farms that would offset proposed land-use changes on that farm.

Example 5: Regional vegetation planning

The *Native Vegetation Conservation Act 1997* (NVC Act) provided for a regional approach to native vegetation management through Regional Vegetation Management Plans (RVMPs). The NVC Act provided RVMPs with the status of a planning instrument under the *Environmental Planning and Assessment Act 1979*.[53] Community-based Regional Vegetation Committees (RVCs) were to develop RVMPs for 22 designated regions throughout NSW. However, there were considerable delays in the implementation of the regime envisaged under the Act. By late 2002, thirteen RVMPS were drafted with only two gazetted by 2003 - Mid-Lachlan and the Riverina Highlands RVMPs.

RVMPs were intended to provide certainty to landholders by specifying the circumstances when development consent was required to remove vegetation, as well as detailing measures

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51 Ibid.

52 *"Southern Mallee Regional Guidelines for the Development of Land Use Agreements" – to address clearing, cultivation, nature conservation and cultural heritage issues*. Prepared by the Southern Mallee Regional Planning Committee, June 2000. See also 'The Southern Mallee Regional Guidelines" A Case Study in *Regional Native Vegetation Management Plans: a model,* Prepared for the World Wide Fund for Nature, December 2000, at www.org.au/publications/regional_native_vegetation.pdf

53 S. 36, *Native Vegetation Conservation Act 1997*

for the protection of high conservation value vegetation, and strategies to meet the objects of the NVC Act.

RVCs were appointed by the Minister for Land and Water Conservation to prepare RVMPs. The Committees comprised a range of representative stakeholders which were to make consensus decisions wherever possible[54] RVCs also were responsible for reviewing and monitoring a RVMP. The NVC Act prescribed a range of matters for consideration and suggested content.[55]

The *Native Vegetation Conservation Act* 1997 was repealed with the gazetting of the *Native Vegetation Act* 2003. With this action, the RVMP process ended. The two gazetted RVMPs ceased to have legal status and could not be formally implemented. However, the NSW Government stated that there would be consultation with RCVs to integrate existing RVMP into Catchment Action Plans.[56]

It would appear the RVMP process contributed to the ultimate demise of the NV Act. Their slow development[57] and doubts in whether they could be adequately enforced appear to be two key factors that caused uncertainty in the success of RVMPs and the NVC Act (and ultimately eroded governments political will).

Factors that appear to have contributed to the slow development of RVMPs included:

- difficulties in members reaching consensus
- members lacking appropriate skills
- a lack of quality data on which to base decisions, including appropriate mapping
- access to appropriate technical knowledge to develop the plans
- a perception that government was interested in a 'one-size fits all approach'.[58]

RVMPs were to contain regulatory provisions relating to native vegetation clearing that control development and land use. Compliance monitoring and enforcement appeared to be key concerns for some stakeholders. For example, it was argued that inadequate mechanisms for enforcement, combined with low penalties were unlikely to discourage non-compliance with the NVC Act. [59] It was also argued infringements were likely because RVMPs were to introduce self-assessment to landholders with no established assessment skills. [60] Similar sentiment was

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54 When consensus could not be reached, majority voting was to be used and dissenting members could submit a minority report, Section 12(1) (2) and (3), *Native Vegetation Conservation Act 1997.*

55 S. 25 and 27, *Native Vegetation Conservation Act 19977*

56 DIPNR (2004) Fact sheet: *Catchment Management Authorities — their role in delivering the reform program*, Sydney.

57 Productivity Commission 2004, *Impacts of Native Vegetation and Biodiversity and Regulations,* Report no. 29, Melbourne after Community Reference Panel 2001, *Report on Term of Reference 1: Review of Exemptions*, Minister for Land and Water Conservation's Review of Aspects of the *Native Vegetation Conservation Act 1997*, October.

58 Productivity Commission 2004, *Impacts of Native Vegetation and Biodiversity and Regulations,* Report no. 29, Melbourne.

59 Bartel, R.L. 2003, 'Compliance and complicity: an assessment of the success of land clearance legislation in New South Wales', *Environmental Planning and Law Journal*, vol. 20, pp. 116–41.

60 Audit Office of New South Wales 2002, *Performance Audit Report: Department of Land and Water Conservation — Regulating the Clearing of Native Vegetation*, August.

expressed publicly by the Wentworth Group, the Australian Conservation Council and the NSW Nature Conservation Council.[61]

In announcing the new Native vegetation reforms in NSW, the NSW Government, "considered that the regime through the NV Act was overly complicated and couldn't deliver agricultural and conservation outcomes".

In its submission to the NRC, the Department of Primary Industries listed the key features of the RVMP process/plans as:

- ownership of the process by the community
- a hierarchy of scaled response which enabled strong links from regional objectives to property management
- the plans minimised public and private land tenure differences for native vegetation management.

Other submissions noted Draft RVMPs provides a wealth of existing material to provide landscape context for property planning and CAP development.[62]

61 Through submissions and references to the Productivity Commission 2004, *Impacts of Native Vegetation and Biodiversity and Regulations*, Report no. 29, Melbourne.

62 Submissions from Coast and Wetland Society and Department of Lands.

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