A REVISED INCENTIVE POLICY FOR REMNANT VEGETATION CONSERVATION

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NINTH REPORT OF THE PROJECT
Economics of remnant native vegetation conservation on private property

Acknowledgments

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Reports of the project *Economics of remnant native vegetation conservation on private property*

Report 1
Lockwood, M., Buckley, E., Glazebrook, H. (1997) *Remnant vegetation on private property in northeast Victoria*. Johnstone Centre Report No. 94. Johnstone Centre, Albury.

Report 2
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Report 3
Lockwood, M., Carberry, D. (1998) *Stated preference surveys of remnant native vegetation conservation*. Johnstone Centre Report No. 104. Johnstone Centre, Albury.

Report 4
Walpole, S., Lockwood, M., Miles, C.A. (1998) *Influence of remnant native vegetation on property sale price*. Johnstone Centre Report No. 106. Johnstone Centre, Albury.

Report 5
Miles, C.A., Lockwood, M., Walpole, S., Buckley, E. (1998) *Assessment of the on-farm economic values of remnant native vegetation*. Johnstone Centre Report No. 107. Johnstone Centre, Albury.

Report 6
Miles, C.A., Lockwood, M., Walpole, S. (1998) *Incentive policies for remnant native vegetation conservation*. Johnstone Centre Report No. 108. Johnstone Centre, Albury.

Report 7
Walpole, S., Lockwood, M. (1999) *Catchment benefits of remnant native vegetation conservation*. Johnstone Centre Report No. 129. Johnstone Centre, Albury.

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Lockwood, M., Walpole, S. (1999) *Benefit cost analysis of remnant native vegetation conservation*. Johnstone Centre Report No. 130. Johnstone Centre, Albury.

Report 9
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As at September 1999, copies of Reports 3, 6, 7, 8 and 9 were available from Michael Lockwood, PO Box 789 Albury, 2640, Phone (02) 6051 9884. Reports 1, 2, 4 and 5 are out of print. Reports 4 and 5 are available by email - contact mlockwood@csu.edu.au

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1. Introduction

This document is the ninth in a series of reports arising from a project entitled *the economics of remnant native vegetation conservation on private property*. The project focuses on the Northeast catchment in Victoria and the Murray catchment in NSW. In the first phase of the project, remnant vegetation on private property (RNV) was identified using remote sensing in conjunction with field surveys. The economic values associated with these remnants were then assessed. These values included both market and nonmarket economic benefits and costs. A preliminary benefit cost analysis (BCA) indicated that the community would gain a net economic benefit from economic incentives that led to improved RNV conservation in the two study areas. In September 1998 we published a report that reviewed a range of policy options, and outlined a proposed incentive policy for delivering improved RNV conservation (Miles *et al*. 1998a). The report was widely circulated, and generally well received. However, we considered that further development and refinement of our proposal was required. First, we conducted a survey of landholders to determine their response to some key elements of the policy proposal. Second, we sought comments from two local experts in the field. This was in addition to comments made by Carl Binning from CSIRO and steering committee members on the initial policy proposal. Since publication of our initial proposal, we have also completed a BCA of improved conservation management of RNV in the two study areas (Lockwood & Walpole 1999).

This current report integrates these various sources into a modified policy proposal. In Section 2 we present the results of the landholder survey. The comments we received from the two reviewers are summarised in Section 3. A brief description of the BCA results is given in Section 4. In response to these two sources of comment, as well as the BCA, we have revised and elaborated on our original policy proposal, as described in Section 5.

2. Landholder survey

In late 1997 and early 1998, landholders in the two study areas were surveyed to measure the costs and benefits they faced to conserve RNV. Surveys were conducted of 100 Victorian and 122 NSW landholders in the two study areas who owned property containing RNV. Values assessed included grazing, timber products, stock shelter, mitigation of land degradation, weed control, pest control, fence maintenance, fire management and the opportunity cost of not being able to clear RNV for some other use.

The surveys also asked whether the landholders were willing to make further comment on RNV policy. Of the 222 initial respondents, 148 indicated that they might be willing to participate in a follow up survey. These landholders were sent a mail survey that was designed to assess their views concerning the main features of the policy proposal detailed in Miles *et al*. (1998a). Four main aspects of the proposal were assessed:

- non-binding management agreements;

- binding management agreements;
- employment of an RNV Officer; and
- priority areas for RNV conservation.

To provide an indication of whether the views of landholders had changed over the intervening year, two of the questions in the original survey were repeated in this second survey. These questions concerned the types of benefits that landholders believed to be associated with RNV, and any plans they may have for clearing RNV over the next ten years. The survey instrument is given in Appendix 1.

The 148 landholders were sent a covering letter reminding them that when they originally undertook the first survey, they had indicated a willingness to participate in further research regarding incentives for remnant vegetation conservation. They were then informed that one of the major findings from the first survey was that remnant vegetation is costly to manage, and that financial incentives may be required by landholders to undertake conservation activities. The policy proposal regarding incentives for remnant vegetation conservation was introduced, and the purpose of the survey was described as being the research team seeking landholders' views on how useful these policy proposals might be. Enclosed with this cover letter was the survey instrument and a postage paid return envelope. As with the previous survey, it was emphasised that participation was entirely voluntary, and the answers would be kept strictly confidential.

The surveys were mailed out in November 1998, followed by a reminder notice for those that had not returned the survey within two weeks. A total of 74 completed surveys were returned, (38 from Victoria and 36 from NSW) - a 50% response rate. The results from the survey are summarised in Table 1.

There was support for both non-binding and binding management agreements, though this was tempered by a significant degree of uncertainty. There was no significant difference in the responses of Victorian and NSW landholders.

Many respondents made additional written comments on the proposals. Eleven respondents commented on the need for larger economic incentives than those provided under the non-binding agreements. Three landholders specifically referred to the need to increase the funding available to support fencing, and four argued that there was a need to compensate landholders for not being able to graze, log or clear the RNV. Suggestions on a funding formula were offered, such as a compensation package based on 70% of the production value of cleared land on a per hectare basis; or developing a formula based on DSE capacity and wool price, plus fencing. Seven landholders provided additional comments supporting the non-binding agreements, while eight said they needed more detailed information before they could make a commitment. Six commented on problems associated with funding fencing works. Several already had areas fenced, and so would not get any benefit from such an incentive, while others pointed out the impracticality of fencing when the native vegetation was fragmented or in flood prone areas.

With respect to binding management agreements, several landholders again expressed a need for more detailed information. Thirteen offered additional comments in

support of binding agreements. Three were concerned about how a binding agreement would carry forward in the event the property was sold. One landholder was concerned that the incentives offered under the binding agreements were too high, and that this would encourage 'the wrong people' to enter into agreements. Seven respondents preferred non-binding agreements to binding agreements because they were concerned about losing rights or management control over their land.

Table 1. Landholder survey results

Question		Victoria (N = 38)	NSW (N = 36)
Would enter into a non-binding agreement	**Yes (%)**	37	56
	No (%)	5	8
	Maybe (%)	55	36
	Don't know (%)	3	0
Would enter into a binding agreement	**Yes (%)**	45	53
	No (%)	11	6
	Maybe (%)	45	39
	Don't know (%)	0	0
Value of an RNV Officer	**Useful (%)**	55	75[+]
	Not useful (%)	11	3
	Maybe (%)	29	19
	Don't know (%)	3	6
Priority areas of RNV *(average: 0 low, 1 medium, 2 high)*	**High quality RNV**	1.5	1.3
	Veg. type all on private land	1.4	1.7
	Links between areas	1.2	1.2
	Rare species	1.9	1.8
Benefits of RNV *(% yes, excluding N/A)*	**Stock production**	85	94
	Crop production	32	73[#]
	Land deg. control	89	88
	Timber	79[+]	57
	Clean water	89	87
	Habitat	76	83
	Nutrients & soil	89	96
	Recreation	68	64
	Aesthetics	86	100[#]
Intending to clear	**% yes**	37[#]	14
	Average area (ha)	14	81
Likelihood of clearing *(of those intending to clear, % of responses 3 or above on a scale 1 very unlikely to 5 very likely)*	**Pines**	7	40[+]
	Hardwood	57	60
	Pasture	71	40
	Grapes	14	0
	Crop	21	0
	Rice	0	0
	Other[1]	14	20

[+]Significantly higher than the value for the other study area ($0.1 < p < 0.05$)
[#]Significantly higher than the value for the other study area ($0.05 < p < 0.01$)
[1]Chestnuts, Olives, Mill logs

There was strong, although not unanimous, support for the funding of an RNV officer. The support was stronger in NSW than in Victoria. Seventeen respondents offered additional comments supportive of the proposal, while six felt it would be a waste of money. Several of the latter preferred funds to be spent on on-ground works, rather than in employing advisers.

In terms of categories of RNV that should be priority targets for management agreements, the average rating for all categories was medium to high. The highest average priority was for areas containing rare, threatened or vulnerable species, and the lowest was for areas that provide links between blocks of native vegetation. Six respondents added comments to the effect that conservation of all RNV should be a high priority. Two commented that lower priority should be given to areas adjacent to public land because they considered that those areas were not well managed. One person felt that the most important priority should be to improve the quality of RNV.

There were no significant differences in the responses between the 1997/98 and late 1998 surveys with respect to intention to clear RNV, area to be cleared, and the reasons for clearing. There were also no significant differences in the proportion of respondents recognising increased stock production, land degradation control, recreation and aesthetic values as benefits associated with the RNV on their properties. However, in the second survey significantly more respondents from both States recognised clean water and nutrient cycling as RNV benefits, and significantly more NSW respondents recognised habitat and crop protection benefits. Significantly less NSW respondents recognised timber production benefits.

In order to preserve confidentiality, individual's names were not linked with their responses, so it is not possible to directly assess any changes in views between the two surveys. The validity of comparing the aggregated results for the two surveys, as was done in the previous paragraph, depends on the sub-sample of respondents answering the second survey being representative of the entire sample from the first survey. This may not be the case for at least some relevant attributes. For example, under-representation of NSW respondents from the eastern half of the catchment may explain the increase in identification of crop protection benefits and decrease in timber production benefits. Nonetheless, it is possible that the observed increase in recognition of clean water, nutrient cycling and habitat values may indicate an increase in awareness of these benefits of RNV since the first survey.

3. Expert review of the draft policy

In addition to the comments provided by steering committee members, the draft policy proposal (Miles *et al*. 1998a) was sent to two reviewers. The reviewers were chosen on the basis of their familiarity with both RNV issues and the current policy environment. The following issues raised by the reviewers will be addressed in Section 5.

1. More emphasis needs to be given to maintaining and improving conservation values through research and development, education, extension and use of tools such as decision support systems.

2. The relationships between the three levels of government established by the policy should be consistent with the *Intergovernmental Agreement on the Environment* 1992.

3. There is a need to extend and more clearly specify the role of local government. Issues that need to be addressed include whether there are any economic benefits to constituents, and costs to local government of administering the policy.

4. The proposal needs to address the problem that the economically and geographically smaller councils in NSW will have more difficulty engaging with the policy, and there will also be greater complexity in establishing effective partnerships to implement the policy given the large number of councils across the Murray Catchment.

5. Rate rebate schemes are difficult to promote with councils. Local government needs to be more involved to attract their support.

6. The role specified for State government agencies is obscure and indirect. The proposal needs to increase the role of State government agencies in delivery of the policy - they have the jurisdictional responsibilities, expertise and can potentially provide funding.

7. There is a need to involve State agencies in assessing applications for management agreements. They have existing programs and activities in this area, and excluding them sets up barriers to cooperation. Management agreements need to include the relevant State agency as well as the Catchment Management Authority (CMA) in Victoria and the Catchment Management Committee (CMC) in NSW.

8. State agencies need to be involved in the development of RNV management plans.

9. There is a need to address the interaction between public and private land managers with respect to management issues such as weeds and feral animals.

10. There is a need to integrate the work of the volunteer groups to establish a broader base for implementation of the policy.

11. There is a need to indicate how the policy relates to local government planning instruments such as Local Environment Plans and Development Control Plans (NSW) and Planning Schemes (Victoria).

12. In practice, despite the availability of more attractive incentives under the proposed policy, some RNV will continue to be cleared, both legally and illegally. In Victoria, issuing approvals is the responsibility of local government, and the Department of Natural Resources and Environment (NRE) provide responses to planning applications on RNV clearing. This is the time when many RNV matters are considered. The development of RNV management plans should be complimentary to this process. A similar integration needs to occur in NSW.

13. There needs to be a more complete specification of how the proposal will relate to the provisions and implementation of the *Native Vegetation Conservation Act 1997* (NSW).

14. There is a need to take account of the *Threatened Species Conservation Act 1995* (NSW) and *Flora and Fauna Guarantee Act 1988* (Vic) in the proposal.

15. The balance that is sought between non-binding and binding agreements needs to be specified more clearly.

16. A more detailed specification of the scope of a typical RNV management plan is required.

17. There is a need to connect the proposal with the existing productivity partnership programs that provide landholders with training in matters such as whole-farm planning. RNV management needs to become a standard part of farm planning.

18. There is a need to provide for longer term funding of the policy by reducing the emphasis on the National Heritage Trust (NHT).

19. Financing of the policy is probably best done through a joint State-Commonwealth arrangement.

20. A fencing grant of $1,200 per km in non-binding agreements is too low to achieve effective participation. A rate of $2,000 would be more attractive.

21. There is a need to specify whether the emphasis is on the area or the quality of the RNV.

22. To the list of priority targets for RNV conservation, add groundwater recharge areas and streamsides.

4. Implications of the BCA for RNV policy

In a previous report, we detailed the economic values associated with conservation of RNV, and used BCA to aggregate these values for the two study areas (Lockwood & Walpole 1999). The BCA was based on the conservation outcomes specified in the improved RNV conservation scenario outlined in Table 2.

Table 2. RNV conservation scenario

Scenario	*Consequences*
Current situation maintained	• RNV on some properties is extensively grazed and/or used for timber products[1] • RNV on some properties is not fenced[1] • Some landholders have intentions to clear over the next 10 years (7,174 ha in Victoria and 3,425 ha in NSW) • Biodiversity decline will continue on some properties
Improved RNV conservation scenario	• Fence largest RNV block on each property where this is currently unfenced • Prohibit all RNV clearing • Allow grazing consistent with biodiversity conservation[2] • Allow collection of firewood and posts consistent with biodiversity conservation[3] • Rate of biodiversity decline will be reduced

[1]See Miles *et al*. (1998a) for details.
[2]Based on limiting grazing to a maximum of 10 weeks per year. Details of grazing regimes consistent with achieving biodiversity outcomes need to be determined according for the particular requirements of each vegetation type. At present such detail is unavailable.
[3]Limit firewood and post extraction to a maximum of 0.5 tonne/ha/year. Miles *et al*. (1998a) also assessed the on-farm costs of excluding timber extraction altogether.

Net present values were computed at a discount rate of 7% over two time periods- 5 years and 40 years (Table 3). An important influence on the result of the BCA was the inclusion or otherwise of the opportunity costs (OCs) faced by landholders if they are prohibited from clearing any RNV. OCs were not included in the 5 year analysis, because landholders wanting to clear to establish pasture, hardwood or softwood plantations, or for horticultural activities such as orchards, would not obtain a return on their investment within five years. The opportunity costs associated with activities such as establishment of orchards and vineyards were very high. We therefore also assessed the effect of excluding these opportunity cost components from the analysis (the limited OCs results in Table 3). Since no NSW participants indicated that they would potentially clear RNV for such alternative uses, this calculation only affected the results for the Victorian study area.

Table 3. Summary of BCA results

	Net Present Value ($ million)	
	Victoria	*NSW*
5 year conservation program	29.8	40.5
40 year conservation program, all OCs	-44.9	30.6
40 year conservation program, limited OCs	22.5	30.6

The BCA showed that there is a net economic benefit in moving to the conservation scenario, provided the orchard and vineyard related OCs are not included in the analysis.

Two benefit components underlie the BCA results - a private benefit to the productivity of downstream properties, and a public benefit associated with biodiversity conservation and aesthetic values. Note that the benefits to downstream properties are entirely due to the prohibition on clearing, whereas the improvements in RNV management and preventing clearing both contribute to protection and enhancement of biodiversity. The costs all accrue to landholders in the two study areas. A compensation payment that encouraged or enabled landholders to manage their RNV according to the conservation scenario would, under most circumstances, yield net economic benefits.

A publicly funded incentive scheme that achieved the conservation outcomes specified in Table 2 would yield net economic benefits provided the payments did not exceed the values, (depending on the assumptions made), given in Table 3. In terms of RNV policy, we prefer the 5 year time horizon to enable review and where necessary revision.

We also consider that it is neither practical nor appropriate to compensate landholders for the opportunity costs of being prohibited from clearing RNV. It would be very difficult to identify those landholders genuinely desiring to clear without attracting strategic behaviour on the part of some landholders who would have had no intentions to clear prior to compensation being available. In addition, it would be manifestly unfair to reward those who wish to clear by making available compensation that was not available to those wishing to retain their RNV. The principle of granting compensation to landholders for not being able to clear RNV can also be challenged. Binning & Young (1997) distinguish between a duty of care (where costs of RNV conservation are regarded as part of the normal costs of production) and provision of non-marketable public conservation service (in which case, economic incentives are appropriate). They go on to suggest that a duty of care should apply to those management practices that are required to achieve land use objectives at a regional or landscape scale. We consider that the duty of care applies to a requirement that landholders retain existing RNV, whereas improving the RNV management involves provision of public conservation service. This justifies provision of incentives based on costs to landholders associated with: (i) loss of productivity arising from a reduction in grazing and timber products extracted from the RNV; and (ii) the costs of improved RNV management associated with fencing, weed control and feral animal management.

On this basis, governments could spend up to $29.8 million in Northeast Victoria and $40.5 million in the Murray catchment and still achieve a net economic benefit, provided the conservation outcomes were achieved. However, we need to further qualify these BCA conclusions. First, no policy has guaranteed outcomes. Since the BCA assumed that the desired conservation objectives will definitely be achieved, the net benefits are over-estimated to the extent that this does not occur. Second, the BCA did not incorporate transaction costs associated with establishing and implementing the policy. These costs arise from activities such as acquiring information about policies, analysing their implications, negotiating and administering contracts, and collecting and administering payments. As demonstrated by Whitby *et al*. (1998), the transaction costs that accrue to both public agencies and landholders with respect to implementation of conservation policies can be considerable.

Third, the actual budget for the incentive policy should be such that the desired conservation outcomes are delivered at minimum possible cost. This will ensure that the net economic benefits of the conservation achievements are maximised. That is, the lower the costs, the larger the surplus of economic value that accrues to the community. A cost effectiveness analysis is beyond the scope of our work, as are assessments of transaction costs and the probability that the desired conservation outcomes will be achieved. Fourth, given that the policy, or something like it, should not just be restricted to the two study areas, and a diminishing community willingness to pay would be expected for additional catchments, further work is required to establish a suitable funding cap for State-wide programs. Finally, budgets for such programs are of course a matter for political consideration. For these reasons, we refrain from suggesting a budget for the incentives outlined in Section 5, but offer the preceding discussion and benefit estimates as inputs into the decision making process.

5. Modified policy proposal

This section presents a revised incentive policy proposal for RNV conservation in the two study areas of Northeast Victoria and the Murray catchment of NSW. The policy is based on the initial proposal outlined in Miles *et al*. (1998a), results of the landholder survey, expert review, and outcomes from the BCA. The components of the policy are indicated in Figures 1 and 2[1]. Specific aspects of the proposal are detailed below.

Management agreements

The popularity of management agreements as an effective tool to protect and enhance RNV was discussed in Miles *et al*. (1998a). Individual management agreements allow an agency to design a menu of contracts that are more likely to achieve agency objectives in a cost effective manner (Weaver 1998). The landholder survey reinforces the potential of such agreements, as well as the need to offer landholders the opportunity to select either a binding or non-binding management agreement. The weakest aspect of non-binding agreements is a lack of certainty that the anticipated benefits of RNV conservation will be realised. Binding agreements, on the other hand, will maximise the probability that benefits will be achieved and maintained.

Binning & Young (1997) emphasised the need for financial incentives to be tied to entry into binding management agreements in order to secure permanent protection of RNV. As indicated by the landholder survey, if substantial economic incentives are offered, the majority of landholders are likely to at least consider entering into binding agreements. However, binding agreements, because of their restrictive nature, tend to be less accepted by landholders. Concerns, for example have been raised by landholders about losing rights or management control over their land. In the longer term, this may change as such agreements become more commonplace, and if greater

[1] While the proposal has been specified in terms of our two study areas, clearly many of our suggestions lead to policy questions that extend well beyond Northeast Victoria and the Murray catchment. Addressing these questions is beyond the scope of our work.

trust develops between landholders and the institutions involved in RNV conservation. There is therefore an urgent need to establish constructive relationships between agencies and landholders. Of course agencies such as Greening Australia, NRE, the NSW Department of Land & Water Conservation (DLWC) and National Parks and Wildlife Service (NPWS), have already been making efforts to address this issue. This effort must be maintained and strengthened through ongoing communication, partnership development and education. Organisations such as the Murray CMC and Landcare groups can assist in this process by providing crucial bridges between government agencies and landholders.

Figure 1. Structure of the proposed policy package (Northeast Victoria)

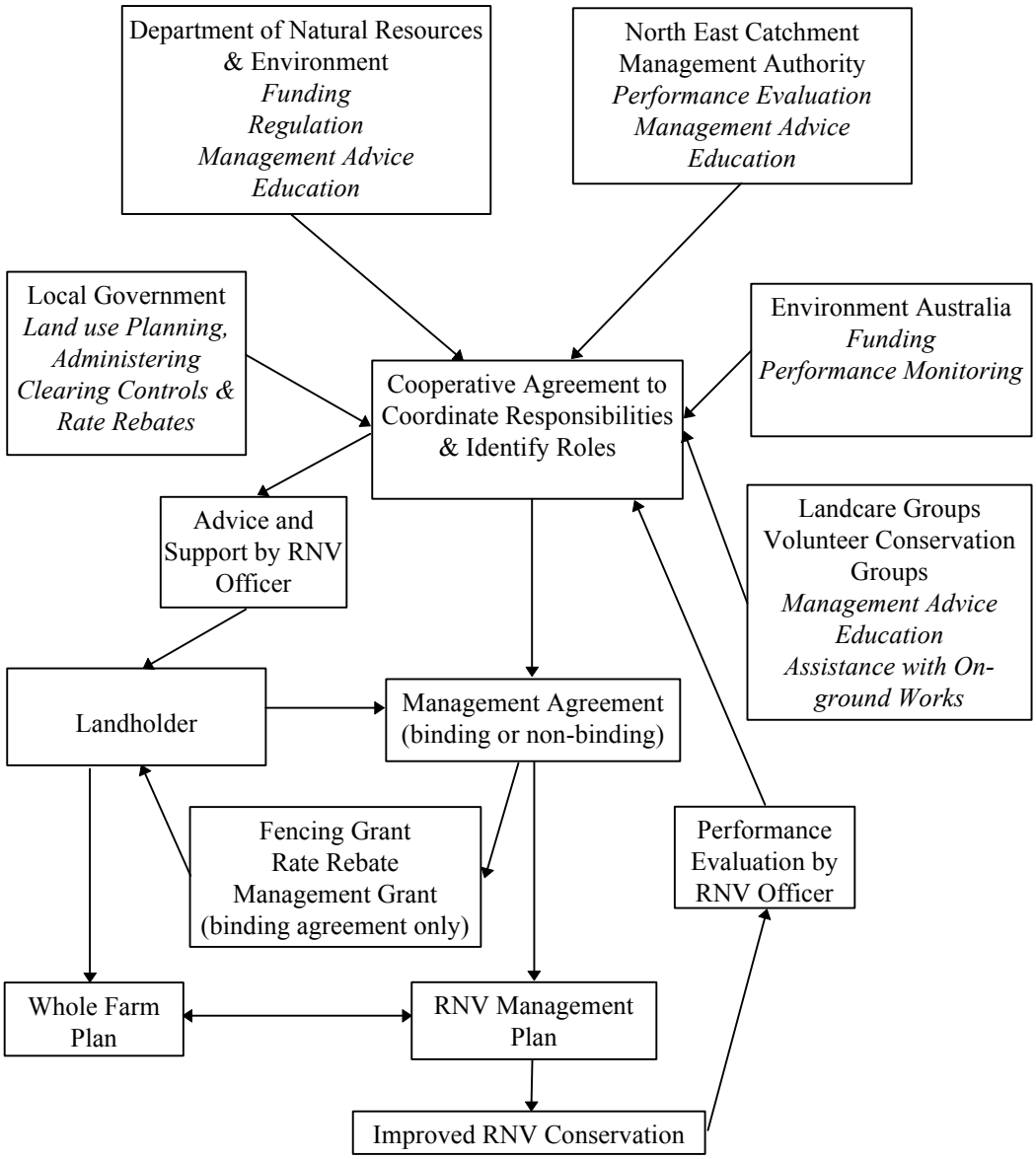
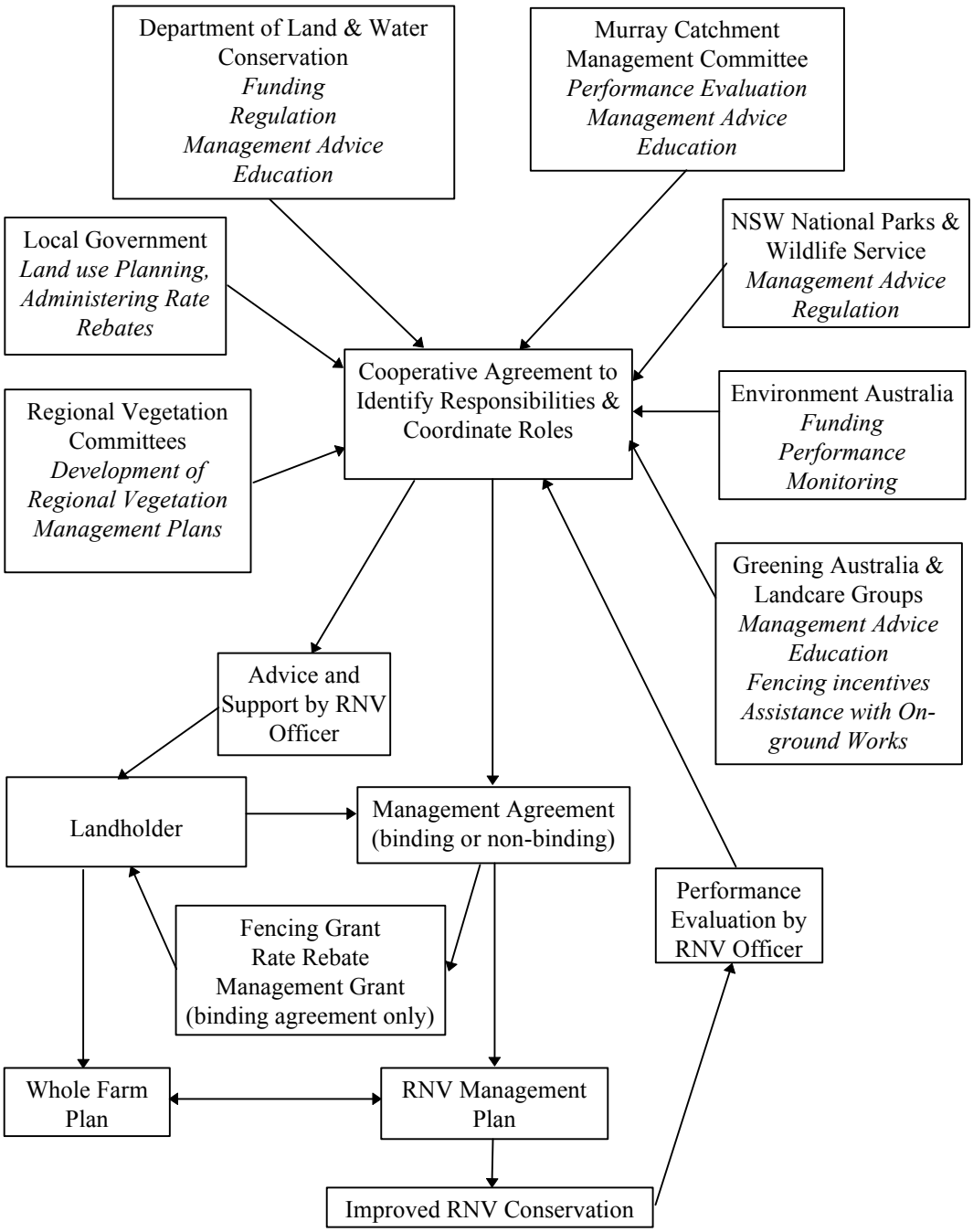


Figure 2. Structure of the proposed policy package (Murray Catchment)



In the short term, it is likely that non-binding agreements will continue to be more popular with landholders. In the longer term, an attempt should be made to tip the balance more towards binding agreements. Of course the balance between binding and non-binding agreements will, in the end, be decided by landholder choices. Those responsible for managing the agreements (see below) need to have appropriate marketing and education programs in place to ensure that landholders make these choices in an informed way, and in a climate conducive to acceptance of an agreement. To be successful, management agreements must engage strong landholder support and commitment. Such agreements need to be seen as

partnerships between the landholder and the contracting organisation. Terms of agreements need to be binding on both the landholder and the contracting organisation (NPWS 1996).

We suggest that the following two types of agreement be offered to landholders.

1. Non-binding management agreements that include:

- RNV management plans;
- direct grants of up to $2,000/km to contribute towards fencing costs; and
- 100% rate rebates for the area of RNV under the management agreement, with a minimum payment of $250 per annum.

2. Binding management agreements that include:

- RNV management plans;
- direct grants for fencing materials and labour up to $5,000/km;
- 100% rate rebates for the area of RNV under the management agreement, with a minimum payment of $250 per annum; and
- annual payments for RNV management costs (such as control of weeds and feral animals), based on the mean cost per study area as determined by Miles *et al*. (1998b), calculated as an annuity over 5 years.

We suggest that both types of agreement should be of five years duration. This time period should be sufficient for short term management objectives to be achieved, while providing a limit on the duration of government support. Renewal of agreements should be based on satisfactory performance as measured against the objectives of a management plan (see below).

Institutional arrangements

As indicated in Figures 1 and 2, there are many agencies, organisations and individuals with a stake in RNV management and conservation. For the Victorian study area, the relevant agencies and organisations include the Northeast CMA; NRE; the Commonwealth government agency Environment Australia; the local governments of the Alpine Shire, Indigo Shire, Rural City of Wangaratta, Towong Shire and Rural City of Wodonga; and community organisations such as Landcare groups. For the NSW study area, the relevant agencies and organisations include the Murray CMC; DLWC; Regional Vegetation Committees (RVCs); NPWS; Environment Australia; Greening Australia; the Shires of Wakool, Murray, Berrigan, Corowa, Hume, Albury, Holbrook, Tumbarumba Windouran, Conargo, Jerilderie, Urana, Lockhart and Culcairn; and Landcare groups. At present, attempts to establish an effective approach to RNV conservation is being hampered by the difficulty of co-ordinating effort across such a large number of institutions.

We suggest that the way forward is for all institutional stakeholders to jointly develop and enter into a Cooperative Agreement for RNV conservation. Such a partnership arrangement should be established in accordance with the following guidelines.

1. The process for arriving at an agreement be initiated and hosted, in the first instance, by the CMA and CMC, with organisational support from NRE and DLWC.

2. RNV management should occur within a nested institutional structure that takes advantage of existing institutions and allows each level of government to take action at a scale that is appropriate to its jurisdiction (Binning & Young 1997). The agreement should be consistent with the *Intergovernmental Agreement on the Environment 1992* that sets down the broad roles and responsibilities of the three levels of government with respect to environmental matters. Some pertinent points from the agreement include:

    - the development and administration of the policy and legislative framework will remain the responsibility of the States and local government;
    - Local government has a responsibility for the development and implementation of locally relevant and applicable environmental policies within its jurisdiction in co-operation with other levels of government and the local community;
    - the Commonwealth will continue to co-operate with the States in agreed programs;
    - the States have primary responsibility in the general area of nature conservation;
    - the Commonwealth has a particular interest in facilitating the effective and efficient co-ordination of nature conservation across all jurisdictions; and
    - there is a need for national co-operation to ensure that native vegetation remnants that are ecologically significant on a national scale are identified, management and protection arrangements are consistent across borders, research initiatives are co-ordinated and not duplicated, and that off-reserve protection activities complement the reserve system.

3. In recognition of the problem that the economically and geographically smaller councils in NSW will have more difficulty engaging with the policy, and the greater complexity in establishing an effective partnership, special attention should be paid by the Murray CMC and DLWC to encourage participation by NSW councils.

4. The agreement should designate one of the institutions as having responsibility for managing the implementation of the policy, including authorising management agreements, delivering incentives, and employing where necessary, additional RNV officers. Landholders would then have a 'one-stop shop' from which they could enter into agreement, receive incentive payments, develop an RNV management plan, and receive support and advice from an RNV Officer. The designated management institution (DMI) should have the necessary legal powers to enter into both binding and non-binding agreements with landholders.

In our initial proposal, we suggested that the CMA/CMC be responsible for employment of RNV Officers and direct administration and delivery of the policy. We considered that these bodies could provide the important regional perspective necessary to manage issues, and satisfy demands for accountability of public expenditure. However, on the basis of the comments from the reviewers, we have left identification of the DMI as a matter for negotiation between those institutions with an interest in participating in the development of the Cooperative Agreement. The revised proposal also has the potential to more effectively integrate the responsibilities of local government into delivery of the policy. The recent trend for State governments to establish regional institutions such as CMCs and Vegetation Management Committees in NSW, and CMAs in Victoria, has led to tensions between the roles and functions of these organisations relative to local government. There is concern amongst local governments and others about potential confusion and conflicts with respect to statutory functions, the uncertain longevity of these new regional bodies, and since they are generally not elected, their potential to diminish local governance (Binning & Young 1998).

The respective roles of local governments and State government agencies, and their relationship with the CMA/CMC, can be specified in the Corporative Agreement. Where organisations such as Greening Australia are already providing incentives, they should also be a party to the agreement. This would help avoid unnecessary duplication of effort and overlapping of responsibilities.

5. Design of the institutional arrangements under the Cooperative Agreement should where possible build on existing strengths of the partner organisations. For example, the Nature Conservation Working Group of the Murray CMC and Greening Australia provide useful models for effective engagement with landholders and successful delivery of fencing incentives.

6. Applications for management agreements should involve the DMI, and the relevant State agencies if these are not the DMI.

7. As part of developing the agreement, consideration should be given to whether any of the existing instruments for establishing non-binding or binding agreements between landholders and a public institution can be used or adapted to fulfil the purposes of this proposed policy. The relationship between existing RNV incentives should also be established.

   Incentives are currently offered by the Commonwealth government, State agencies and non-government institutions. Bushcare, a program under the Commonwealth's NHT that is administered by Environment Australia, can assist landholders from both study areas to better manage their RNV.

   In NSW landholders can currently enter into various agreements and access a range of incentives for RNV conservation. Management contracts are non-binding voluntary agreements that can be negotiated between a landholder and DLWC that enable landholders to access grants of up to $10,000 for activities which conserve native vegetation on their properties including: fencing; site preparation; feral animal control; weed control; and tree and shrub planting.

Property Agreements can be negotiated for amounts over $10,000. A Property Agreement is a voluntary binding agreement between a landholder and the DLWC outlining the management of native vegetation on an individual property. The NPWS administer Voluntary Conservation Agreements and Wildlife Refuges that are non-binding voluntary agreements under the *National Parks and Wildlife Act 1974*. Greening Australia has a fencing incentive program that operates in the Murray CMC.

Victorian incentive programs that have some component that may contribute to RNV management include the Land Protection Incentive Scheme (a State-wide program designed to assist landholders to carry out landcare works such as protective fencing, soil erosion control, tree planting and salinity control); and the Tree Victoria program which makes grants available to rural groups to assist with revegetation and remnant protection projects. Victorian landholders can enter into Trust for Nature voluntary covenants, while NRE offers Land Management Corporative Agreements and Land For Wildlife agreements.

A central issue to be decided in the process of developing the Cooperative Agreements for the two study areas is which of the following three arrangements should apply:

- the existing range of incentives is maintained with our proposal integrated into one or more of these schemes;

- the existing range of incentives is maintained and a new scheme introduced along the lines we are suggesting; or

- our proposal replaces some or all of the existing incentives.

8. The agreement should recognise the interaction between RNV management by private landholders, and public land management by government agencies, especially with respect to issues such as weeds and feral animals. This recognition may simply require reference to the neighbour relations programs State agencies already have in place to deal with such matters, but some additional assurance that management efforts in private RNV will not be compromised by the standard of adjacent public land management may be necessary.

Increased prohibitions on RNV clearing

The agreement should establish that no clearing of RNV is to be permitted for uses such as grazing, cropping, hardwood or softwood production. As noted in Section 4, we regard retention of RNV as a duty of care. Permits for clearing RNV in areas suitable for high value uses such as viticulture could be considered. This increase in restrictions on RNV clearing are in line with the results of the BCA reported in Section 4. These prohibitions should be recognised in local government and regional planning instruments such as Local Environment Plans and Regional Vegetation Management Plans (NSW) and Planning Schemes (Victoria).

We recognise this suggestion is counter to current land use planning practices in both study areas. In NSW, areas available for clearing without permit are to be identified in Regional Vegetation Management Plans developed by RVCs. Plans (that are still in preparation) will: (i) identify areas where native vegetation can be cleared without application; (ii) identify areas where an application to clear will be necessary; (iii) identify areas of RNV that must be retained; (iv) allow clearing exemptions to be developed according to regional requirements; (v) highlight areas where the condition of native vegetation should be improved; and (vi) recommend areas that should be revegetated. Note that because RVCs have not been established based on regional catchments, the Murray catchment will encompass more than one RVC. We recommend that the RVCs adopt a 'no clearing' policy for all RNV, contingent on the availability of suitable incentives to enable landholders to manage their RNV effectively.

In Victoria RNV clearing controls operate through planning permits under the State section of the Planning Scheme under the *Planning and Environment Act 1987*. Local government administers all clearing permits. If the application concerns an area less than 10 ha, this is the only level of administration that is involved. If the area is greater than 10 ha, or involves timber harvesting, the application is also referred to NRE. The *Planning and Environment Act 1987* specifically rules out the possibility of compensation for those refused permits to clear. We recommend that the local sections of the relevant Planning Schemes include a RNV zone that prohibits clearing, except for the high value uses mentioned above.

Funding

An essential part of the proposed management agreements is the provision of financial incentives. There are a range of direct management costs associated with RNV protection. These include the cost of erecting fences, maintenance of fences and tracks, weed and feral animal control, and fire management. Most landholders in the two study areas will experience a net loss if management regimes are introduced to enhance conservation values (Miles *et al.* 1998b). It is therefore an aim of the management agreements to offer financial assistance to landholders to undertake best management practices. Funding is also required to cover additional staff costs (see under implementation) and to compensate local government for costs imposed on them by the policy.

Direct funding to landholders under non-binding agreements will be limited to a contribution that will cover part of the costs of fencing RNV (up to $2,000 per km), plus a rate rebate. The lower level of financial support attached to non-binding agreements reflects the relative uncertainty that the anticipated benefits would be delivered. This is an increase of $800 per km compared with the initial proposal, which was set at $1,200 to be consistent with the level of funding provided under Greening Australia and NHT programs for non-binding agreements. However, comments by both the reviewers and landholders suggested that an increase was necessary to improve the attractiveness of non-binding agreements, particularly in Northeast Victoria. It also needs to be recognised that fencing costs vary considerably depending on factors such as topography and accessibility. It is likely to cost more to fence RNV in Northeast Victoria and the eastern part of the Murray

catchment, than in the central and western parts of the Murray catchment. The administering agency may wish to consider building some flexibility into the level of incentives offered to account for these factors.

As an added incentive to secure the long-term protection of RNV, the level of financial assistance will increase for binding agreements. Funding would be available to cover the full costs of fencing, including labour, for a cattle proof fence. Since these costs depend on property specific factors such as topography, the grant should be based on actual fencing costs for each property. Quotes from fencing contractors we contacted, as well as Victorian Department of Agriculture estimates (Boord & Trapnell 1993), suggested that these costs are generally between about $3,000 and $5,000 per km. We have therefore placed a $5,000 per km cap on the grant. Landholders committing to binding agreements would also be covered for any increase in costs arising from implementation of the management plan. The average magnitude of these costs for the two study areas is given in Table 4.

Table 4. Productivity and management costs of RNV conservation

	Net cost (present value) of a 5 year conservation scenario ($/ha RNV)	
	Northeast Victoria	*Murray catchment*
On-farm productivity	34	51
RNV management	238	121

Given that the general community and downstream landholders have been identified as beneficiaries of improved RNV management, there is a potential justification for these two groups to fund the incentive scheme. The general community could 'purchase' the biodiversity, aesthetic and landcare benefits via government funding of the incentive scheme. Extracting a contribution from downstream landholders would be more complex. Unlike biodiversity values, the external benefits would also be largely maintained regardless of the RNV management regime, as long as the vegetation is not cleared and is not suffering incremental decline. The major costs to landholders in this regard are the opportunity costs associated with not being permitted to clear RNV for some alternative land use. As noted in Section 4, it is not practical to compensate landholders for the opportunity costs of being prohibited from clearing RNV. In addition, according to the stated preference surveys that were used to determine community willingness to pay for conserving RNV (Lockwood & Carberry 1998), protecting the condition of the rural landscape with respect to factors such as soil and water is also regarded as a public benefit by many people. For these reasons, we recommend that the incentive policy be entirely government funded.

Although the details of funding arrangements need to be sorted out as part of the Cooperative Agreement process, we suggest that the funding is probably best done through a joint State-Commonwealth arrangement. State and Commonwealth funding of the program is consistent with the fact that the policy is primarily directed at improving RNV management, thus providing public good benefits associated with biodiversity conservation, water quality and aesthetic amenity.

Although rate rebates may not be a large financial incentive for landholders, they are a symbolic way of recognising landholders' efforts to manage RNV. Since rates are levied by local government, this proposal would require co-ordination under the Cooperative Agreement between local government and the DMI. The legislative basis for local councils offering rate rebates for conservation purposes is described in Cripps *et al*. (1998). We propose that the local governments provide a 100% rebate on rates levied on RNV for those properties covered by either type of management agreement, with a minimum payment of $250 per annum being made to all landholders entering into an agreement. This minimum payment is required because small rebates give no incentive to landholders, and may be seen by them as a waste of time, or even an insult. Since local government need to be supported in their RNV conservation effort, State-Commonwealth funds should be used to reimburse councils the foregone rate revenue, as well as covering increased administration costs.

Implementation

On-ground implementation of the policy will require a joint effort on the part of landholders, agency staff and possibly the assistance of volunteer organisations such as Landcare groups and the Victorian Trust for Conservation Volunteers. Organisations such as NRE, DLWC, NPWS, Greening Australia, Murray CMC and a network of the Upper Murray Landcare Groups already employ officers who have, at least in part, some role with respect to RNV conservation. Currently in the NSW study area, there are fencing incentive officers (Greening Australia), native vegetation officers (DLWC), and a native vegetation project officer (CMC) who could potentially take on the role of RNV Officer. Similarly, in the Victorian study area there is a Bushcare officer, a revegetation officer, and a farm tree extension officer (all NRE). It may be possible for these officers to undertake the proposed RNV management duties. However, it may not be viable to appoint extra duties to these existing officers, hence the appointment of new RNV Officers will probably be required. The roles and responsibilities of professional personnel involved in RNV management, and the complementary relationships between them, should be specified in the Cooperative Agreement. Part of the Cooperative Agreement process should be to identify whether either one or more of these existing staff members who can be given responsibility to implement the policy; or additional staff are required for effective implementation of the policy.

In any case, we suggest that RNV Officers for the two study be identified and given responsibility for:

- encouraging and administering applications for management agreements;
- assessing the quality of RNV sites;
- developing management plans with landholders;
- providing information and technical advice on best practice RNV management; and
- assessing performance against criteria set down in the management agreements.

Delivery of the actual RNV conservation activities (fencing, weed control and so on) would be the responsibility of the landholder, with support from a RNV Officer. The

role of the RNV Officer would be to provide management support, advice, and information on best management practices for RNV. An important priority for the proposed management agreements is to motivate landholders and to maintain their long-term interest in conservation. As well as the RNV Officer and CMA/CMC, landcare and other community education organisations will continue to have an important role in this regard.

Recipients

For reasons of equity, as well as community and political acceptability, any landholder with RNV in the two study areas should be eligible to enter into either a binding or non-binding management agreement. The regional catchment management plan and biodiversity action plans (NSW), together with the following priorities, should be used by the RNV Officer to rank landholder applications for entry into agreements:

- RNV containing any rare, threatened or vulnerable plant or animal species, and in particular those listed under the *Threatened Species Conservation Act 1995* (NSW) or the *Flora and Fauna Guarantee Act 1988* (Vic);
- high quality RNV;
- RNV containing a vegetation type that has a relatively high private land/public land ratio;
- RNV in groundwater recharge areas and along water courses; and
- RNV that links with other areas of native vegetation such as those on adjacent public land[2].

The objective should be to get as much area of the RNV in the above five categories under management agreements. Managing the RNV to maintain or enhance its quality will be addressed in the RNV management plan that is required under a management agreement.

The rankings should be used to assist decisions concerning the merits of each potential agreement, and to allocate resources where they are likely to have the most benefit for RNV conservation. Regardless of their entry into an agreement, all landholders would be able to seek advice from the RNV Officer.

[2] We also note that Travelling Stock Routes are a particularly important repository for remnant native vegetation in the western part of the Murray Catchment Management Region in NSW. Although they are public land, and therefore not included in this study, management of these Travelling Stock Routes should reflect their significance for regional biodiversity conservation.

Management plans

Development of management plans as part of binding or non-binding agreements will be a joint responsibility of RNV Officers and landholders, in consultation with the relevant State agencies. Plans should include measurable objectives and indicate the actions required to achieve these objectives. Ideally, the RNV management plan should be a sub-plan of a whole-farm plan. RNV management needs to become a standard part of farm planning. Some indication of the willingness of landholders to be involved in property planning is given by the fact that, in 1995, 24% of Victorian Landcare group members were participating in property planning activities (Curtis 1996). These participation rates were in the absence of the economic incentives to be provided as part of this proposed policy package. The plan should also be consistent with higher level plans such as the regional vegetation management plans and regional biodiversity strategy in NSW, and the regional catchment management strategy and vegetation management plan in Victoria. While state government agencies have the capacity to develop plans and strategies, they do not have the capacity, or in some cases the local expertise, to effectively implement them. As noted above, this should be the responsibility of landholders in conjunction with RNV officers.

Given the lack of definitive best practice guidelines for RNV management, an adaptive approach should be used. Adaptive planning treats management as an iterative processes of review and revision. Management interventions are regarded as a series of successive and continuous adaptations rather than a set of rigid prescriptions. The approach emphasises flexibility, requires willingness to learn through experience, and may require sacrificing present or short term gains for longer term objectives (Briassoulis 1989). The emphasis is on learning how the system works through management interventions which are both issue oriented and experimental (Dovers & Mobbs 1997). Adaptive planning recognises that there is often considerable uncertainty about the outcomes of any particular action. This uncertainty is built into plans so that information about the actual results of actions are used to inform, and where necessary modify management practices. It is a process of learning by experience.

As described in Miles *et al*. (1998b), the two study areas have been stratified according to broad vegetation type, landform, climate and land use. For Northeast Victoria, the combination of all four land characteristics resulted in a total of 55 strata that contained RNV. For the Murray catchment in NSW, there are 79 strata containing areas of RNV. Each property will have specific management needs depending on these local environmental characteristics and other factors such as past uses of the RNV. While the general structure and format of plans can be standardised, specific objectives and actions will probably need to be developed for each property. Such a considerable planning effort will require the commitment of, and effective working relationships between, the landholders, RNV Officers and agency staff.

Specific matters that will need to be addressed in most RNV management plans include:

- weed control, and where possible eradication;

- feral animal control;
- grazing regimes, if any, including stocking rates and times;
- extraction of forest products such as poles, posts and firewood, if any, including quantities to be taken; and
- fire management.

Monitoring and enforcement

Effective RNV management requires that landholders feel they are being rewarded for sympathetic management (encouragement) and not have rigid management regimes imposed on them (hindrance) (Binning & Young 1997). Although the emphasis in the proposed policy is on providing incentives rather than controls, some mechanisms are required to:

- ensure appropriate expenditure of the funds provided;
- evaluate whether the objectives of the management plans are being achieved; and
- review the effectiveness of the program.

Funds allocated according to management agreements should be provided to landholders on a contractual basis, with the RNV Officers responsible for determining that the terms of the contract are honoured. Monitoring of performance against the management plan objectives would also be the responsibility of the RNV Officer. The approach in dealing with any deficiencies in plan implementation should be the provision of information, technical advice and encouragement, rather than sanctions.

The program should be subject to an initial evaluation after three years. This evaluation should avoid targeting individual properties, though assessments will need to be made of a sample of properties, but rather aim to form an overall view on the success of the program for achieving both property specific and catchment wide objectives for RNV management. Note that spending more money does not necessarily equate to better biodiversity conservation outcomes. The program evaluation should attempt to measure the program's value for money. The continuation of the program should be dependent on a positive evaluation report. The evaluation should be conducted by an independent consultant to the managing agency as determined under the Cooperative Agreement.

Communication and education

We have already alluded to several aspects of the policy that must be supported by ongoing communication between stakeholders, and by enhancement of stakeholder knowledge. A change in culture is also required, such that providing a supply of high quality nature conservation, aesthetic and land protection benefits to the community is widely recognised and accepted as a legitimate component of rural productivity. Private landholders need to be recognised for, and themselves come to accept, their significance as suppliers of nature conservation values. Such a cultural change can be fostered through, amongst other things, the ongoing communication and education efforts by all those rural institutions involved in RNV conservation - this includes government agencies, CMCs, CMAs, Landcare groups, and Greening Australia,

amongst others. Some landholders may also act as important role models in this regard.

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Appendix 1. Survey instrument

Remnant Native Vegetation Incentives and Policy Survey

This survey outlines some policy proposals regarding economic incentives for remnant native vegetation conservation, and *we would like your opinion* on how useful you think these proposals may be.

Please read the proposals carefully before you answer the questions. You may be aware that there are several incentive schemes already in place for remnant native vegetation conservation. However, for the purposes of this survey we would like you to assume that there are no other incentives for remnant vegetation conservation available to you.

Your participation in the survey is completely *voluntary* and the answers will be kept *confidential*.

The components of the proposed policy packages are outlined on the following pages, followed by some questions for you to complete.

In order to help you understand the policies being proposed, the following information may be helpful:

RNV — remnant native vegetation

Non-binding management agreement — these are voluntary in nature and fundamentally rely upon ongoing landholder support and participation.

Binding management agreements — these are contracts that bind the landholder for a fixed period of five years.

RNV management plan — this plan would be developed by the landholder with the assistance of a qualified technical officer. The plan will set out the management practices required to improve the conservation value of your remnant(s). For example, grazing management, weed control strategies, or regeneration strategies.

There are six questions in the survey, and it should take no more than 10 minutes to complete.

Question 1: Suppose you had the chance to enter into a **non-binding** RNV management agreement. This would involve:

- entering into a voluntary management agreement with your Catchment Management Authority (Northeast or Murray);
- you and a technical officer preparing a RNV management plan;
- a direct grant to you of $1,200/km to contribute towards fencing costs for areas of your remnant vegetation that are currently unfenced; and
- a 100% rate rebate for the area of RNV under the management agreement, with a minimum payment to you of $250 per annum for the term of the agreement.

If this agreement was available, would you be willing to participate?
☐ Yes ☐ No ☐ Maybe ☐ Don't know

Your comments on this proposal:

_____

_____

_____

_____

Question 2: Suppose you had the chance to enter into a **binding** RNV management agreement. This would involve:

- entering into a binding management agreement for 5 years with your Catchment Management Authority (Northeast or Murray);
- you and a technical officer preparing a RNV management plan;
- a direct grant for fencing materials and labour up to $5,000/km for areas of your remnant vegetation that are currently unfenced;
- a 100% rate rebate for the area of RNV under the management agreement, with a minimum payment to you of $250 per annum for the term of the agreement; and
- annual payments for RNV management costs (such as control of weeds and feral animals).

If this agreement was available, would you be willing to participate?
☐ Yes ☐ No ☐ Maybe ☐ Don't know

Your comments on this proposal:

_____

_____

Question 3: Suppose a RNV technical officer was employed by your Catchment Management Authority (Northeast or Murray). The RNV technical officer would:

- encourage you to enter into either a non-binding or binding management agreement, and administer your application;
- provide information and technical support on how best to manage your RNV;
- help you to develop and implement a management plan for your RNV; and
- assess and monitor the success of your management plan.

Do you think you would make use of the services of this person?
☐ Yes ☐ No ☐ Maybe ☐ Don't know

Your comments on this proposal:

_____

_____

_____

_____

Question 4: Priorities for funding.

Any landholder with RNV would be eligible to enter into either a binding or non-binding management agreement. However, due to potential funding limitations some priorities need to be established. How would you rate the following priorities? Please tick one box for each point.

Funding priority	**Low**	**Medium**	**High**
Landholders with high quality RNV			
Landholders with RNV containing a vegetation type that does not occur on public land			
Landholders with RNV that links with other areas of native vegetation such as those on adjacent public land			
Landholders with RNV containing any rare, threatened or vulnerable plant or animal species			

Your comments on this proposal:

_____

_____

Some additional questions:
In the previous Remnant Vegetation survey, we asked you the following two questions. We are interested to see if your opinions are still the same (it is important that the person who did the previous survey answer these questions, rather than another member of the household).

Question 5. Which of the following do you believe to be a *benefit* of having RNV on your property? (N/A = not applicable to you). Please tick one box for each item.

Benefits of RNV	**Yes**	**No**	**N/A**
Increased stock production due to shelter and shade			
Increased crop production due to shelter			
Land degradation control			
Timber for firewood and fencing			
Cleaner water			
Habitat for animals which help control pests			
Nutrient cycling/soil formation			
Recreation			
Aesthetics			

Question 6. Is there **any** chance that you would clear any of your RNV in the next 10 years? ☐ No ☐ Yes

a. If yes, how much? _____ha/acres

b. If yes, how likely (scale from 1-5) is it that you would want to clear the RNV for the following uses in the next ten years? Please circle one number for each item.

LAND USE AFTER CLEARING	**very unlikely**				**very likely**
Pine plantation	1	2	3	4	5
Native hardwood plantation	1	2	3	4	5
Pasture	1	2	3	4	5
Grape vines	1	2	3	4	5
Cropping (please specify type)	1	2	3	4	5
Rice	1	2	3	4	5
Other (please specify)	1	2	3	4	5

We appreciate the contribution that you have made to our project. If you would like be on our mailing list to receive our next Remnant Vegetation Newsletter, please write your name and address on a separate piece of paper and return with the survey.

Please return this survey as soon as it is convenient to Sandra Walpole in the self-addressed envelope provided.

Thank you for your time.