

SUB 38

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Hon Pam Allan
Chair
Standing Committee on Natural Resource Management
Legislative Assembly
Parliament House
Sydney NSW 2000

18th July, 2003

Re: Legislative Assembly Committee Inquiry into Natural Resource Management

The Nature Conservation Council is the peak environment group for the State of NSW. NCC was established in 1955 and currently reaches 150,000 individuals through its 130 member organisations. The NCC and its member groups have been campaigning and involved with natural resource management, including conservation, protection and management of natural resources since establishment.

The NCC has made significant contribution to the development of NSW government policy and management plans through its involvement in various state and regional natural resource management consultative and advisory committees.

NCC also provides guidance to its member groups and has developed policies on behalf of its member group constituency with regard to various aspects of natural resource management.

Our submission addresses the following terms of reference of the Inquiry:

- Current disincentives that exist for ecologically sustainable land and water use in New South Wales;
- Options for the removal of such disincentives and any consequences in doing so;
- Approaches to land use management on farms that both reduce salinity and mitigate the effects of drought;
- Ways of increasing the up-take of such land use management practices;
- The effectiveness of management systems for ensuring that sustainability measures for the management of natural resources in New South Wales are achieved;
- The impact of water management arrangements on the management of salinity in NSW.

NCC appreciates the opportunity to make a submission to the Committee regarding these important issues and has endeavoured to keep this submission brief. Please contact Samantha Newton (Natural Resources Coordinator, 02 9279 2522) or myself if you would like more information regarding any of the issues addressed herein.

Yours sincerely,

Brooke Flanagan
Executive Officer

For clarification, NCC has made a combined response to the first two items of the terms of reference.

Current Disincentives that exist for Ecologically Sustainable Land and Water Use in New South Wales and Options for the Removal of such Disincentives and any Consequences in doing so

Conflict between State and Commonwealth Governments

The inability of the State and Federal governments to reach agreement on various natural resource issues has led to significant delays in the implementation of important bilateral agreements. The lack of cooperation between different levels of government has affected many natural resource issues. For example, the current water sharing plan delay in NSW is a result of the wrangling between governments over issues of funding and policy direction. The water reform process has been in action for 5 years and there is still dissension as to water access entitlements and trading rules.

The reality is that both the Commonwealth and New South Wales Governments have responsibilities for the management of natural resources under various pieces of legislation. The Commonwealth has responsibilities under the *Environment Protection and Biodiversity Conservation Act* of 1999 (EPBC Act) and its predecessor legislation, and under various international treaties eg the migratory species agreements of JAMBA and CAMBA, the Ramsar Convention, the Convention on Biological Diversity. The State and Commonwealth have joint responsibilities under the bilateral agreements made under the EPBC Act and in regards to the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust. The State Government has responsibilities under various pieces of legislation, too numerous to mention here. They also have a role within the CoAG framework, and they have the major role of regulation and compliance over land use in NSW.

Both levels of government have committed funds to fixing the environment, whether through incentives programs or funding for conservation and rehabilitation. Unfortunately both governments seem to be relying on the other to make the first move in committing funding, despite the number of agreements signed. The most current case in point is the interim funding for the implementation of the priority projects nominated by the NSW Catchment Management Boards. Many Boards have only had one project funded out of the 3 or 4 they were requested to nominate. Despite a number of public announcements, the funding for many of these projects has still not been released, and therefore on-ground works have been unable to commence.

To solve this problem both groups need to commit substantial funds through State and Commonwealth budgets for environmental management and rehabilitation, and the governments need to honour their agreements and set a precedent by ensuring the promised funds are delivered in a timely fashion. The Commonwealth and State Governments must work together and support each other. This will be particularly important in the area of generating appropriate incentives, given these are applied at Federal, State and Local levels. Without this cooperation, it is likely incentives can duplicate resources, or work against each other. Formal Federal, State and Local partnerships regarding incentive delivery should be considered.

Legislation

NSW has numerous individual pieces of legislation that apply to natural resource management and this is a large and confusing burden for landholders to bear. The development application process is often complicated and requires several different forms and consultations. There is an effort within DIPNR, the new super department for natural resources management, to streamline this process, however issues of merging requirements for all pieces of legislation still have a long way to go.

One of the obvious solutions is to streamline the legislation, which is difficult and time consuming. In the interim it is necessary to provide guidelines and incentives for ecologically sound management of natural resources that can be widely promoted through the network of coordinators and facilitators. There are some moves for some licences and approvals to run through a joint application process, however there are still opportunities for improvements to be made. The process of streamlining legislation must avoid the temptation to oversimplify.

Allocation of Funds in State Government Budgets

Bottom line budget allocation for incentives is currently insufficient to firstly attract participants and secondly to adequately address the rehabilitation and conservation activities required. The processing of funds is often slow and budget delays can slow down on ground works.

Budget allocation for natural resources management and incentives needs to be increased to reflect the long-term importance of the environment and to bring spending for the environment in line with health, education etc. In a recent survey by ACF, people polled were asked if it was more important to leave future generations a healthy environment or a healthy economy, overall 64.4% of respondents answered that a healthy environment was more important. Effective policy development and education programs implemented immediately could provide both an economic and environmental solution in the future.

In the 2003-4 NSW Budget, education and health have been allocated \$8,159.3 million and \$9,267.2 million respectively, while environment, natural resources and planning have a combined budget of just over \$1,000 million. It is clear that the health of the land we live off, and environment we live in, is currently being given a low priority in the budget. The bottom line allocation of funds needs to be increased to reflect the importance of the health of the environment for our long-term social and economic well being and survival

Accessibility of Incentives Information

There are two stages to accessing incentives information and there are strong disincentives inherent in both. The first is finding information on the various incentives schemes available and the second is accessing the more detailed costs and benefits to the landholder and the required negotiation time with administering body.

There is much talk about the money *promised* by the Commonwealth and State Government for incentives programs - by Government. There is also much talk about the *need* for incentives - from farmers, environmentalists and the wider community.

There are a number of incentives programs - a detailed web search yielded a large number of sites, the following of which were very useful (Environment Australia, Natural Heritage Trust, National Parks and Wildlife Service, Environment Protection Authority, Greening Australia etc.). But, the difficulty is for regional people, who have very limited, and often unreliable, access to the World Wide Web. Some sources of funds are relatively well marketed, for example the Bush Heritage Fund, Greening Australia (fencing incentives), and Landcare. But in the majority of cases this information has not been adequately marketed outside the web site. Perhaps the most obvious solution would be to present a comprehensive, though brief document on the types of incentives available, with a brief description of how they apply and the benefits. This document would need to be available through local council offices, council libraries and regional offices of government. But the most effective means of getting information to people is through direct contact with other people. People need to be well resourced and trained and the extension networks assessed for gaps in coverage and action taken to address gaps. It is important to find ways of keeping good staff longer and maintaining intellectual capital.

The real disincentive is then in the next stage with the detail of the costs and benefits to the landholder of these incentives and the excessive time for negotiations with the relevant funding body. For example the Voluntary Conservation Agreements (VCAs) available through the National Parks and Wildlife Service are not as popular because they involve putting a covenant on the title of the land in perpetuity. For the small sector of the population that is willing to take this step, many get discouraged by the time required to undertake the negotiations. This is partly due to the lack of resources within the Service to spend time on negotiating VCAs.

Another major disincentive to conservation covenants such as VCAs is the lack of support from financial institutions. The first step to addressing this problem would be to work with financial institutions to develop (with Government, scientists and landholders) incentives programs that do not reduce the value of the property and that are supported and marketed appropriately.

Environment Australia commissioned two reports by several academics and WWF, looking at different incentive mechanisms. One report was a more comprehensive guide to policy makers on choosing appropriate mechanisms. The second report was for landholders to assist them in taking advantage of incentives that are available. NCC suggests that documents such as these need to be used to assist people to take advantage of incentives. Further, these types of documents should be expanded so that they provide practical guidance to catchment bodies on how to implement and take advantage of options available. These reports can be found on the following web-links:

Landholder document:

<http://www.ea.gov.au/water/wetlands/publications/management/index.html>

Policy document:

<http://www.ea.gov.au/water/policy/incentive/index.html>

Economic Valuing of Land and Activities through Market Forces

The major driver for uptake of ecologically sustainable land use practices in New South Wales is long-term economic viability for the property and the people associated with that property. Financial institutions such as banks have a key role to play here. Most farms have

high capital value, but low cash flow. This leads to a high dependence on borrowing from banks to update infrastructure and farm efficiency. The banks will not approve loans for activities that will not clearly produce an increase in farm productivity or to a farmer who is not aiming to use the land more productively. The key to changing this attitude is educating financial institutions in the reality that better environmental management practices can improve on-farm productivity and contribute to improving sustainability.

There are examples of farms being run very efficiently using conservation farming techniques and yet because their farms do not have high turnover or profit margins they are looked upon as being inferior farms. Retaining vegetation and other natural features is not valued and this has implications for lending etc and leads to landholder dissatisfaction with regulations. In addition to economic values, the social responsibility of landholders to retain native vegetation on their properties for the greater public good needs to be recognised, rewarded (eg stewardship payments) and fully appreciated by the broader community.

This presents a particular problem in attempting to measure the impact of native vegetation legislation on farmers. There are many studies that have been undertaken (eg under the RVMP processes in NSW, and now the Productivity Commission federally) which aim to identify the costs to landholders of regulations. These studies are often based on measuring land values. However, as noted above, land values may not address the non-marketed benefits of conservation, depending on the preferences of buyers and sellers.

The NCC would like to draw attention to two papers produced by WWF related to this topic. The first WWF paper is a submission to the Productivity Commission on the costs of native vegetation and biodiversity regulations federally. This emphasises that there are many problems with current methods to determine cost impacts. The second WWF report was focused on assessing a report by Professor Sinden of UNE, which argued excessively high costs to farmers of regulations. These two documents suggest some approaches that could and should be taken in seeking to address the issue of the costs and benefits of native vegetation, and how this may link to land valuations (both papers are attached for your information).

There needs to also be some education within the banking community of the long term benefits of sustainable farming and the long-term financial outputs from sustainable farms. Part of this process would be to determine why banks do not support such measures. This consultation process would then work through ways of overcoming these problems and should involve the wider community.

Taxation

Conservation is the most highly taxed land use at both a Federal and State level. Currently land managed primarily for conservation does not give the landowner access to the rebates and incentives enjoyed by rural producers.

This is a potential area of cooperation between the states and the Federal government. Many of the issues related to taxation are in the Federal jurisdiction, however there are significant opportunities for partnership with states, given the need to increase investment from private philanthropists and direct it to catchment levels. Greening Australia in partnership with CSIRO is investigating such options through the MBI funding under NAP through its Leverage Fund concept. Given NSW NAP regions are being considered, NSW should consider involvement in this initiative.

Carl Binning and Mike Young published a comprehensive paper in a report to the National R&D Program on Rehabilitation, Management and Conservation of Remnant Vegetation, Environment Australia, Canberra in 1999. This report can be found on the following web link:

http://www.ecosystemsproject.org/html/publications/docs/ea_taxman.pdf

The World Wide Fund for Nature, Australia (WWF) prepared a number of suggestions for reforming the taxation system to encourage conservation on private land:

Tax deductibility for bargain sales of land for conservation as well as for land donations with retained right of occupancy would make a major and lasting contribution to preserving critical ecosystems on private land."

"Bargain sales" - the sale of land to a conservation organisation for a value below its market price - had proved to be the single most effective method for achieving private land conservation in the USA. The gap between the full market value of the land and the sale price should be considered a charitable donation, and therefore recognised as a tax deductible gift.

This could be effected through amendments to the gift provisions of the Tax Act which would also make the sale exempt from Capital Gains Tax. Bargain sales exemption should also apply to donations of assets for which an annuity is paid and donations of items of cultural heritage.

WWF have suggested the following reforms to the taxation system:

- *Tax deductibility for land donations with retained right of occupancy*
- *Extension of the Landcare rebate to conservation land managers*
- *Removal of the GST for purchases of land for conservation*

The introduction of these cost effective reforms would send positive economic signals to the owners and managers of rural lands who are ultimately responsible for conserving a large proportion of Australia's biodiversity.

Currently, there are more than 1,400 nationally threatened species that require urgent conservation action. Many of these occur in agricultural areas where it is difficult and not cost effective to implement government conservation programs. Further tax reforms are needed to provide conservation with a taxation treatment commensurate with its public benefits rather than continuing to treat it as one of the most highly taxed land uses in Australia."

Conflict between, and efficiencies within, State Government agencies

There are a large number of agencies in NSW that have responsibilities for natural resources use and management, land use planning, and conservation and environmental management for example the NSW National Parks and Wildlife Service, the Department for Infrastructure, Planning and Natural Resources, the NSW Environment Protection Authority, State Forests of NSW, NSW Fisheries, NSW Agriculture, and the Department of Mineral Resources to name a few of the larger agencies. There are also a number of Statutory Authorities or government owned corporations such as the Sydney Catchment Authority, Sydney Water Corporation and Hunter Water Corporation that have significant roles to play.

Government agencies have differing aims and objectives, which often conflict. For example all the agencies listed above have clearly stated environmental responsibilities, but often the key objectives for the agency is to contribute to short-term economic growth. There is then a conflict with these agencies with regard to regulation and compliance issue. It is imperative that an agency that has production as its key objective is externally regulated.

Another problem with so many agencies with different and often conflicting key objectives is the assurance that all decisions reflect a 'whole of government' approach. For the reasons stated above in relation to regulation and compliance, it is difficult for all agencies to reflect a whole of government approach to any aspect of natural resources management. This is a significant problem and a significant disincentive to the uptake of ecologically sustainable land use practices because the community is often able to play one agency off against another - sometimes through loopholes in legislation and through the Land and Environment Court.

The lack of coordination between State government departments with natural resource responsibilities, that is, DIPNR, EPA, NSW Fisheries *and* NPWS and the lack of communication between the agencies has hobbled environmental protection. The recent creation of the DIPNR super department and ministry may solve one problem by combining planning and natural resources management, but at this stage it is too early to determine the success of this very large organisation. NCC hopes a change in the culture within the new planning and natural resources management department will lead to greater communication and coordination with other agencies.

Perverse Incentives

Drought and flood relief and other payments are not linked to natural resource management outcomes. Drought payments often penalise farmers that are managing their land well. Farmers who manage their farms sustainably have come this far through the drought with groundcover and reduced incomes, yet due to their excellent management they are ineligible for payments. Drought payments are incentives for poor management and should be abolished or drastically over-hauled to ensure that the payments are not acting as perverse incentives. All other payments need to be directly linked to the achievement of natural resource management outcomes. If specific targets are met and recommended management regimes implemented, then payments can be made. Too many 'relief' payments are linked to poor management and the costs associated with marginal farming activities.

A system for developing drought assistance should be focused on much earlier identification of problems developing. Assistance should be provided early in the drought process to ensure that stocking rates are appropriate and management systems are in place to deal with drought, rather than waiting until it is "too late", and the assistance operates as a perverse incentive.

Incentives for implementing sustainable farming practices should be developed and implemented. The benefits of such a system would be a reduction in the number of marginal farms requiring assistance to survive tough times, farms that have a lower level of debt associated with them and farms that are sustainable into the future. These programs need to have adequate support to ensure that there are good on-ground results. Coordinators and facilitators, such as the Landcare coordinators are essential to ensuring that information is disseminated and implemented in ways that are suitable to the local area.

3. Approaches to land use management on farms that both reduce salinity and mitigate the effects of drought

There are many approaches and land uses that can reduce or mitigate the impacts of salinity and drought on farm operations. Well vegetated riparian zones and wetlands, perennial crops, and farm forestry are all measures that can be used to aid in the reduction of salinity. The spacing and placing of crops and vegetation can be key players in reducing salt breakouts. Existing native vegetation, which provides wildlife corridors, shade for animals, maintains biodiversity and habitat, and lowers groundwater should also be fenced off and maintained. Planting of locally appropriate deep-rooted perennials that hold moisture in the ground, provide shade and habitat and lower the groundwater table should be promoted. All of the above measures work effectively to reduce salinity through groundcover and lower water tables and also work to mitigate the impacts of drought through retained soil moisture, shading to reduce temperatures and evaporation and groundcover which can recover more quickly after rain than over-grazed pastures.

Management practices that maintain soil crusts, shelter belts, use native pest control, provide shade, maintain soil cover and soil health (which reduces aerial erosion and increases organic matter content in soil) are more cost effective in the long run as they are less expensive options and they reduce the costs of pesticides and fertilisers.

4. Ways of increasing the take-up rates of such land use management practices

There needs to be better promotion of 'good' stewardship amongst farmers, landholders, and land managers through awards, media, documentaries, access to further levels of funding, tax breaks etc. Recognition of a job well done is crucial to farmers. Many of them try to do the right thing yet get lumped into the same group as those who have 'flogged' their land. The community needs to be made aware of the differences between the different types of land management and incentives to move towards this need to be encouraged. Labelling of food products would be a great way for consumers to have the choice of buying standard produce or that produced by healthy and sustainable farms.

There needs to be increased access to incentives especially stewardship payments/extension services payments to assist farmers to change management practices and protect the environment.

Farmers who have implemented sustainable farming practices should be encouraged to set up network of farmers to provide support and encouragement to each other and to promote sustainable agriculture to other farmers in their local areas in order to increase adoption of good stewardship practices. These groups could then be used as a focal point for the provision of information and demonstrations that show economic benefits of good management practices.

An effort to remove the disincentives discussed in the first section of this submission would also encourage the uptake of environmentally sustainable land use practices.

5. The effectiveness of management systems for ensuring that sustainability measures for the management of natural resources in New South Wales are achieved

Currently, there is a lack of monitoring and evaluation of compliance to sustainability principles. There is also very little enforcement in NSW of natural resource legislation in rural areas. With the confusion surrounding the current water and vegetation reform processes, the level of compliance is only going to decline. The NSW government needs to make a firm commitment to monitoring and enforcing natural resource management decisions. We recommend that an immediate moratorium should be called for all new landclearing applications until the reformed system is in place.

Ecologically Sustainable Development (ESD) indicators must be established in order to provide benchmarks against which performance can be measured. In conjunction with the indicators, performance targets must be established and mechanisms for measuring performance must be developed and applied. Any performance measures must be readily accessible and inexpensive to monitor – otherwise the process will become cost-prohibitive. The proportion of the budget set aside for monitoring of resource management decisions needs to be significantly increased and focussed on providing reliable information that can be used to improve management decisions. Currently data collection is ad hoc and short term. Committees and other groups are calling for long term reliable data and yet the government insists on short term highly targeted monitoring programs that do not consider overall environmental health, nor the development of trend data.

Monitoring of these processes should be undertaken by an independent body on a regular rotation to ensure that all targets are being met. The body should report on the level of progress being achieved and make recommendations for future work and target directions.

Active Stewardship for agreements registered on title is vital if the organisations holding the agreements are to be sure they are being upheld as ownership changes. Such stewardship programs can be combined with local educational activities to create informed and active “conservation communities”. The MDBC Landmark Project is also looking at appropriate policy options given a good scientific understanding of problems in particular regions. Reports from the Landmark Project are expected later in 2003, and the NSW government should consider the outputs and seek to build on them as appropriate.

6. The impact of water management arrangements on the management of salinity in NSW

Water Sharing Plans – It is the opinion of the NCC that the Water sharing plans will have limited impact on salinity management in NSW. The plans do not have salinity management as an objective nor were the committees given this target as a point of reference. The water in the plans is focused on volumes and timing and land use are not considered in these plans. Some of the environmental flows will be used to flush and dilute build ups of salts and algae within river systems but their primary goal is to ensure the fundamental health of the ecosystem and salinity management will be a part of that goal. The water sharing plans do not return enough water to the rivers to promote long term flushing and dilution effects and with the continued land uses such as irrigation and annual crops and pastures the amount of salt entering the river system is not likely to be reduced.

Murray Flows process – The Murray Flows process will again have limited results as it deals only with flow volumes and timing. It will aid in the management of salinity through flushing and dilution but these are short-term solutions to a long-term problem. The increased environmental flows will have greater dilution effects and the increased awareness of environmental issues this has generated may encourage other farmers to plant riparian buffers and get advice about conservation farming. The Murray Flows process will be beneficial for ecosystems in general and the improved flooding regime will help some ecosystems recover. Salinity management will be a by-product of this but more still needs to be done.

MDBC Cap – The introduction of the Cap will have some impacts on salinity as it effectively freezes development of water resources at 1993/1994 levels. However, not all catchments are working within cap yet and there are those that are regularly breaching cap. The savings in water that are generated by cap (if any) need to be returned to the environment for the management of ecosystems, riparian habitats and native fish populations. In most catchments new development has been significantly limited by the introduction of cap and that will be the most useful in managing the salinity problem within the Murray Darling Basin as new irrigation developments arise only when there is enough water saved from other farm activities. These efficiencies will help in lowering the groundwater, however they still do not help the mitigation of salinity with regards to deep rooted vegetation etc.

**Productivity Commission Inquiry on:
Impacts of native vegetation and biodiversity regulations**

A WWF Australia Submission

July 2003

Introduction

WWF welcomes the opportunity to participate in the Productivity Commission (PC) inquiry into the impacts of native vegetation and biodiversity (NV and B) regulations. It must be stated at the outset that WWF has significant concerns regarding the scope of the study. WWF is firmly of the view that for NV and B regulations to be effective, they must meet particular criteria, in that they must be economically and ecologically sound, socially acceptable, and desirably should be part of a suite of mechanisms designed to implement the objectives of ESD.

This study is only one small part of what is needed to determine the success or otherwise of NV and B regulations. The PC argues that there is minimal information on the impacts of the regulations and therefore a study like this is required. However, WWF asserts there is minimal information on all the aspects of the regulations, especially the benefits and how they are distributed. What is needed is an overall program related to all aspects of the regulations. A study such as this would therefore need to be seen in this context. Alternatively, this context must be adequately provided in the study itself. Results are otherwise liable to misinterpretation.

This submission is presented in two parts. The first provides general comments on the scope of the inquiry. The second addresses specific issues within the Terms of References of the Inquiry.

Part One: General Comments

Recommendation 1

The Scope of Inquiry should be broadened to include assessment of the benefits provided by biodiversity or retaining native vegetation

The scope of the inquiry is narrowly focused on determining the economic impact of the specified regulatory regimes on landholders. It is stated that “...*the commission has not been asked to assess the benefits of native vegetation and/or biodiversity conservation as such...*”. WWF considers this to be a serious omission, given that retaining native vegetation and reducing biodiversity loss have been shown to yield both direct economic benefits to landholders and to the broader community, enabling continued long-term sustainable use of the land.

Retaining native vegetation can provide substantial benefits (Gillespie 2000, Miles et al. 1998). Native vegetation can provide direct benefits to landholders by providing

shelter and shade for stock, grazing and firewood. Long term sustainability of land for agricultural use can also be improved by preventing erosion and salinity. This can benefit both landholders and the broader community. The value of the direct benefits to landholders has been estimated by Miles et al. (1998) as being \$36 /ha in the Victorian sample and \$630/ha in NSW. The community's Willingness to Pay for retention of native vegetation, which approximates its value to the community, has been estimated by various authors. For example, Lockwood & Carberry (1998) estimated the community value of native vegetation at \$760/ha. Hill (2002), in her review of consultant's reports on the NSW Regional Vegetation Management Plans (RVMP) identified "*The lack of recognition or quantification of specific environmental and economic impacts of maintaining native vegetation*" as a key issue.

WWF considers that the Commission should broaden the scope of the inquiry to include an assessment of the benefits of retaining native vegetation and improved biodiversity. The regulations provide direct benefits to landholders and indirectly to the community. These will contribute to reducing salinity and land degradation, contributing to achievement of long-term sustainability of commercial enterprises.

By putting the benefits aside, the PC raises a question of what the appropriate costs are to consider in a study focussed solely on costs. There are at least two aspects of benefits that impact on an interpretation of cost calculation. Firstly, the private benefits of biodiversity and native vegetation would lead to a lower net cost faced by an individual farmer. Secondly, the costs imposed by agricultural practice (recognising the regular problem of sunk costs and differentiating past from current costs) would need to be identified, and ideally should be linked to those landholders generating external costs. Again, this would lead to a lower net cost faced by the individual farmer. If the PC study took a comprehensive approach to benefits and costs, all these factors would be considered and the problem of determining "what cost" in isolation would disappear. In the absence of such a complete study, WWF asserts that it is the net costs to farmers that should be reported.

Recommendation 2

The Commission should recommend that guidelines be established for preparing Social and Economic Assessments of the impacts of Biodiversity and Native Vegetation regulatory regimes

Many of the socio-economic studies on the impacts of retaining native vegetation reviewed by WWF have focused on determining landholder costs, ignoring benefits. In addition, the basis for estimating future opportunity costs were based on flawed assumptions, in general, overstating the impact on landholders. Hill (2002), observed that the terms of reference provided to consultants preparing socio-economic studies on the impacts on the NSW Vegetation Management Plans were inconsistent and in general, did not request that the benefits of retaining native vegetation be quantified.

WWF considers that the Commission should recommend that guidelines be provided to establish a common and accepted basis for assessing the socio-economic impacts of the native vegetation and biodiversity regulations.

These guidelines should:

- Include assessment of economic, social and *environmental* impacts.
- Clearly indicate that the assessment results in a determination of opportunity costs not actual losses.
- Provide guidelines to methodology to be used
- Provide an indication of issues to be considered and reasonable assumptions for the assessment.

Part Two: Comments on Specific Issues

The Commission has identified major issues for the Inquiry. WWF has commented on those issues considered most relevant from an environmental perspective. The issues commented on are:

- 2.1 Impacts on landholders and Regional Communities
- 2.2 Efficiency and effectiveness of regulatory regimes in reducing *costs* of resource degradation.
- 2.3 Adequacy of assessments of economic and social impacts
- 2.6 Options to reduce adverse impacts of environmental regimes

2.1 Impacts on landholders and Regional Communities

WWF Comments:

Has current legislation resulted in significant costs to landholders?

The Commission proposes to review the impact the EPBC Act and Regulations on native vegetation have had or is likely to have on landholders. Given the Act only came into force on 16 July 2000, WWF considers that this limited period (about 3 years) is insufficient to rigorously determine neither the costs nor the benefits of the Act.

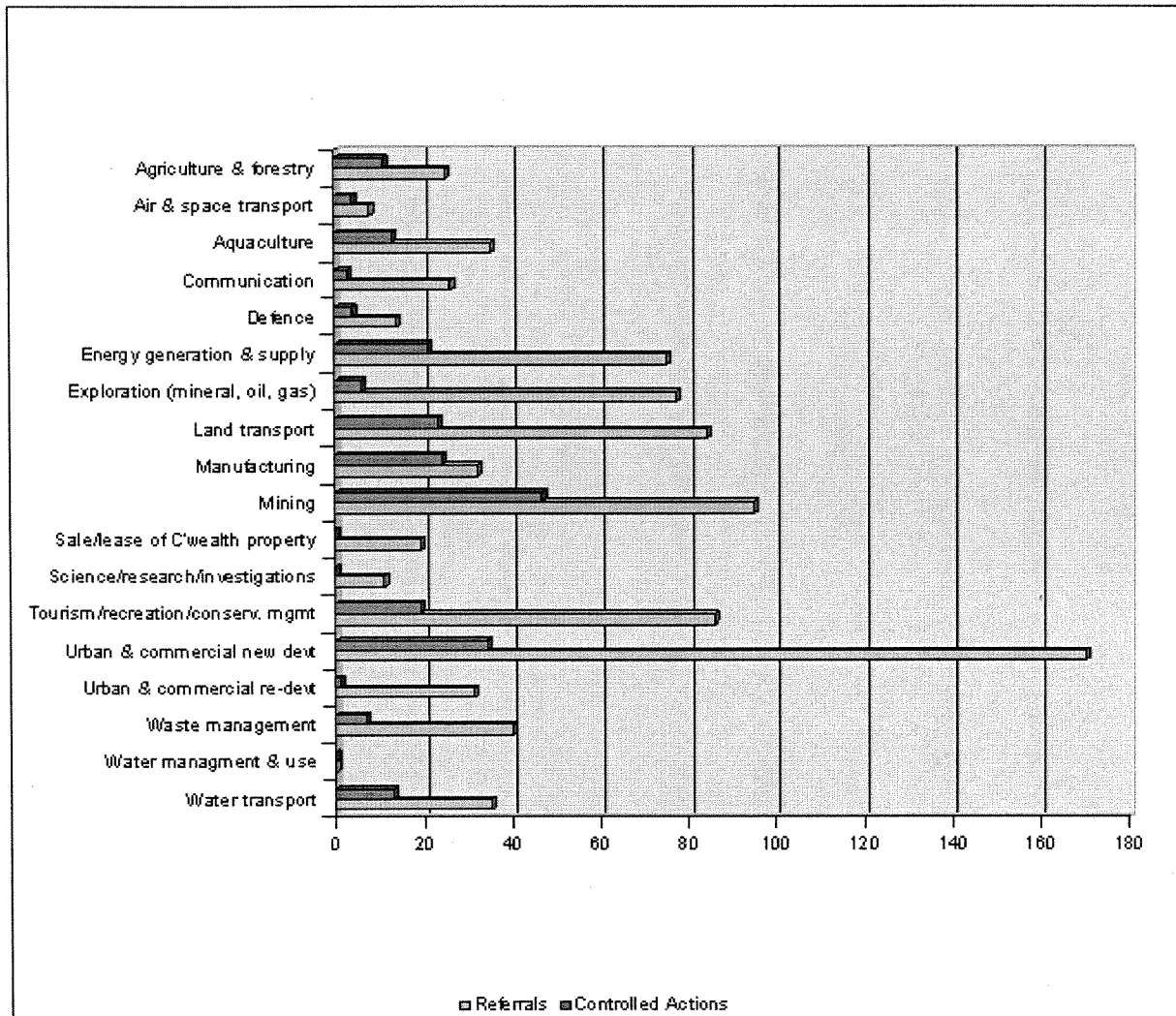
However, the evidence indicates that the EPBC Act has had little or no impact on landholder decisions in relation to clearing native vegetation, and consequently are likely to have had minimal economic effect on landholders despite claims to the contrary:

- To date, the evidence strongly suggests that the EPBC Act has had no or very little impact on rural landholders, with **only seven referrals** having been submitted on land clearing proposals since inception of the Act. In 2001-2, a mere 9 of a total of 309 referrals related to the agricultural and forestry sector (see graph below)

Similarly, recently state legislation has been unable to prevent high levels of land clearing. For example, in New South Wales over 4000 Sq. km. of remnant native vegetation has been cleared since introduction of the Native Vegetation Act in 1998 (DLWC 2002). Queensland is the glaring example of the very limited impact of state legislation, where despite native vegetation laws being in place, the Statewide

Landcover and Trees Study (SLATS) calculated that the average annual clearing rate for the average land clearing rate over the two year period (1999-2001) was 577,000 ha/year.

Referrals Received and Controlled Actions By Category



Rights, responsibilities and mitigation of impacts.

WWF agrees that it is essential to define the rights and responsibilities of resource users. There should be a clear definition of landholder obligations, which should include a recognition of “catchment care”, which would not attract compensation. That is, any mitigation of the economic impact of these regulations should take into consideration the responsibilities of landholders to sustainably manage resources entrusted to them. WWF considers that any government mitigation of the impacts of the regulation regime should be undertaken only impacts clearly exceeding landholders defined obligations and responsibilities to the environment.

WWF strongly objects to the establishment of rights and responsibilities by “grandfathering” on the basis of current unsustainable practice. Mitigation measures should be of a temporary nature aimed at facilitating structural adjustment supporting

the transition to a sustainable management regime for native vegetation and biodiversity.

The notion of catchment care is defined and further discussed in the “sharing costs of achieving environmental goals” section below.

Consideration of impacts on landholders

The impacts on landholders of concern to the Commission would normally be included in a socio-economic assessment. WWF considers that many assessments of the impacts of the regulatory regimes have been inadequate and incomplete. Specific issues such as potential loss in income, reduced property values and changes in productivity as a result of the regulatory regime, will be discussed in WWF’s comments on the adequacy of socio-economic assessments.

2.2 Efficiency and effectiveness of regulatory regimes in reducing costs of resource degradation.

WWF Comments:

Can cost effectiveness be considered without assessing environmental benefits?

The Commission intends to assess the cost-effectiveness of the current regulatory regime. Without assessing the benefits of retaining native vegetation and biodiversity, it is difficult to understand how this will be accomplished. The Commission itself states, “*To assess the effectiveness of the regimes under review, these cost must be compared with the environmental benefits.*” This once again emphasises the importance of including the assessment of environmental benefits in the scope of the inquiry.

Precautionary Principal is the foundation of biodiversity protection

Any assessment of the effectiveness of legislation aimed at protection of biodiversity must understand the need for a precautionary approach to this issue. WWF considers it essential that regulations aimed at conservation of biodiversity embody a precautionary principle, which prevents actions that may lead to extinction of species, given that in many cases impacts on biodiversity are irreversible and the establishing safe minimum standards has a high degree of uncertainty.

Biodiversity has a number of characteristics, which distinguish it from more conventional natural resources, making its management more complex (Young et al. 1996):

- In many circumstances biodiversity loss is irreversible
- Many species have yet to be discovered
- Ecosystem diversity exhibits threshold effects
- Information on responses of species to biodiversity loss is limited
- Many biodiversity problems require ongoing management
- Much biodiversity has no immediate economic value

Perverse environmental outcomes

There is evidence that the potential introduction of legislation to regulate native vegetation has caused an increase in the level of land clearing, particularly in Queensland, which has recently introduced measures to stop “panic clearing”. It is likely that this perverse behaviour will result whenever governments consider introducing *but have not yet introduced* regulations to restrict resource use to produce positive environmental outcomes. NSW legislation also provides a perverse incentive to re-clear regrowth to maintain its unprotected status.

WWF supports investigation of perverse environmental outcomes and consideration of the positive economic effect these activities have on landholders. It is also worth noting that to the extent these perverse outcomes occur, the potential negative economic impacts of the legislation on landholders is reduced.

2.3 Adequacy of assessments of economic and social impacts

WWF Comment:

Many assessments of social and economic impact are inadequate and incomplete

WWF considers that the socio-economic analysis on the impact of regulation of native vegetation and biodiversity for the most part has been inadequate and incomplete. For example, WWF reviewed a report on the impact of the Native Vegetation Conservation Act on the Moree Shire, NSW (Moss 2002). This report only estimated the direct economic impact on farmers, which was significantly over-stated, with no benefits of retaining native vegetation considered. Methodology used to assess impacts of regulation have been inconsistent, with Hill (2002) noting that socio-economic studies supporting the NSW Remnant Vegetation Management Plans used a variety of approaches to value benefits and costs of the Plans.

It is essential that the value of retaining native vegetation be included in all assessments of social and economic impacts. It has been well established that the cost of resource degradation, due to loss of native vegetation, is significant. Salinity and erosion have major impacts on agricultural productivity. The cost of salinity to farmers over the next 20 years has been estimated at in excess of \$500m (Hajkowicz & Young 2002).

Recent studies (Gillespie 2000, Miles, et al 1998) concluded that retention of native vegetation provided significant direct and indirect use values. Some of the key benefits identified were:

- *Private benefits*-grazing, wood supply, reduced salinity, prevent land degradation, long-term sustainability
- *Public benefits*-biodiversity, reduced salinity, prevent land degradation

The Commission has assumed there is very little information about the costs to landholders. In WWF’s view, this is not the case. There are many studies seeking to identify this cost. What is missing is the benefit side. Especially as there are diffuse

impacts, which are hard to address, this makes it even more difficult to assess the impacts of the legislation. WWF considers further work should be undertaken to fill those gaps, and to provide a context for costs.

Issues in estimating impacts on landholders

It must be made clear that the economic impact due to *opportunity costs* to landholders do not consist of actual costs but are estimates of a potential loss of future income. This estimate is based on a range of assumptions of uncertain future events, which must be clearly stated. Some assessments reviewed by WWF include questionable assumptions, such as:

- Not providing a clear definition of land that capable of economically being cleared in the absence of the regulatory regime. Hassall and Associates in its socio-economic assessments of the Draft Native Vegetation Plans in NSW concluded that clearing was not an economic option for farmers for a large proportion of remaining native vegetation. For example in the Western Riverina 74% on the native vegetation was judged to have no opportunity cost (Hassall and Gillespie 2002).
- Assuming that productivity and margins of newly cleared land would be equivalent to those of land currently in production. Landholders acting in an economically rational manner would clear the most productive land first.
- Not considering of limitations, such as availability of water.
- Assuming that large scale clearing will not require additional fixed costs and capital. The recently completed Land and Water Resource Audit shows that 66% of agricultural land made a loss when all costs are included (NLWRA 2002).
- Including both the potential loss of income and reduced property value as a cost to landholders. This double counts the cost, since the property value is derived primarily by its ability to produce income.
- Assuming that changes in property values can be attributed only to the impact of current regulations, without considering the myriad of other factors influencing property prices.
- Not considering the economic value of existing native vegetation. For example, as feed for grazing domestic animals.
- Not considering that all restrictions on clearing cannot be attributed to the current regulation regime, since in many case previous legislation also placed some restrictions on clearing, for example SEPP 46 under the Soil Conservation Act in NSW.

2.6 Options to reduce adverse impacts of environmental regimes

WWF Comments:

Framework/system issues:

Until we have a framework that is likely to be able to address the difficult nature of the diffuse style problems of biodiversity loss and land clearing, looking only at the cost impacts of regulations will be unhelpful. We still do not know what in the system needs to change and what doesn't. We also know that in some cases change is just expected and costs are to be borne by some, and in other cases there seems to be an

expectation of assistance. Costs by themselves don't mean anything. What is needed as a top priority, is a system that might actually work in leading to sustainable practice.

Sharing costs of achieving environmental goals

Many of the economic costs of the regulatory regimes fall on the resource users. However the beneficiaries of past resource use and of achieving sustainable use of resources are also the resource users. WWF considers that the cost of resource management should be shared equitably between landholders and the general community but that landholders' responsibility for the sustainable use of the resource needs to be taken into consideration.

WWF accepts the argument put forward by the Wentworth Group in its recent "A New Model for Landscape Conservation in New South Wales" in relation to the concept of catchment care. WWF considers this to be an improvement on the duty of care principle, which we have argued on previous occasions. The Wentworth Group states "The catchment care principle is that landholders have a responsibility not to clear native vegetation where, on the best available science, this is contrary to the long-term interests of rural industries. The catchment care principle focuses on maintaining fully functioning and productive landscapes". Further, they state that public funding "will be needed to implement the catchment care principle and to assist farmers required to protect 'above average' amounts of native vegetation" (Wentworth Group, 2003, p7).

Should the impact on specific landholders of resource management clearly exceed their catchment care obligations then mitigation measures can be considered. WWF suggests that funding of these measures could be achieved through introduction of an environmental levy to ensure that public benefit is purchased.

Consideration of additional approaches to achieving environmental goals

WWF considers that native vegetation of conservation value must be retained and biodiversity protected. In order to judge the effectiveness and efficiency of alternative methods of retaining native vegetation and biodiversity versus current regulatory regimes it would be necessary to consider not only the costs but also benefits provided. Approaches that differed from the current regulatory regime could be considered as long as the conservation benefits were retained. Economic instruments can be used to achieve positive environmental outcomes and have the advantage of being decentralised and flexible. However, regulation is essential and perfectly compatible with the use of market based instruments.

WWF supports an approach that uses mix of instruments (regulatory, market, voluntary and institutional) tailored to address specific environmental issues. These instruments should not be considered as alternatives but rather as complementary approaches to achieving environmental goals. Young et al. (1996) consider that concentrating on a single instrument to address complex environmental issues such as the conservation of biodiversity is a misguided approach, lacking flexibility and resilience.

The Wentworth Group (2003) has proposed a model for landscape conservation in NSW, which can be considered as a basis for protection of native vegetation. In addition to the catchment care principle discussed above, we emphasise our support for its main components, as follows:

- Strengthening and simplifying native vegetation regulations to end broadscale clearing of remnant vegetation and protect regrowth.
- Set environmental standards and clarify responsibilities for native vegetation management.
- Use management plans to provide investment security, flexibility for farmers.
- Provide funding to farmers to meet new environmental standards and support conservation.
- Restructure institutions by improving scientific input, information systems and regionalising administration.

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**COSTS TO FARMERS OF PROTECTING
NATIVE VEGETATION IN THE MOREE
PLAINS**

A CRITIQUE OF SINDEN, J.A (2002)

A critique of Sinden (2002), "Who pays to protect native vegetation?: Costs to farmers in Moree Plains Shire, New South Wales", Paper presented to the 46th Annual Conference of the Australian Agricultural and Resource Economics Society, Canberra, 12-15/2/2002.

A WWF Australia Report

By Warwick Moss

April 2002



COSTS TO FARMERS OF PROTECTING NATIVE VEGETATION IN THE MOREE PLAINS

A CRITIQUE OF SINDEN, J.A (2002)

A WWF Australia report prepared by Warwick Moss, April 2002

WWF Australia Mission Statement

WWF Australia aims to conserve nature and ecological processes by:

- ◆ *Preserving genetic, species and ecosystem diversity*
- ◆ *Ensuring that the use of renewable natural resources is sustainable both now and in the longer term, for the benefit of all life on earth*
- ◆ *Promoting actions to reduce to a minimum pollution and the wasteful exploitation and consumption of resources and energy*

WWF's Australia's ultimate goal is to stop, and eventually reverse, the accelerating degradation of our planet's natural environment and to help build a future in which humans live in harmony with nature.

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Executive Summary

This report critiques a paper presented by Dr. Jack Sinden to the Australian Agricultural and Resource Economics Society Annual Conference in February 2002. The Paper ("the Paper") focuses on equity impacts on Moree Farmers following the introduction of the Native Vegetation Conservation Act in NSW in August 1995. The Paper concluded that land values have declined by approximately 21% since that date, and lost income from the restriction on development imposed by the Act amounted to 10% of income in the year 2000 (or some \$20m over the Moree Plains Shire as a whole). From an equity perspective it was concluded that farm households contribute 31 times urban households as a proportion of income.

This critique demonstrates that there are a number of problems with the methodology used, and the conclusions drawn, in the Paper. As a result it is not possible to draw conclusions on the level of inequity, or the level of income loss, imposed by the Act. By varying only two of the Paper's key assumptions, the loss of income generated could be as low as \$5m using the same methodology. As the methodology is also considered to be flawed, the result could be even lower than this figure. We also argue that the equity comparison is invalid, and it is not possible on the basis of the Paper to meaningfully compare farm and urban households.

The major questions addressed in this critique are:

1. Are the sample farms chosen representative of the Shire as a whole, given the results are based on a sample of family farms who have made recent land transactions, and in order of the first responding to the survey.
2. How reasonable are the assumptions in determining costs to farmers of implementing Native Vegetation Act. Is it reasonable to assume that:
 - recently cleared land produces the same Gross Margin as existing cleared land;
 - results of a good year rather than an average year are a valid basis for determining lost income; and
 - the estimated proportion of land cleared if Act not implemented is 65% as compared with 62% estimated based on historic trends.
3. Does the methodology used accurately determine the equity of cost sharing for protection of native vegetation between rural and urban communities? Equity is based on a comparison of the opportunity costs of rural businesses compared with actual costs of urban families.
4. Is the regression (statistical) model used appropriate?

WWFs conclusions on these issues are that:

1. There is no evidence that the characteristics of sample of farms used in the report are representative of the shire as a whole. Extrapolation of sample results to the entire shire may not be valid on this basis.
2. The calculation of the loss in farm income seriously overstates the estimated lost income.

3. The methodology used to estimate equity between rural and urban communities is too narrowly defined and yields questionable results.
4. The methodology to determine loss in land values is not based on a sound regression model.

The conclusions of the Paper are not considered to be sound. However, the Paper has been used by NSW Farmers and by Dr. Sinden from the University of New England to make statements on the basis of the conclusions. This critique demonstrates why the public statements made are incorrect, and why drawing conclusions based on a narrow study can be misleading. Most importantly, the public statements have extrapolated the results of The Paper to the entire State of NSW. There are many reasons to question the validity of this extrapolation.

This critique makes several recommendations which could improve the Paper, including:

- ensuring a randomly generated sample;
- ensuring sample information accords with overall Shire information (and is “ground-truthed”);
- providing stronger rationale for assumptions, and showing the sensitivity of the results to assumptions;
- better defining the basis for comparison between farm and urban households;
- better incorporating private costs of land clearance with the private benefits.

Finally, this critique outlines WWF’s perspective regarding the issues presented in the Paper, namely:

The issues presented in the Paper are of great importance, and we welcome public debate and discussion on the topic, and appreciate the opportunity to critique this work. However, we consider that there are a number of broad comments to be made:

- It is necessary for the case to be soundly proven and presented for conclusions to be made in one area. It is also equally important for the conditions to be determined which allow results to be extrapolated to other areas;
- Cost sharing is becoming an increasingly important part of biodiversity conservation on private lands, and WWF supports the needs for this;
- WWF considers that it is inappropriate for one sector to bear the brunt of biodiversity conservation beyond the cost-share required for that sector, in effect cross-subsidising other beneficiaries of biodiversity conservation;
- WWF considers however that the contribution made by farmers is likely to be within the duty of care requirements according to the South Australian model. It is imperative that the broader community, and those farmers undertaking either unsustainable or more intensive land uses, to increase their contribution accordingly.
- At present it is unlikely that any sector is bearing the appropriate cost of environmental management. The main costs are borne by society and individuals experiencing environmental degradation, and many of these costs are yet to be quantified, or even realised.

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1 Introduction

World Wide Fund for Nature (WWF) has reviewed in detail the Paper prepared by J. A. Sinden "Who pays to protect native vegetation? Costs to farmers in Moree Plains Shire, New South Wales" ("the Paper"). WWF is concerned that there are a number of problems with the methodology used in, and the conclusions drawn by, the study. This response is aimed at outlining the causes for our concern and major criticisms of the Paper.

The Paper aimed to analyse the impact on farmers of the Native Vegetation Conservation Act in NSW ("The Act"). It does not seek to provide a cost-benefit justification of the Act, and it does not dispute that the benefits to protection of native vegetation, biodiversity, soil and water conservation could well exceed the costs. Rather, the focus of the Paper is on demonstrating two main points. Firstly, it seeks to demonstrate the costs that have been incurred in terms of reduced land values and reduced annual incomes. The Paper concludes that land values have declined by 21% and annual income has reduced by 10% (amounting to \$20.4m over the Shire as a whole). Secondly, it seeks to demonstrate that these costs have been disproportionately imposed upon farm families (as opposed to urban families), leading to an inequitable situation in the community. The Paper concludes that farm households pay 31 times more than urban households for protection of the environment. (A more complete description of the Paper is provided below to provide a basis for critique).

The broad conclusion of the study that some landholders are more impacted than others fits in with other evidence and anecdotal information. However, this response questions the extent to which the study accurately calculates the amount of cost to landholders, as well as the basis for comparison between farming and urban households. The figures in the report are not well justified and have been derived using many unsubstantiated assumptions. Further, the characteristics of the Moree Plains Shire that make the study potentially valid are extremely unlikely to be valid in other parts of Australia, making the results non-transferable. For example, Moree has highly productive soils and high value cropping options that are not applicable to many Shires or catchments in the State.

In so far as this study relates to important issues of the costs of environmental management, and questions of cost-sharing, it is important for WWF to identify its stance from the outset in this critique.

WWF believes that:

- **it is not appropriate for one part of the community to bear the full brunt of environmental management;**
- **it is appropriate for the farming community to undertake their duty of care for the environment; and**
- **it is also necessary that those undertaking intensive land uses and the broader community (through philanthropy, Government and market mechanisms where appropriate) increase their cost-sharing contribution to environmental management.**

A problem with the way the Paper deals with these issues is that its scope is extremely narrow, by trying to focus solely on costs, and on only one cause of development constraint. The danger with a narrow study of this type is that the conclusions will be misinterpreted and misused. This has already been evident in the NSW Farmers press releases stating that the cost of the Act has been \$120m over 6 years. An understanding of the study and how the results were derived shows this to be false, and is addressed below.

This narrowness of the Paper has meant that some important issues are not addressed. For example the Paper makes no attempt to discuss any reasons for decline in income potential or property values other than the Act. This is clearly inadequate when the issues of terms of trade, water resources, international markets and trade restrictions, as well as expectations of farmers for long run security are taken into account. In yet other cases, important issues are “noted” but not incorporated into the analysis, such as the private benefits of native vegetation to farmers, or the relationship between native vegetation clearance and cropping sustainability.

This critique will focus on the following questions. The sections where these are examined in detail are shown.

1. Are the sample farms chosen representative of the Shire as a whole, given the results are based on a sample of family farms who have made recent land transactions, and in order of the first responding to the survey (section 2.1)?
2. How reasonable are the assumptions in determining costs to farmers of implementing the Act. Is it reasonable to assume that:
 - recently cleared land produces the same Gross Margin as existing cleared land (section 2.2.1)?;
 - results of a good year rather than an average year are a valid basis for determining lost income (section 2.2.2)?; and
 - the estimated proportion of land cleared if the Act was not implemented would be 65% as compared with 62% estimated on historic trends (section 2.2.3)?
3. Does the methodology used accurately determine the equity of cost sharing for protection of native vegetation between rural and urban communities? Equity is based on a comparison of the opportunity costs of rural businesses compared with actual costs of urban families (section 2.3).
4. Is the regression (statistical) model used appropriate (section 2.4)?

Other issues not considered in full detail are shown in section 2.5.

Section 3 provides a discussion of how the conclusions from this Paper are misleading, and have already been misused in press releases by NSW Farmers and the University of New England. Section 4 provides conclusions and recommendations.

2 Analysis and criticism of the Paper

2.1 Assumptions related to the representativeness of the survey

The Paper's results are generated from surveying 51 landholders in the Moree Plains Shire, totalling some 71000ha. The Paper claims that the farmers surveyed are representative of the family owned and operated farms in the Moree Plains Shire. The "per hectare" results obtained from the survey are extrapolated to the full number of hectares in the shire, approximately 1.7m ha. In order to justify the assertion of representativeness and make this extrapolation, it would be necessary for the Paper to demonstrate clearly why these survey results are representative. The Paper fails to achieve this¹. The survey sample is not likely to be representative of all farms or land uses in the area for a number of reasons, outlined below.

Firstly, the study has surveyed 51 farmers all involved in land exchanges in the 6 year period of the study. It is likely that these farmers have different characteristics from other farmers in the area. Why have these farmers been involved in exchanges, when others have not? Are they already poorly performing farms? If so, this will lead to an overestimate of opportunity costs. To be valid, the Paper would need to clearly state why farms who have been involved in property sales are representative of those who have not.

Secondly, the 51 farmers have been chosen through an "incidental" method, that is they were the first to respond to attempted contacts. They are claimed to be geographically distributed, but are not chosen according to other characteristics of industry sector, landholding size, age of holdings or other factors. While values have been determined for some of these characteristics in the study, there is no indication that these values have been controlled for in selecting a sample. From an econometric perspective, this is perhaps the major statistical issue. Random samples are the best way to eliminate bias in a survey, or, put another way, bias is generally introduced by using a non-random sample.

Thirdly, there does not appear to be any process of "ground-truthing" the in survey information in relation to the entire catchment. Do the average figures from the survey properties accord reasonably with the overall property figures for the Shire. For example, there is no evidence presented as to whether the land use and native vegetation percentages accord to those of the Shire as a whole.

At the very least, the Paper would need to show how much of the land in the Shire is managed by family farms, according to his definition, and extrapolate his results to that area. The Paper averages the farm output over the productive and non-productive land in a property. That is, gross margins are averaged over the entire property, even if only part of that property is productive. It would be far better for the Paper to focus on comparing

¹ As will be discussed in section 2.2, The Paper determines a reduction in Gross Margin Per Hectare caused by the restriction placed on clearing land. This loss, an opportunity cost of not clearing, was calculated to be a reduction of \$12 GM per hectare, based on the survey sample. This number has been extrapolated over the full 1.7m ha in the Shire.

productive land as this is more likely to allow valid comparisons between similar properties. Average results for other categories of landholding would need to be determined and extrapolated to those areas. The purpose of conducting a survey is to determine particular characteristics to estimate the attributes of a population. There is no reason to think that the Paper's results for family farms are applicable to all landholdings in the Shire.

Fourthly, it appears the survey is further biased as all survey respondents appear to have a preference for clearing at least part of their native vegetation. To be representative, a proportion of the sample would be expected to not want to clear. Middleton, quoted in the Paper on p10, surveyed landholders in Walcha Shire and found that 65% did not want to clear their land, and therefore had no opportunity cost associated with the Act. By showing on pages 23-24 that farmers have a willingness to protect vegetation, he appears to try and show these views are representative of the broader perspective. But it is not clear from the Paper that these farmers do not want to clear "now". It implies that there is a limit to the amount they want to clear, but to get to that limit would require clearance.

The Paper states that the respondents to the survey have been asked about retaining 15% of their "remaining native vegetation". They have not been asked about retaining the vegetation they currently have, and in all the cases 15% (of total property or of remaining vegetation) is below what is stated to be on their property. The Paper states "[t]hirty of the 51 in the sample were happy to retain at least 15 per cent of their native vegetation. The other 21 wished to retain the option to develop at least part of their native vegetation"². As 30/51 is just under 60%, the Paper might be suggesting this makes his sample fit with the Middleton study (however this is not explicitly stated). WWF's interpretation is that all of the respondents to the Paper's survey would like to clear native vegetation on their property, and are unlikely to be representative of all landholders³.

The implication of this section is that it is likely that the characteristics of the sample would not apply to the Shire as a whole, and therefore the \$12 Gross Margin Per Hectare loss in income should not be applied to all 1.7m hectares in the Shire.

² It should be noted that there is confusion as to exactly whether the Paper is referring to willingness of landholders to retain "15 per cent" of their total farm as native vegetation, or as he states on page 24 "15% of the remaining vegetation on each farm". This critique has assumed the former, although at a number of points the paper suggests the latter. If that is the case, the farmers could be assumed to have a very high preference for clearance, as their preference for native vegetation would fall in the range of 5%-9% of their total property (ie 15% of the figures on page 24 of the Paper).

³ Perhaps a better way for the Paper to proceed is to determine how many hectares he believes will be brought into production at a particular GMPH, and add that to total production. Even if the result turns out to be similar to the current study's results, it would be more methodologically sound than determining the income loss per hectare on a sample that is not representative.

2.2 Assumptions related to the calculation of loss of income on farm

2.2.1 The assumption that vegetation can be cleared to be turned into productive uses produce the same gross margins as land already brought into cultivation.

In calculating the amount of income lost, the Paper calculates the amount of gross margin that could have been generated if the Act had not restricted the amount of land brought into production. In this study, the Paper applies the average Gross Margin from previously used land to that of the “new” land. In other words, the Paper assumes the new land will have the same “average productivity” as the previously cultivated land in the Shire.

In the first instance, unless reasons are provided to the contrary, economic theory of the “law of diminishing returns” would assume that the newly cultivated land will be less productive than that already in production⁴. The theory would suggest that the most highly productive and accessible land will have been brought into production first, and there will be “diminishing returns” to bringing more marginal land into production. These diminishing returns could arise because new land is less accessible, less convenient, has more woody vegetation which could be harder to clear, or could be in more hazard prone areas.

The Paper would need to demonstrate why this expectation would not hold for the Moree Plains Shire, however this is not done in the Paper. Potential justifications would relate to land capability (including the nature of soils), the technology available to bring land into cultivation, water resource availability, and perhaps demonstration that the area has not yet reached the point of diminishing returns (ie that highly productive land has still not been brought into production before now). These justifications are not provided. Further, even if they could be provided for the Moree Shire, as one of the most productive agricultural areas in Australia, it is unlikely that they could be provided in other areas of the State.

Water resources are also a critical limiting factor, not taken into account by the Paper. Land that may be brought into production for cropping is unlikely to have access to water for irrigation (without either significant cost or the need for water efficiencies on a large scale in the Moree area). This could restrict cropping expansion to dryland uses (that is restricting irrigated cotton expansion) which lowers the Gross margin figures which may be used in the calculation of the loss in Gross Margin Per Hectare, and the land values.

⁴ There may be occasions in the development of Australian agriculture when poor land has been brought into production, and there may be long distances between pockets of good land, and a particular property may have quite variable land qualities. However, unless shown otherwise, it seems a reasonable assumption that the most productive land would have been cultivated first.

This, along with other changes in assumptions, will lower the GMPH seen as a cost of the Act.

Further, a major omission in the Paper is that of the private economic values or benefits of native vegetation. There is an important distinction to be made here. The Paper does not dispute that the economic benefits of the Act could outweigh the costs, and therefore be an “efficient” Act. He argues therefore that by focusing on equity he can ignore the benefits. It would seem, therefore, to be unfair to criticise the Paper for not considering the benefits as it is outside the stated scope of the Paper. However, this line of argument is not valid in the case of where native vegetation provides direct private benefits to farmers, and removal of that vegetation provides direct costs to farmers. So, even if we accept his broader rationale for ignoring the benefits, it is an omission under his own criteria to ignore the private costs incurred by clearance. In other words, these private costs of clearance would lead to a lower Gross Margin Per Hectare lost by the Act.

The Paper does mention briefly the benefits of native vegetation, and the optimal vegetation cover, in the context of grazing, however native vegetation can supply important benefits to crops in terms of wind protection (counteracted to a small extent by shading the area of the vegetation), pest control through habitat provision, and soil stability and quality (Gillespie, 2000). Cropping might also benefit indirectly from vegetation cover in terms of flood control and water resource issues such as maintaining water yield and quality. The point here is that the loss of these services from clearance of native vegetation is likely to lower the average GMPH of increasing crop area, thus lowering the projected loss of income incurred by the Act.

The implication is that the net loss to the landholder is likely to be less than stated for two reasons: (1) that newly cultivated land is likely to be less productive than previously cultivated land (due to land capability and/or water availability); and (2) the benefits to on-farm enterprises of native vegetation are not considered.

2.2.2 Use of good year figures, rather than average year figures, to calculate the extent of lost farm income.

The Paper states on p15 that an “average income over the three years was estimated from the local maxim that ‘two bad years follow every good year’. The main results are set in terms of a good year to present a strong test on the equity criteria”. The equity issues will be discussed in section 2.3 below. However, in determining the income losses this is not a conservative option at all, because it is taking the highest income loss. This can provide a misleading interpretation of the study.

In terms of overall costs (ie not the equity ratio), taking the good year ignores the variability of risk in the various agricultural categories. A bad year in a cropping environment can lead to greater variability in income, whereas it is recognised that in a grazing sense, native vegetation provides additional security in bad years. That is, the native vegetation becomes increasingly important as a food source. The opportunity cost

of grazing (ie the benefits of cropping) is most starkly demonstrated in a good year, however, this clearly overstates the level of opportunity cost on average.

The implication of this is that basing the loss in income on an average year rather than a good year would present a much lower estimate of income loss. Taking the Paper's figures as stated, in a good year the loss is \$20.4m. On an average year the loss is halved to \$10.2m.

See Appendix One for details of figures provided in this section

2.2.3 The assumption that 65% of the land would be cleared, despite an estimated 62% if previous rates of land clearance had continued.

The amount of land that could have been brought into cultivation had the Act not been in force is critical to the Paper's estimates of income loss. The Paper states that the amount of cleared land that could be cultivated in December 2000 was 59.1% of land in the sample. As the Paper's farms are taken to be representative of all farms in the Shire, the 59% figure is taken to be the baseline for cultivable land at the time of the Act (apparently including land clearance approvals under the Act).

On page 21, at rates of increase prior to the Act, the Paper estimates that "the total area of cultivable land would increase to 62% of the average property across the whole Shire. The authors [of a study of clearance rates] suggest that [this] rate is an underestimate, so *we assume that 65% would now be cultivated.*" (emphasis added)

As the figures below show, this is no minor assumption. The impact of this assumption is roughly a 50% change in the projected total loss of income. No justification other than the suggestion of the quoted authors is provided for this change. At the very least the sensitivity of the results to this assumption should be reported, and a likely range provided for the lost income.

The lost income is very sensitive to the assumptions about the projected land area under cultivation. A range of income losses should be presented on the basis of such an assumption. As stated in criticism (c) basing the loss on an average year shows a \$10.2m loss instead of \$20.4 million. However, if based on previous rates of increase, ie 62% of the area is cultivated (instead of 65%), an average year loss is \$5m.

See Appendix One for details of figures provided in this section.

2.3 Problems with the methodology to determine equity comparisons between farm and urban households.

This concern deals with the major focus of the Paper, namely the equity implications of the Act. The equity case described by the Paper is determined by calculating the ratio of costs incurred for environmental protection over gross income. This is done for farmers, where the costs of environmental protection are determined by the income losses under the Act. For urban communities, this was done by taking the national expenditure on environment protection and calculating the contribution per family.

The important point to note in this critique is that there is a difference between the total dollar amounts and the equity implications. The Paper is seeking to be conservative in the equity findings, and therefore using the good years where the equity implications will be their lowest⁵.

On page 22, the Paper calculates that the loss of gross margin due to the Act for a farm represents 15.6% of estimated household income. Further, he calculates that the contribution by equivalent urban households is 0.5% of family income. On this basis, the Paper concludes that the farm family is contributing 31 times more than the urban family.

This analysis is flawed and presents a misleading picture of the contribution made by farm and urban households to environmental protection. It is disturbing that the NSW Farmers have latched on to this analysis to push what can only be described as a point of political rhetoric (see section 3).

Firstly, it is incorrect to compare farm households with urban households in this way. Farm households in the way the Paper describes it are more like a business, and would need to be compared with other businesses. In particular, they would need to be compared with businesses that have a reliance on the use of natural resources, and need licences or permits to environmental resources. Alternatively, farm households would need to be defined as the non-business aspects of the farm, and the environmental expenditure of farm households would need to be determined as the direct costs attributed to the household income.

Secondly, while opportunity costs are valid economic costs, it is not valid to compare the opportunity costs of one group with the direct costs of another group. That is, total costs of each group need to be compared. It should be noted that the direct costs of farmers in protecting the environment, including vegetation planting, salt interception, landcare works and the like have not been estimated by the Paper. In effect the Paper has compared the farm household's opportunity cost with the amount spent by Government's on behalf of taxpayers on biodiversity protection and soil and water conservation. The opportunity costs to urban families are not considered, nor the direct expenditure of either

⁵ As has been discussed in section 2.2, this conservativeness does not apply to the total dollar amounts. These are at their highest in a good year.

farm or urban households undertaken by means other than the tax system. There is no way of comparing the total costs to farm and urban households from this Paper.

Thirdly, the interpretation of the amount of expenditure by urban households on environmental protection is too narrowly defined. The Paper's implied argument is that the Native Vegetation Act is imposing costs on farm families for biodiversity protection, and soil and water conservation. It must be remembered that these are the major environmental issues of concern to farm households. It is probably true to say that urban households have more of a role to contribute to biodiversity, soil and water conservation. However, these are only a smaller part of the environmental issues faced by urban families. In order to determine the full extent of environmental contribution of urban families it is necessary to consider air pollution, congestion, environmentally related health issues, water, soil and biodiversity management within urban areas etc. Further, the contribution by urban people to environmental organisations is substantial, as well as their willingness to pay for conservation through tourism. It is totally misleading to emphasise only one portion of an urban families budget with that of a farm family whose major environmental issue is related to biodiversity, soil and water conservation.

Fourthly, there are a number of significant ways in which the urban community (through the taxation system) contributes to rural issues beyond the narrow scope of costs recognised by the Paper. Subsidies (eg through lack of full-cost recovery in water prices, non-commercial lease rates on properties etc), structural adjustment packages (water use efficiencies, rural assistance packages etc) and drought and flood relief packages. There is no recognition of these contributions by the broader community to issues of relevance to rural communities and environmental sustainability.

Fifthly, distribution of income in urban settings is diverse just as in rural communities, however not as variable. No account is taken of the fact that for some urban families, environmental contributions are significant proportions of income. Further, if disposable income is considered, the burden of environmental expenditure on some urban households could well be as bad as for poorer rural households.

2.4 Problems with the regression model used

There are a number of technical statistical and economic concerns with the regression model used. There is a dynamic relationship between at least 3 of the variables used. That is, Gross Margin Per Hectare, Sustain, and OCACT are all related to native vegetation to some extent. While the Paper discusses the relationships between these variables, it does not use these relationships in interpreting the model. The paper does not show how related these variables are to each other, and what impact if any that has on the regression model. It is difficult to know whether this indicates the presence of multicollinearity⁶ or not, however this could be suspected. Given that the purpose of the

⁶ Multicollinearity refers to the issue when variables used in a regression may essentially convey the same information and at least one of them may be redundant. This is not a problem if the goal of the regression is to generate a predicted value, however it could be a major problem if the goal is to understand how independent variables relate to the dependent variable.

regression here is to understand the impact of the Act on land values, multicollinearity could be a major problem here. The explanation of the impact of the Act on land values could be wrong.

Further, the implications of the income modelling on the land value modelling are not considered. The paper assumes that, over time, land clearing for cultivation could increase to 80% of the average property across the shire, but does not show the implications of this on the sustainability variable. Indeed, given that a \$10 fall in the sustainability level would lead to a \$19.49 fall in land value according to his model, then it is important to show what impact native vegetation clearing would have on the sustainability level. As the paper points out, other factors bear on the sustainability level, however native vegetation is a component. The author makes no attempt in the study to show how these dynamic relationships would impact on income loss or property value loss.

The implication of this is that the model has been used as if land can be increasingly cleared without feeding back into other variables of the model (as well as other economic and social values not considered in the Paper). This is not valid, and such an assumption could impact significantly on estimated net income loss and medium to long term property values.

Further, a major problem in relation to the model is that the opportunity cost of the Act is only statistically significant at the 10% level. That major conclusions are drawn as if they are certain (with no sensitivity analysis of the results to assumptions) is disconcerting. There needs to be a much broader analysis of the causes of loss in property value and income than a “straw man” attack on the Act.

In order to justify the use of this model, more statistical information would need to be provided. The model does have a surprisingly good fit in the R-squared statistic for a cross-sectional sample. However, without analysis of the variances it is not possible to determine whether a non-linear model may fit better. Further, that 3 of the variables are related would suggest the regression should be run with different variables to determine if there is a better fit.

Further, as the critiques above show, ranges need to be provided to data such as OCACT as these are derived variables. Given changes in assumptions can vary OCACT substantially, then the regression should be run on different values of OCACT.

2.5 Other concerns not explored in detail

Relative wealth of Moree Shire

Land value calculations have relied upon prices increasing by 8% pa. This is not likely to apply to other regions, and is a healthy rate compared to parts of major cities in Australia. Generally the Moree shire is wealthy, and restrictions will appear to have higher opportunity costs. This is signified by the owner's salary of the farm being \$80000, as an

indication of the opportunity cost of farming in terms of alternative employment. Many other farming communities would not have access to such high alternative salaries. Further, the wealth of the Moree Shire tends to be at odds with the claims that Moree farmers are already struggling financially. It may prove that an analysis of income distributions within the Moree Shire may prove more fruitful than a comparison between average farm households and urban households. This may shed light into the full range of reasons of low income status of farmers, in addition to the impact of the Act.

Use of Gross Margins as the basis of determining income losses

Gross Margins are a commonly used means of determining profitability of an agricultural enterprise. However, these need to be used with caution, and can often present a misleading picture of profitability. The average return to land results in the Paper are far more important for assessing the profitability of enterprises. This is because it reflects the capital costs both in terms of clearing land, putting in new infrastructure, and making appropriate returns on capital. Gross Margins do not take these capital costs into account. It would need to be demonstrated that farms in the Moree shire could cover these costs. The financial success of high value land uses in the Shire indicate enterprises can cover these costs, certainly in the short term, and especially given good year returns are particularly profitable. However in the long term and on increasingly marginally land, this would need to be more clearly justified. This is a further reason to doubt the applicability of the study to other areas, given the costs of infrastructure development will be more significant in areas where Gross Margins are lower.

Focus on costs alone to determine equity impacts

The Paper states on page 10 “The benefits and costs from the protection of native vegetation provide the necessary information to judge the contributions of policies on the efficiency and equity objectives. The benefits of retaining vegetation are hard to measure. *But the assessment of costs, even just to those who provide the environmental services, remains useful information to judge outcomes on the equity objective*” (emphasis added). This claim is by no means self-evident and needs supporting evidence. It is debatable as to what conclusions can be drawn on efficiency or equity by looking *only* at costs. Without considering the private and social benefits, it is not at all clear what this tells us about equity. As noted in the paper, this study is very much narrower than similar studies by Lockwood and Walpole.

The Sustainability measure requires more explanation

The Paper discusses that Moree is characterised by extensive clearing and high environmental sensitivity of remaining vegetation. The sustainability measure used in the paper seeks to address the level of sustainability of this past cropping practice. The percentages in table 2 for sustainability appear to be low (indicating low sustainability), however this is not discussed. Further, there is no acknowledgement or discussion of whether current practices are sustainable in a longer term sense (30-50 years), such activity may not be sustainable. Is this Paper advocating short-term gain at the expense

of long term for both individual farmers and the broader community? It would help if the study could provide more information as to a) the meaning of the sustainability index used; and b) what factors influence buyers interpretations of sustainability.

There is a strong indication from experiences in the southern catchments of the Murray Darling Basin that there is a long lead time before environmental problems emerge from unsustainable practice. The high clearance rates in the northern parts of the MDB are relatively recent, and environmental problems are beginning to emerge and are expected to increase (MDBC, 1999). There is a danger that the current perceptions of sustainability are not indicative of longer term costs which need to be considered in current land clearing decisions. This would imply that the Paper's cost estimates are overstated.

Does the Act affect the sustainability of existing enterprises?

The Paper acknowledges that while loss of opportunity cost is a loss in economic terms, there is less certainty in regard to such losses. This is a very important point. The restriction of the Act applies to lost development opportunity, and as such represents a valid economic cost. However, it does not, or should not, cause people to lose past income, in that they can still operate their businesses as before⁷.

While it is clear that the Act might prevent some changes to higher value land uses, it has no bearing on whether a farm as it stands is profitable or not. This is determined by other factors. It is highly likely that clearing is only delaying the inevitable: many of these enterprises will not be profitable for other reasons in the future regardless of how much land is cleared. By that stage, the costs to individuals and society will be even higher from the environmental costs incurred. There needs to be a recognition of the other factors affecting profitability as well. The fact that OCACT (the opportunity cost of the Act variable in the Paper's model) is only statistically valid at the 10% level shows that there is not a strong connection between current market value of farm enterprises and the Act.

Duty of care and property rights

Property rights are the subject of significant debate and discussion in the community. The essential point relevant to the Paper is the level to which rights are associated with responsibilities. Rights are given to people and organisations with the expectation that they will be appropriately managed. The concepts of "duty of care" and "public conservation service" are becoming common terms in relation to land management (Binning and Young, 1997), (Bates, 2001). South Australia provides perhaps the major example where duty of care has been incorporated into natural resource management through legislation to retain native vegetation (Marano 1999), (Fensham and Sattler, 2002). The SA experience suggests that losses that have resulted from, or been associated with, native vegetation conservation legislation are frequently within the expected "duty

⁷ Some people argue that the lack of ability to clear woody weeds may be a consequence of the Act which impacts on their current business, however this is a debatable point, and different to the Paper's argument here.

of care". It is suggested that the revised amounts of loss, following this critique, would be within a duty of care requirement, or much closer to it.

3 Misleading conclusions drawn from the Paper

Why the NSW Farmers projection of \$120m over 6 years is incorrect.

Firstly, without challenging any of the assumptions in the Paper, the figure provided clearly shows the danger of misinterpreting a narrowly focussed paper. The Paper states that "[t]he gross margin has been decreased by the Act by \$12 per hectare, or \$20.4m across the Shire as a whole" (p21). The Paper's abstract however suggests that this is an annual income, and the Act has "already reduced annual incomes by 10 percent across the whole Shire". Alarming, the University of New England's press release stated "The Act has already reduced farm incomes by an estimated \$20.4million *per year* across this *one shire*" (emphasis added).

NSW Farmers have put out a press release on February 12, 2002 on the basis of the Paper (see attachment 2). In this press release the NSW Farmers stated "In the Moree Shire alone, native vegetation legislation has already cost farmers \$120 million over the past 6 years". That is, they have assumed that the \$20m loss in income in 2000 is a \$20m per annum amount over the 6 years of the operation of the Act. This is false. Clearance is assumed to take place at a rate of just over 2.2 percent per annum, until AFTER 6 years, and when an area equivalent to 65% of the entire property area would have been reached.

Given the baseline situation of cultivable land is stated as 59% of the average property size, and an eventual 65% level after 6 years (without the Act), there is a lost increase in area of 1% per annum⁸. That is, one year after the Act, roughly 1% of the property area is cleared, 2 years after the Act 2% is cleared, and so on up until 6% after 6 years.⁹

Therefore, if we assume that the value of production in each year is the same (using dollar values in 2000), the 1% of the area is worth \$3.33m (\$20m/6). The total cost would therefore be \$70.4 million, a substantial difference from the \$120m. However, this is based on assuming that every year was a good year, and as the Paper states, there is only one good year in three. To illustrate the variability of this result to assumptions, if we assume that every bad year loses half that of a good year, the total loss becomes approximately \$50m (over 6 years) (see table below). Further, using average year figures reduces the loss to \$34m over the period, and taking 62% as the area cleared lowers it to \$17m! Just two assumptions, ie using average instead of good years, and different clearance percentages change the result from \$120m to \$17m!

⁸ That is, if there is 41% native vegetation being cleared at 2.2% per annum, this amounts to roughly 1% of the total property size.

⁹ The rate of increase is compounded, so this linear rate is not exactly correct. Further, it is obvious that such a rate of increase can only be temporary, with a maximum option of 15 years if 80% cultivation is reached as a maximum

Table 1: Estimated total opportunity cost attributed to the Act based on the Paper.

Year	Approx. percentage cultivation	Total under	Approx. Good Year lost income (\$m)	Approx. lost income (2 bad years, 1 good) (\$m)
1995	60		3.33	1.67
1996	61		6.67	3.33
1997	62		10	10
1998	63		13.33	6.67
1999	64		16.67	8.33
2000	65		20	20
Total			70	50

Further, the NSW Farmers press release suggests that “[t]his study could be replicated in most shires across the state and achieve the same result, meaning the NSW Government has cost farmers and rural communities billions of dollars in that time”. As this critique shows, because many of the assumptions needed to justify the study in the Moree case have not been explicitly stated, it has led to the erroneous conclusion that it has general application.

This highlights that interpreting reports such as these can be difficult, and misleading conclusions can be drawn.

4 Conclusions and Recommendations

This critique seeks to show that the level of income loss stated to have occurred following the introduction of the Native Vegetation Act into NSW in 1995 are likely to be overstated.

The main criticisms outlined in the report include:

1. There is no evidence that the characteristics of sample of farms used in report are representative of the shire as a whole. Extrapolation of sample results to the entire shire may not be valid on this basis.
2. The calculation of the loss in farm income seriously overstates the estimated lost income.
3. The methodology used to estimate equity between rural and urban communities is too narrowly defined and yields questionable results.
4. The methodology to determine loss in land values is not based on a sound regression model.

Overall the conclusions of the Paper are not considered to be sound. However, the Paper has been used by NSW Farmers and by Dr. Jack Sinden of the University of New England to make statements on the basis of the conclusions. This critique demonstrates why the public statements made were incorrect, and why drawing conclusions based on a

narrow study can be misleading. Most importantly, the public statements have extrapolated the results of the Paper to the entire State of NSW. There are many reasons to question the validity of this extrapolation.

This critique makes the following recommendations which could improve the Paper, including:

- ensuring a randomly generated sample;
- ensuring sample information accords with overall Shire information (and is “ground-truthed”);
- providing stronger rationale for assumptions, and showing the sensitivity of the results to assumptions;
- better defining the basis for comparison between farm and urban households;
- using average years to demonstrate equity and income losses; or using a table to show equity and loss figures in good, bad and average years;
- better incorporating private costs of land clearance with the private benefits;
- reporting statistical information to show how particular regression pitfalls have been avoided, or choosing a model without those pitfalls.

Finally, this critique draws WWF’s conclusions regarding the issues presented in the Paper, namely:

The issues presented in the Paper are of great importance, and we welcome public debate and discussion on the topic, and appreciate the opportunity to critique this work.

However, we consider that there are a number of broad comments to be made:

- It is necessary for the case to be soundly proven and presented for conclusions to be made in one area. It is also equally important for the conditions to be determined which allow results to be extrapolated to other areas;
- Cost sharing is becoming an increasingly important part of biodiversity conservation on private lands, and WWF supports the needs for this;
- WWF considers that it is inappropriate for one sector to bear the brunt of biodiversity conservation beyond the cost-share required for that sector, in effect cross-subsidising other beneficiaries of biodiversity conservation;
- WWF considers however that the contribution made by farmers is likely to be within the duty of care requirements according to the South Australian model. It is imperative that the broader community, and those farmers undertaking either unsustainable or more intensive land uses, to increase their contribution accordingly.
- At present it is unlikely that any sector is bearing the appropriate cost of environmental management. The main costs are borne by society and individuals experiencing environmental degradation, and many of these costs are yet to be quantified, or even realised.

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Appendix One: Calculations of Opportunity Costs under varied assumptions

Table 2: Estimates of opportunity cost (income foregone) in Good and Average years, with 65% of property under cultivation (derived from the Paper's figures).

Good Year	With Act	Without Act	Change	Change (%)
Average Area ha	1393	1393	-	-
GMPH	125	137	-12	-10%
Total Gross Margin	174125	190841		
% Cultivated	59.1%	65.0%	5.9%	
Cultivated Land ha	823	905	82	
GM Cultivated ha	212	211		
Total Catchment Impact (Millions)			-20.4	
Total ha (Millions)	1.7			

Average Year

Average Area ha	1393			
Gross Margin/ha	60	66	-6	-10%
Total Gross Margin	83580	91924		
% Cultivated	59.1%	65.0%		
Cultivated Land ha	823	905		
GM Cultivated ha	102	102		
Total Catchment Impact (Millions)			-10.2	

Table 3 Estimates of opportunity cost (income foregone) in Good and Average years, with 62% of property under cultivation (derived from the Paper's figures)

Good Year	With Act	Without Act	Change	Change (%)
Average Area ha	1393			
Gross Margin/ha	125	131	-6.1	-5%
Total Gross Margin	174125	182669		
% Cultivated	59.1%	62.0%		
Cultivated Land ha	823	864	40	
GM Cultivated ha	212	212		
Total Catchment Impact (Millions)			-10.4	
Total ha (Millions)	1.7			

Average Year

Average Area ha	1393			
Gross Margin/ha	60	63	-3	-5%
Total Gross Margin	83580	87681		
% Cultivated	59.1%	62.0%		
Cultivated Land ha	823	864		
GM Cultivated ha	102	102		
Total Catchment Impact (Millions)			-5.0	

Appendix Two: Press Releases by UNE and NSW Farmers

a) NSW Farmers Press Release, February 12, 2002

(source: NSW Farmers' Press Release Service)

MisCARRiage of justice revealed by university study of veg laws

A new, independent university study has revealed that farmers in one shire alone in northern NSW are losing income of \$20 million a year because of the NSW Government's Native Vegetation Conservation Act (NVCA).

The study, by the Associate Professor of Agricultural and Resource Economics at the University of New England, Jack Sinden, shows the NVCA has reduced the household incomes of farmers in the Moree Shire by nearly 16 percent a year.

Chairman of the NSW Farmers' Association's Conservation and Resource Management Committee, Rob Anderson, says the study explains the Association's continuing outrage at the NVCA because of the cost to farmers across NSW.

"In the Moree Shire alone, native vegetation legislation has already cost farmers \$120 million over the past six years and the annual cost is expected to rise to \$37 million by 2005. This study could be replicated in most shires across the state and achieve the same result, meaning the NSW Government has cost farmers and rural communities billions of dollars in that time.

"The Native Vegetation Conservation Act and its forerunner, SEPP46, have placed intolerable burdens on the farming community and are major factors in the hardship and declining wealth of rural towns.

"The Premier has just trumpeted the success of the Olympics in adding \$3 billion to the NSW economy. However, Bob Carr won't be as quick to tell people that legislation designed, passed and implemented by his government has already cost farmers in NSW more than the Olympics earned.

"The University study also found that farm households pay 21 times more to protect native vegetation for the public benefit than urban households. While annual incomes across the Moree Shire have been reduced by 10 percent because of the NVCA, the University of New England has found that urban householders give up only a half of one percent of their income through their taxation for protection of native vegetation.

"On top of all that, the NVCA has reduced property values in the Moree Shire by 21 percent. There would be anarchy if urban people were asked to make the same financial sacrifices for public good conservation as their country counterparts.

"It's hard to imagine a western government imposing such an inequitable burden on a part of the community and getting away with it. But the NSW Government has done it and continues to expect country people to bear an intolerable burden to shore up its urban green vote," Mr Anderson said.

b) University of New England (UNE) press release, February 12, 2002

(source: UNE website: <http://www.une.edu.au/news/releases2002/February/016-02.html>)

Economist estimates cost of Vegetation Act to farmers

The NSW Government's Native Vegetation Conservation Act has reduced land values by 21 per cent in north-west NSW, an economist from the University of New England said today.

Associate Professor Jack Sinden said the Act has also reduced farm incomes by an estimated 10 per cent and may well reduce them by 18 per cent by 2005. Dr Sinden, speaking at the 46th Annual Conference of the Australian Agricultural and Resource Economics Society in Canberra, was reporting on his detailed analysis of the prices paid for 51 family farms in Moree Plains Shire.

Dr Sinden, an Associate Professor of Agricultural and Resource Economics at UNE, said the Act restricts the area of native vegetation that farmers can clear and develop to pasture or crops, and so limits their potential to earn income. His figures on income reduction are based on this potential, he said. "In this way, farm families in the Shire lose 15.6 per cent of their potential earnings in a mandatory payment for the conservation of native vegetation. In contrast, urban households lose only 0.5 of one per cent of their earnings for the same purpose, through their taxes."

He said his research showed that none of the farmers wanted to clear anywhere near all of their native vegetation, but that many needed the option to develop more land than at present. "Further limits on land use to protect native vegetation are being contemplated for the Shire and elsewhere in the State," he said. "They include restricting cropping to 40 per cent of the farm instead of the current 52 per cent in Moree Plains Shire. This will reduce incomes by a further 14 per cent. They also include the same kind of restriction on cropping, plus a restriction on grazing over another 10-20 per cent of the farm. These two restrictions will reduce income by a further 29 per cent in the Shire."

"The Act has already reduced farm incomes by an estimated \$20.4 million per year across just this one shire. These costs have been imposed on farmers who are already struggling financially."