A review of the impacts of vegetation protection on farm land values in northern New South Wales: how much do farmers have to pay?

Submission to the public inquiry

Impacts of Native Vegetation and Biodiversity Regulations

conducted by the Productivity Commission

from

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A review of the impacts of vegetation protection on farm land values in northern New South Wales: how much do farmers have to pay?

The protection of native vegetation can increase, decrease, or have no effect on the value of farm land. But the evidence shows that the decreases tend to be large, widespread, and to vary greatly across farms within a region. Policies to protect native vegetation therefore concern economics and equity as much as environmental science.

1 Introduction

To meet international obligations to protect native vegetation and biodiversity, most countries must encourage private landholders to conserve because there are insufficient government reserves to meet the international commitments. Many countries have already introduced regulations to encourage private landholders to retain native vegetation on their forests and farms. But what are the impacts of such regulations in Australia?

Regulations that restrict the farmer's activities lead to a loss of income and loss in land value. There is already considerable published evidence on the sizes of these losses - - from official publications of the NSW Department of Land and Water Conservation, consultants' reports, farmer submissions and independent research.

This submission reviews the evidence from independent[1] research on the impact of the protection of native vegetation on farm land values in New South Wales. The evidence comprises the results of published economic analyses of the influence of protection on land values and covers a wide range of land types throughout the northern part of the state. The magnitudes of the impacts, the distribution of them among farmers in regions, and the broad relationship of changes in land value to changes in native vegetation are now summarised. The magnitudes are summarised, net of clearing costs, in Table 1.

2 Magnitudes of impacts across regions

In the marketplace, the value of cleared land tends to be greater than the value of land where the native vegetation has yet to be cleared. This trend is shown for all but two of the 13 regions of Table 1. The values of the table show changes on a given site with and without native vegetation, and show that retention of vegetation decreases land value sometimes by large amounts. An explanation and cautious overview is

provided by Dobbin[2] (2000, p14). "While problems may occur in 20-30 years time - the majority of farmers are worried about their short-term viability and protection of their assets".

In 1998, the government of New South Wales introduced the Native Vegetation Conservation Act (NVCA) to protect native vegetation. The Act has had a significant impact, particularly in the more marginal, emerging farming areas in the west where land has yet to be cleared. Spackman[3] (2000, reference 16) presents estimates of the effect of the Act on land value for the area from Coonamble to the Queensland border, assuming that no further clearing is permitted. Land values increase when land is cleared on black soils, but do not increase on the lighter less productive red soils in this region.

In contrast to the Walgett region, the majority of the Liverpool Plains has been cleared and cropped for many years but individual properties still have large proportions of native grass or timber left. Under the Act, the farmer must graze the plains grass and cannot develop it to cropping. Spackman (2000) reports that land value would increase by $600 per hectare, or 60 per cent per cent, if this development were permitted. All his other case studies for the Liverpool Plains also show that land values would increase with clearing - - and so the potential land value has been reduced because native vegetation must be retained.

The losses in land value, when vegetation must be retained, will be high when the productivity of the alternative agriculture is high, and when large amounts of native vegetation remain. Moree Plains has one of the highest values of gross agricultural production of any shire in the state and it also has 48 per cent of its land still in native vegetation. From data from a detailed, field survey, Sinden (2002) estimates that the NVCA has reduced land values in Moree Plains Shire by between 16.0 to 20.4 per cent, and reduced total Shire-wide land values by between $198 and $230m (see Endnotes 1, 2, 3).

Land values for farms on the tablelands follow the same trends (Reynolds 1978, and Reynolds and Sinden, 1979):

- unimproved land value is decreased by about $3.3 in 1978 dollars per hectare for each increase of one square metre of tree cover per hectare on land around the edge of the gorges near Armidale, and

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[1] In this context, independent research comprises analyses undertaken within organisations that are not stakeholders in the issues.

[2] Neil Dobbin is National Manager, Primary Industry Bank of Australia Ltd.

- unimproved land value is decreased by $6.36 in 1978 dollars for each *increase* of one square metre of live tree cover in dieback-infested areas on the adjacent tablelands.

Tree cover averaged 8.9 square metres per hectare over the gorgelands sample, and 2.9 square meters per hectare for the tablelands sample.

3 Distribution of impacts within a region

In any given area, some farmers will be severely affected and others will be hardly affected at all. Further, the size of the impact will varies widely within each region according to the amount of vegetation left on the farm. Evidence on the distribution of the decreases in land value is provided by several of the studies. For example, land values in southern and eastern Walcha Shire are reduced by an average of $230 per ha or 15 per cent (Middleton et al 1999) when vegetation is retained but the losses are concentrated on only 35 per cent of the farms. But the distribution of these losses was:

(i) 65 per cent of farms bear no loss of land value,

(ii) 10 per cent bear a loss between $0 and $50 per hectare,

(iii) 5 per cent bear a loss between $50 and 100, and

(iv) 20 per cent bear a loss over $100 per ha.

Once clearing and development costs are deducted from the potential increase in land value, there may be no gain left when land is steep, heavily timbered, and unsuitable for cropping or intensive grazing. For example, clearance of native vegetation around Coutts Crossing and Nymboida Village in Nymboida Shire was unprofitable anyway. But even here the distribution of losses showed that clearing native vegetation was profitable for a few:

- 2.5 per cent of farmers lost between $150 and $325 per ha,
- 14.0 per cent lost between $0 and $150, and
- 83.5 per cent lost $0 because it was unprofitable for them to clear.

The impact in well-established cropping areas is usually minimal, because there is little native vegetation left. But individual farms in these areas have often maintained native vegetation on land that is well suited to cropping. They will suffer a reduction in their land value because the market will discount its value. This kind of individual impact in more marginal areas such as Walgett East may be very significant because

[3] Peter Spackman is a Land Valuer based in Gunnedah.

extensive areas are still not cleared to crops. "It is not unusual for value reductions in excess of $1,000,000 on some of the larger properties" (Spackman 2000, p32).

4 Changes in impact at a given site

So far we have considered the overall or average, magnitudes of impacts in different regions, and the distribution of impacts within a given region. But intuition suggests that the impact of native vegetation on land values changes with changes in the percentage of the farm occupied by it. So we now consider how the impacts at a given site might change over the range of levels of native vegetation.

The Murray River catchment covers 3.6m ha in southern NSW and includes the towns of Albury, Deniliquin, and Corowa. Walpole and Lockwood (1999) and Walpole (2000) report the results of an intensive analysis of benefits and costs of remnant native vegetation on 122 farms in this area. Walpole (2000) reports that the proportion of native vegetation had little effect on land values when native vegetation occupied less than 50 per cent of the farm. When it occupied more than 50 per cent, increases in the percentage reduced land values.

On the New England Tablelands, land values usually increased when land was cleared but the increase changed with the amount of vegetation. On average, improved land values increased by about $37.8 per ha for each reduction of one square metre of basal area of live tree cover per ha in areas where the native vegetation is already subject to severe eucalypt dieback (Sinden, Jones and Fleming 1983). The sample of 192 paddocks was divided into five groups by live tree cover and the relationship of land value to quantity of tree cover tested within each group. In the two groups with least tree cover, **increases** in tree cover led to **increases** in land value. In the three groups with most live tree cover variations in tree cover had little effect on land value - - apparently land value increases and then plateaus out with increases in tree cover in this region.

These results, when combined with those of Reynolds (1978), indicate the same kind of relationship. Both Sinden, Jones and Fleming (1983) and Reynolds (1978) measured live tree cover in square metres of basal area per hectare and so the elasticity in both cases is the percentage change in land value for a one per cent change in live tree cover. The use of percentages allows a comparison even though one study used unimproved land values and the other improved land values.

Live tree cover	**Elasticity**

8.9	-11.1
2.9	-9.1
0.4	-0.02

While increases in live tree cover always decrease land value, the decrease is negligible at low amounts of cover and these low amounts are common across wide areas of the New England region.

The broad relationship indicated by these empirical results may be summarised as follows.

(i) At low amounts of native vegetation, land value increases as the per cent native vegetation increases.

(ii) At high amounts of native vegetation, land value decreases as the per cent native vegetation increases.

(iii) At intermediate amounts, land values do not change as per cent native vegetation increases.

5 Conclusions

As this summary shows, there is ample evidence to indicate that the loss in land value due to the conservation of native vegetation can be very large. The estimates of $198m to $230m for Moree Plains Shire (see Endnotes 1, 2, and 3), and $148m for the northern outwash province of the Brigalow Belt South Bioregion (part of which is in Moree Plains Shire), suggest that the total state-wide loss must be several billion dollars. Hopefully the Productivity Commission can combine individual estimates of loss by shire and region, with GIS mapping techniques and information on land types, to estimate a state-wide figure.

Endnotes

1 The World Wildlife Fund issued two comments on the introductory paper reporting the costs of vegetation protection in Moree Plains Shire (Sinden 2002). First, Moss and Trujillo (2002) strongly support the data, method and conclusions. They say (p1) " …We have been informed ... that many of the necessary assumptions are valid in the context of Moree shire .. this means that an intimate understanding of the Moree shire may prove the report sound…the broad conclusions are supported: it is not appropriate for one part of the community *(ie the farmers JAS)* to bear the full brunt of environmental management…". This support was followed by questions about several of the assumptions. Second and in contrast, Moss (2002) offers the same kind of questions but without the support.

2 The paper (Sinden 2002) contained sufficient information for economists to calculate elasticities to explore the likelihood of changes in land values - - and so answer the questions posed by the World Wildlife Fund. These calculations show that land values are stable over the likely range of variables (the elasticities were all less than 0.38 per cent).

3 Since Sinden (2002) and the associated press releases, I have received an enormous number of telephone calls asking for copies of the paper. The themes of all the conversations were the same - - "the Act imposes the same kinds of cost on our farm at about the same kind of percentage losses (16 to 30 per cent)".

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Table 1 Effect of retaining native vegetation on land values: a summary of the evidence

Region	Nature of land	Impact of retaining vegetation	N*	Year (reference)
Plains				
Coonamble north to Qld border (Walgett east)	Black soil, Mitchell grass	Decreases LV by $200 per ha or 66%	C	2000 (12)
	Black soil, Co-libah woodland	Decreases LV by $125 per ha or 71%	C	2000 (12)
	Light red soil, wilga, box, pine	No change	C	2000 (12)
Gunnedah (Liverpool Plains) north to Qld border	Black soil, plains grass	Decreases LV by$600m per ha, or 60%	C	2000 (12)
	Chocolate/blac k soil, boonery country	Decreases LV by $600 or 240%	C	2000 (16)
	Red soil, wilga box	Decreases LV by $100 per ha or 40%	C	2000 (12)
Moree Plains Shire	Flat, intensive cropping,	Decreases LV by $127 per ha or 16%, 41% still native vegetation	51	2002 (8)
Tablelands				
New England, Walcha north to Guyra	Away from gorges, dieback present	Decreases LV by $37.8 per ha or 11% for a 1 sq m increase in live cover	192	1983 (10)
Dumaresq, Walcha, Guyra, and Uralla Shires	Tablelands proper	Decreases unimproved LV by $6.36 per ha, or 3.1% when live tree cover rises by 1 sq m	20	1978 (6)
	Tablelands, near gorges	Decreases unimproved LV by $3.3 per ha, or 11.1%, when live tree cover rises by 1 sq m	45	1978 (6)
Walcha shire	Eastern and southern escarpment	Decreases LV by $230 per ha, or 15%	35	1999 (2)
Coast				
Near Coutts Crossing and Nymboida villages	Largely uncleared land, Nymboida shire	No effect, clearing is unprofitable	32	1999 (2)

* N is the number of farms in the sample, where C is a single case study.