

**Factors affecting landholder adoption of  
Native Vegetation Best Management Practices  
in the Murray Irrigation Region**

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## Disclaimer

The views expressed in this report are solely the authors and do not necessarily reflect the views of Charles Sturt University, Murray Irrigation Ltd or people consulted during the research project

### Cover photos:

Scenes from the Murray Irrigation region taken by Joanne Millar and Emily Mendham

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# Executive Summary

This report details the findings of research into factors affecting landholder adoption of native vegetation best management practices (NVBMPs) in the Murray Irrigation region of South-West New South Wales. Although landholders have widely adopted farm planning and irrigation recycling, landholder uptake of native vegetation management incentives and recommended practices has been much lower. The aim of this research was to explore why some landholders are or are not adopting best management practices and their perceptions of the vegetation management incentives being offered by Murray Irrigation Ltd (MIL)

Twenty-four landholders from across the region were interviewed to explore their experiences with native vegetation management and their views on recommended practices and incentives offered. Semi-structured interviews were held with landholders who had undertaken recommended practices using incentives and landholders who have not accessed incentives or are unwilling to undertake recommended practices. Three Natural Resource Management officers who work with landholders and native vegetation management in the region were also interviewed. Prior to conducting the semi-structured interviews, a group interview was held with Murray Irrigation Ltd Land and Water Management Plan (LWMP) implementation officers.

Landholders have adopted recommended best practice or have a desire to undertake native vegetation management, because it matches their personal goals and values. Despite holding conservation goals, some landholders have not undertaken NVBMPs owing to major constraints such as financial and time limits, perceived production losses, the practice not fitting with existing farming systems, inflexible incentives criteria, lack of alternative forms of engagement, limitations of the extension process such as the high rate of staff turnover or a general mistrust of government intentions.

Recommendations are to:

1. Focus more on landholder and community engagement and less on targets
2. Provide opportunities for a wider range of landholders to participate in programs
3. Allow more flexible implementation of criteria for incentives and recommended practices
4. Provide greater labour support through contracts with professional or volunteer providers
5. Provide recognition for past efforts- big or small
6. Provide incentives to retain staff for longer periods

# 1. Introduction

In 2005 Murray Irrigation Ltd contracted Charles Sturt University to conduct research into factors influencing landholder adoption of native vegetation best management practices (NVBMPs) in the Murray Irrigation region. Farm planning and irrigation recycling best practices have been adopted. However, landholder implementation of native vegetation management and uptake of incentives has been relatively low, despite active extension and communication programs. The targets set in Land and Water Management Plans (LWMP) for native vegetation protection were not being achieved in some areas. Hence, the imperative was to improve understanding of landholder attitudes and constraints to adoption of native vegetation management with the aim of tailoring programs to better meet the needs of landholders and enhance native vegetation management.

The aims of the study were to;

- Explore why some landholders are accessing native vegetation incentives and/or adopting best management practices.
- Explore why some landholders are not accessing native vegetation incentives and/or adopting best management practices.
- Make recommendations on how to encourage greater uptake of best management practices and/or incentives.

Scientists and policy makers often express frustration when, for issues such as biodiversity loss, farmer adoption of conservation technologies is modest at best and insufficient to combat the problem (Pannell et al. 2006). In the past, Government has often assumed that at least part of the explanation for low adoption or non-adoption of best practices by landholders was that they were unaware of the existence of a problem, lacked sufficient knowledge and skills, or valued short term economic returns over long-term sustainability of the land (Curtis et al. 2000). In fact, most landholders recognise the existence of significant degradation problems. This has been a direct response to awareness raising and education programs such as Landcare and Bushcare over the last two decades with rehabilitation work now being undertaken in most areas in Australia (Millar & Curtis 1999; Cary, Webb & Barr 2002; Curtis & Robertson 2003; Earl and Cresswell, 2005).

According to Vanclay (2004), stewardship has always been a goal of landholders, i.e. of 'good farm management'. He states that in many instances landholders' attitudes are not the problem - they do not believe they are 'destroying the earth'. Rather, they may have different views about the meaning of environmental management, how best to implement it and have questions about whether the promoted practices are actually sustainable or profitable (Millar 2001; Vanclay 2004). Therefore, any links between conservation attitudes and adoption of best practices is problematic (Curtis et al. 2000). There are often strong constraints on the ability of most landholders to implement many recommended conservation practices (Cary, Webb & Barr 2002). Problems arise if

recommended practices or new enterprises are complex, perceived as risky, do not fit with existing enterprises or conflict with social norms (Barr & Cary 2000; Curtis & Race 1996; Vanclay 1992). Recent literature on factors affecting landholder adoption of conservation practices highlights the broader influence of the following elements:

- the social, cultural and economic context of each farm family;
- the personality traits of individuals;
- the nature of the technology and;
- the adoption or learning process. (Pannell et al. 2006)

These social and technological elements were explored in relation to landholder uptake of recommended native vegetation management practices, and the use of financial incentives offered by Murray Irrigation Ltd.

## **2. Methods**

Qualitative methods were used to understand landholder adoption of NVBMPs in the Murray Irrigation Area. Between March and May 2005, twenty-four landholders from across the four LWMP areas were interviewed to explore their experiences with native vegetation management and their perceptions of the incentives offered. Semi-structured interviews were held with seven landholders who had undertaken recommended practices using MIL incentives and seventeen landholders who had not accessed incentives or recommended practices. A higher number of those who have not undertaken works were interviewed as they make up the great majority of landholders in the study region and have the biggest potential for increasing uptake of vegetation incentives.

Potential interviewees were sent an introductory letter and information sheet about the project (Mendham 2005). The interviewees were then contacted by phone to seek their consent to be interviewed and set up a date and time. Questions were designed to understand from the landholder's perspective, the possible barriers and drivers to adoption of the recommended NVBMPs (see Appendix 1). Sixteen interviews were held with individuals (fifteen male, one female), six interviews with husband and wife couples, and two interviews consisted of father and son. All the interviews were conducted at the property and took between 40 minutes and three hours, depending on whether vegetation sites were inspected.

Prior to conducting the landholder interviews, a semi-structured group interview was held in February 2005 with eight Murray Irrigation Ltd LWMP implementation officers in Finley to ascertain their perspectives and experiences with delivering the program. Three Natural Resource Management officers from outside MIL were also interviewed because of their extensive experience in working with a large number of landholders on native vegetation management issues. The interview guides used are shown in Appendix 1. Most interviews were taped and then transcribed before analysing by coding into themes. Thematic content analysis of the data was conducted using a combination of deductive and inductive methods with the assistance of NVivo qualitative analysis software (May 2001; Rossman & Rallis 2003).

### 3. Findings

#### 3.1 Background demographics

The following table shows some demographics of the landholders interviewed. (N = 24)

**Table 1 Landholder demographics**

<b>Gender</b>		<b>Property Size (ha)</b>	
Female	1	0-250	1
Males	14	250-500	2
Husband and Wife	6	500-999	13
Father and Son	3	1,000-1,499	3
		1,500-1,999	0
<b>LWMP Area</b>		2,000-2,499	2
Cadell	8	2,500-3,000	1
Berrigan	5	4,000 –5,000	1
Wakool	6	>10,000	1
Denimein	5		
<b>Income Source</b>		<b>Enterprises</b>	
On-farm	15	Mixed (cropping and livestock)	15
Off-farm and on-farm (supplementary)	7	Cropping only	6
Off-farm (important role in survival)	2	Cattle only	2
		Dairy	1

The majority of properties ran cropping and livestock enterprises, were between 500 and 999ha and relied on farm income. However, the wide range in property sizes reflects the broad diversity of land suitability and land uses in the Murray Irrigation region which can influence interest in native vegetation management options and farmer capacity to embark on recommended practices (as discussed below). Although the length of residency on properties was recorded it did not have any discernable positive or negative influence on uptake of native vegetation incentives or practices.

Although landholders were selected on the basis of having adopted, not adopted or likely to adopt the recommended native vegetation management practices using MIL incentives, it became evident during the interviews that there was a continuum of past and current native vegetation management practices and varying levels of interest in the new scheme (see Table 2 below).

**Table 2. Landholder adoption of native vegetation management practices**

<b>Landholders who have undertaken NVBMPs (7 interviewees)</b>	<b>Landholders who have not undertaken NVBMPs (17 interviewees)</b>
<ul style="list-style-type: none"> <li>▪ Above and beyond – adopted NVBMPs and undertaken other conservation practices (3)</li> <li>▪ Conducted NVBMPs to enhance production and conservation goals (3)</li> <li>▪ Undertaken NVBMPs but would not do any more (2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Undertaken works under past MIL criteria. Self-funded and/or through Landcare or Greening Australia (7)</li> <li>▪ Conducted self funded works, largely unaware of incentives available (2)</li> <li>▪ Interested in undertaking NVBMPs in but ineligible (2)</li> <li>▪ Interested in undertaking NVBMPs in the future (2)</li> <li>▪ Native vegetation works not a current goal (4)</li> </ul>

## **3.2 Why some landholders are undertaking NVBMPs and using incentives**

### **3.2.1 Conservation, production and sustainable farming goals**

Farmers who were eligible and had implemented NVBMPs on their properties had done so because it was consistent with their goals and values. The goals expressed by these seven farmers included: conservation of vegetation and wildlife; need for long term land stewardship; viable production; making rural communities desirable places to live; family and family succession; and maintaining an aesthetic environment in which to live.

For example, the motivations of one of the farmers interviewed related to becoming aware of native vegetation decline and having a desire to try and reverse some of the damage caused in the past.

*“I could see those trees starting to die about 8 or 10 years ago and that’s what got me thinking, and that’s really what got me started, I’ve got to do something about this otherwise they’re not going to be here forever... and now I’d say 20% of my energy and time is now put into saving the native vegetation.”*

Three landholders had adopted practices to a level beyond what is required by MIL and were motivated by strong conservation and stewardship goals. A great interest and love for the local area, including native vegetation and wildlife was a driving factor as expressed by the following landholder quote.

*“I have such an interest in wildlife...My dream was to take a back seat and get more active in some of these other less profitable ventures that I’m interested in [conservation activities].”*



Two of these farmers had each fenced off over 350 hectares of remnant vegetation, which is managed according to the MIL regime with spring grazing to reduce annual weeds. Some regeneration works such as direct seeding and plug planting have also been conducted on these properties. Previous and current work has also been conducted through Greening Australia and the Wetland Watering Program. Both landholders had plans for further native vegetation works.

For other farmers, conducting NVBMPs enhanced their farming and production goals. For example, fencing off native vegetation directly tied into the biodynamic farming methods that one farmer was using. Several other farmers described how fencing off the remnant vegetation and revegetating areas had production benefits such as shade and shelter for stock and increased yields of crops.

*“I had an experience a number of years ago, when we had rice down against the creek... and it was a cold season and there was a lot of sterility due to the cold but with protection of the creek [i.e., remnant bush there], the crop did well with the protection just from the wind. That’s what I put it down to because other crops around of long grain rice were very poor. It wasn’t flash but it was ok. So that was a real lesson.”*

Most landholders were motivated by a combination of these goals. For example, conducting native vegetation works matched the landholder’s production goals, as well as providing additional conservation values. A couple of farmers interviewed expressed this in terms of achieving sustainable farming well into the future.

*“Our future is just huge, whereas if I’d done nothing over the last 40 years you’d just kick yourselves – now we’ve set ourselves up to be in a good position, and everything is sustainable. So that’s the way I look at it anyway. But long term we will be more viable than people who had done nothing.”*

### **3.2.2 Personality traits**

Personality traits also influenced adoption of the recommended practices. Several farmers expressed positive attitudes towards risk and change, and optimism about the future of farming. A desire to stay positive and try new ventures made undertaking NVBMPs on their properties desirable, even in financially tough times.

*“...so you are adapting and changing with what is happening around you with the environment so it’s not all doom and gloom. You’ve just got to change, work with it.”*

For one farmer, conducting NVBMPs fulfilled a personal desire to seek out new challenges and projects outside regular farming practice.

*“It’ll just be interesting to see if my interest and energy levels will stay up there. Something will come along and I’ll go again with something new. That is what keeping me going, doing all these extra things rather than mundane day to day farming. All these challenges, it’s great, I really love that, it’s good, good fun.”*

Having a long-term vision influenced setting goals for future change as a part of their farm management strategies, as expressed by the following quote.

*“Some people just look from day-to-day whereas because of what happened 10 years ago when I could see trees dying - hello, already alarm bells going off... I’ve always done that...always looking 10 years down the track... got goals and you’re looking there all the time...”*

### **3.2.3 Knowledge and experience with trialling**

Farmers who have adopted recommended practices exhibited knowledge of the native vegetation management regimes required, their purpose and the benefits. The process of trialling and learning was important in the adoption of NVBMPs. Initial perception of a problem and support of extension officers throughout all stages of the learning process facilitated adoption. For example, one of the farmers was able to trial the practice with a local Landcare group before fully committing to it.

*“I was in the Landcare Group and we did trials on die back and that sort of thing in the trees... With the Landcare group I could see how I was going to fix it by fencing it off and getting it to regenerate and then putting understorey in and all that sort of thing.”*

### **3.2.4 Perception of incentives and criteria**

For the respondents who had used the incentives offered, it allowed them to achieve their goals on a greater scale and in a shorter period of time than would be possible without them. The incentives available for fencing and the yearly payment of a management fee of \$10/ha for two years were perceived to be adequate.

*“Wouldn’t have done it if the money wasn’t available. Wouldn’t do it just because of sheer cost - \$30,000 worth of fence and in the immediate future what I can actually earn with that cash, with the \$30,000 I can go and laser another 150 acres and be earning more money off it ... so the incentives are useful... Well, I couldn’t justify it without the subsidy.”*

However, for one farmer the incentives available for conducting NVBMPs were perceived to be seriously inadequate in situations where production loss was going to occur as a result of undertaking the practice.

*“Locking up country that we are actually cutting wood out of now, well that’s just going to impact. So there’s no incentive there – if you can’t derive an income.”*

The criteria associated with the incentives were perceived to be legitimate by these respondents. Indeed, most of the areas of remnant vegetation managed under the program were already larger than the minimum criterion of two hectares.

*“I must admit I wasn’t planning to do this corridor but with the incentives it just fitted in. In our initial farm plan it was only a corridor for probably 10m of trees so I thought might as well go wider and get the incentive and it’s a good shelter-belt of trees.”*

However, the two-year management agreement in the current incentive system was perceived to be too short term by another farmer. The uncertainty of how long the current programs would last was also a concern.

*“If you sell the property and the next person comes along and pulls the fences down and goes in and destroys it so government and everyone else has wasted their time and their money. So it’s got to be a long term goal.”*

### **3.2.5 Perception of extension services and information sources**

The quality of the extension officer and the relationship established with them was considered important throughout all stages of the adoption process, from raising awareness of the practice, fostering interest and maintaining continued support. For one of the farmers interviewed, one-to-one contact with extension officers was the primary source of awareness about the incentives, and the primary reason for him continuing to conduct NVBMPs on his property.

*“It’s amazing what is out there once you find out about it. Like through [extension officer] he has been really good and lots of other people...if it wasn’t for them you wouldn’t know.”*

Follow-up visits by extension officers were also seen as very important to the interviewees. The enthusiasm and commitment of extension officers, as well as outside experts, has also played a major role in the continued commitment displayed by the farmers who have adopted NVBMPs.

*“When he [wildlife survey consultant] came out here, he’s got me inspired – that what I’m doing, I’m doing the right thing, and I just need to keep going, and he just gives you a lift to keep going.”*

The local newspaper was seen as a good source of information on programs. Murray Irrigation newsletters were also regarded as a good source although some mentioned the large amount of information received in the mail. Involvement on several committees meant some respondents received information on the programs first hand. Landcare membership was also an important source of information. Field days were valuable for learning new farming methods for participants who regularly attended them.

*“There’s field days on all the time – and they are good. I went to one at [property name] and one over at [location] which was good, just to see the different ways of approaching it and doing it.”*

## 3.3 Why some landholders are not undertaking NVBMPs and using incentives

### 3.3.1 *Inherent interest in native vegetation and past experience*

Seventeen farmers were interviewed who have not yet undertaken NVBMPs to the current MIL standards. Nevertheless, different landholder experiences with native vegetation management were identified. Ten farmers had undertaken revegetation works on their properties under past MIL programs or through Landcare or Greening Australia Programs that did not have criteria consistent with those of MIL today. Their motivations for doing so were similar to those who had used MIL incentives such as having conservation goals, wanting to create a pleasant farming environment or getting significant production benefits through shade and shelter for stock and crops.

*“There’s nothing like some good tree groves to lift your spirits when you’re going around the farm when it’s been a bit of a grim day, when things have been going wrong.”*

*“People say there are no be benefits... there are benefits, you get production benefits. For example, the guy from Hamilton on the video said 25% of his farm is vegetation and he is still getting benefits, hasn’t lost production yet – but it has to be strategically placed.”*

*“Since we’ve been here we have been putting plantations where we want them, you know fence lines, shade for stock and where they won’t get in the way of cropping or pastures.”*

Likewise, solving an immediate degradation problem was the initial driving factor for planting trees for several farmers. High water tables, salinity and waterlogging were limiting production and would cause even greater problems in the long term. Despite not using MIL incentives, these farmers have continued to conduct other vegetation works beyond alleviation of the degradation.

*“We had a dryland salinity problem here... Back then I thought we would end up having to walk off the place because the salinity was so bad... Landcare and salinity did us a good turn in one sense.”*

*“The high water table, if we didn’t get rid of it we didn’t have a future so we had to do something. I mean we didn’t do it [planted trees] because we were good people. We knew that we were out of business if we didn’t do it. It was necessity that drove that.”*

*“It is a beautiful remnant... It was suffering so I wanted to fix it up ... it is a source of pride...”*

### **3.3.2 Reasons for not undertaking NVBMPs to MIL standards**

Factors constraining or influencing farmers not to use MIL incentives or follow NVBMPs included lack of flexibility or relevance with the criteria; lack of information about the incentives and their requirements; lack of time; economic and production constraints; stage in life; limited opportunity for learning; and lack of confidence in the practice.

Several farmers expressed that they could not plant trees to the current 30 metre criterion owing to the small size of their properties or a concern that the corridor would use valuable productive land. For one farmer interviewed it meant that he is not eligible for incentives so most of his vegetation work has been self-funded or through Landcare. The LWMP group interview also identified the current criteria as a major constraint to adoption.

*“At least 30 metres wide. There’s no way, in my good country there’s no way I want to put 30 metres in, I am happy to put a chain wide, that’s 22 yards, a chain, not 30 metres in our good farming areas.”*

*“They come in and say you got to do this, you gotta do that you’re not going to get anywhere ordering farmers: go in and work with them, encourage them to add a little bit more land perhaps, but don’t make such rigid rules because not everywhere is the same.”*

The importance of flexibility in the criteria was highlighted by a farmer who expressed a desire to revegetate some areas. When the extension officer arrived they were told they could not receive incentives for one proposed area because it did not meet the criteria, despite a channel being the obstacle preventing the area from being 30 metres. The farmer felt very disappointed at this outcome, and has not been interested in undertaking works since. He does not want to conduct a whole farm plan, or fence off areas of remnant vegetation as he feels it may limit future farm management.

*“[Extension officer] just stood there and said no, we couldn’t get anything for that area because it didn’t meet the criteria. I don’t want fences going up everywhere.”*

His experience with the Wetland Watering Program was more fruitful in that the area was de-stocked for a year rather than the establishment of permanent fences. This resulted in a large paddock being managed for conservation rather than the narrow strip that would have been fenced off.

*“They were able to be flexible, and we didn’t have to fence the area off and instead the whole paddock was managed rather than the narrow strip that they wanted.”*

Another barrier mentioned was the need to conduct a whole farm plan first before being eligible for the incentives as one farmer indicated he could not afford to do so without going into debt. Another interviewee had conducted self-funded works, with some costs claimed back through a Landcare group, but was largely unaware of the vegetation

incentives available through MIL. Other interviewees expressed interest in conducting native vegetation works in the past, or their wish to in the future.

*“I think they have improved, they may cover labour now... I’m not sure”*

*“If we could get \$1000 for fencing that would be marvelous! I would have so many more trees in the ground”*

Several interviewees do not need or wish to undertake NVBMPs such as fencing on their properties because of other priorities or the geographic location.

*“Water is dearer and getting scarcer and I see the advantage to laser the country first and then if I live long enough after I get it all lasered, which we are very close to it now... I can then go around and worry about recycle dams, recycle pumps. But first of all I’ve got to laser.”*

*“So we are in a bit of a unique situation here because we are bordering a state forest so we think we have enough trees.”*

The need to fence off remnant vegetation is not relevant for one property, as it was de-stocked over eight years ago and is now solely a cropping property. However, they are still interested in managing the area for conservation.

*“But a lot of the issues like fencing incentives and stuff like that aren’t necessarily particularly relevant here. If I had stock I’d probably get money to fence out the creek or whatever people want you to do but we haven’t had to do it here but possibly if you sell somewhere down the track it will become an issue then.”*

Economic and time constraints were preventing many of the landholders interviewed from undertaking some of the vegetation works they had planned to do. These constraints, caused by the recent drought, were delaying works that in normal circumstances would already be completed.

*“90% of what’s holding me back is time. I just don’t have the time to do some of this stuff that I want to do.”*

*“I’m not spending a cracker on this place until I start making some money on it.”*

Stage in life was another factor with one farmer admitting that native vegetation works were not a priority for him.

*“Wouldn’t even think about it - won’t live long enough, won’t live long enough”*

A general ill feeling towards government was identified by the LWMP and NRM interviews as a major constraint to adoption of incentives for native vegetation management. It was perceived that the issue of native vegetation has been combined

with the water allocation debate in the eyes of the landholders, and is seen as another way government is dictating to landholders. Some interviewees felt that the social consequences of issues such as environmental flows were not being taken into consideration and the voice of rural communities was not being heard. It was also claimed that considerable local knowledge is often being ignored by scientists.

*“Overall ill perception of government, because of the water allocation issues, environmental flows, MDFRC – native vegetation has been all jumbled up in governments dictating what Landholders can and can’t do. Dictating – allocations is one thing, vegetation will be another one. It is all bundled up together. Ill perception of government agencies is more intense in irrigation areas because of the water allocation issue.”*

### **3.3.3 Perception of extension services and information sources**

The influence of extension officers and other outside experts in fostering a positive interest in conservation and the environment was highlighted. However, the high rate of staff turnover was of serious concern, with the resulting difficulties in developing working relationships with extension officers.

*“It is really about personality, personality is the key. We took him [department official] for a drive around the farm, and he pointed out all the bad things about one remnant and made us feel terrible! He ignored all the good things, and didn’t say anything positive or constructive. But [wildlife survey consultant] came out and was so positive and enthusiastic, and pointed out what we had done right and some more things we could do to improve management. We used to think dead trees and fallen branches were sad, but can see now they have a use and are home to birds and insects.”*

*“But they seem to have high staff turnover, which makes it really difficult to establish relationships with anybody there, so that you have some consistency of contact ... and so it really comes down to individuals.”*

*“Seminars here and there on native veg, all sort of stuff but can only go to so many things. I tend not to go to that many of those sort of things. Then again, if I need to know something I know who to ring or I go on the net and have a look or whatever I need to do.”*

Another area of concern was the requirement of having to pay for the native vegetation works up-front. In financially tough times this can be difficult, and is a constraining factor for some farmers. One farmer perceived that the current native vegetation component of the plans is more to do with licence compliance than enhancing the native vegetation and wildlife of the area in a strategic or participatory fashion. It was felt by NRM officers interviewed that many landholders do not feel ownership of their areas of vegetation or the process.

*“So much of this is about licence compliance and bowing to the pressures from the greens and not being driven by what is really required. It is really about saying we’ve got*

*a native veg policy and so go away and leave us alone, not really about identifying what is valuable and saying ok how do we go about protecting it.”*

*“Here’s target, here’s incentive, or else – fantastic way to piss people off. How about provide people with information in a clever and concise way – here’s vegetation, here’s why we need it, what can we do about it? They completely skipped that process.”*

*“Some people see it as giving up their land, “oh that is the Landcare block” – don’t feel any ownership over it. No longer productive, see it as giving up land. It is not all landholders, but the mentality of some.”*

### **3.4 How to obtain better uptake of NVBMPs and incentives**

The personal contexts of individual farmers and families including their goals and values, economic and time constraints, personalities, and stage in life were identified as major factors affecting the adoption, partial adoption, or non-adoption of NVBMPs. Social and political issues also influenced farmer decision making such as the introduction of clearing and threatened species legislation, water allocation, poor public perception of farmers, lack of recognition, uncertainty about the future and feeling disengaged from government policies. To some extent, the nature of the NVBMPs and associated criteria for incentives also influenced acceptance and adoption levels.

Opportunities to obtain better uptake of NVBMPs were discussed during interviews with landholders and NRM officers. The following section summarises their responses in light of the factors and constraints identified above.

#### **3.4.1 Need to appeal to the wide range of landholder goals and values**

The wide range of landholder goals and values identified in this study indicates that extension efforts need to cater for this diversity and develop incentives or methods that can effectively engage with more landholders. Extension staff need to find out what landholders goals are and tailor information accordingly.

For example, the production benefits experienced from planting trees described by the interviewees in this research could be actively promoted by extension staff. Recent wildlife surveys should continue and information from this work communicated to landholders with an interest in wildlife.

*“The interesting thing is that it’s a real measure of people’s values because if they held a veg field day, 3 people turn up. Those field days [wildlife field days] have been absolutely inundated with people... It is a social night, and it was something they could actually show the kids and the kids could get involved in and it says on a whole lot of levels what these communities value.”*



Extension officers should aim to provide landholders with advice on alternative conservation methods that could fit in with existing farming systems. For example, one farmer needed advice on different grazing rates that could be used to encourage regeneration. Advice provided by a wildlife consultant encouraged the farmer to alter some farm management practices such as the removal of fallen timber.

*“Some advice on different grazing rates to encourage regeneration would be good.”*

The current MIL program does not cater for those who may not wish or need to conduct a whole farm plan or fence off areas of remnant vegetation, but they still wish to undertake nature conservation on their properties. They would rather manage areas by using lower stocking rates as fencing off smaller areas is thought to inhibit farm management in the future. Additionally, fencing off areas of remnant vegetation is not relevant for farmers who run purely cropping enterprises.

### **3.4.2 Reinforce vegetation management during farm planning stage**

Some landholders and NRM officers interviewed said that it would be beneficial to reinforce vegetation management during the farm planning stage. For example, if the requirement for 30 metre wide plantations is not included in irrigation layout design it is very difficult for farmers to meet this MIL requirement at a later stage.

*“Surveyors got in there and we bulldozed half of them out [tree plantations], in the wrong spot – in the middle of bays”*

*“One of the problems of course is when they do their whole farm plans the engineers don’t take into consideration the native vegetation, and how to work it around that and how to put in good areas of reveg, and they’ll make little narrow corridors. The engineers need to be educated more too. That’s a big issue that we have. People do their whole farm plans and we go in and we’re expected to try and out of the air pluck some wonderful way that these areas that are left to fit into the guidelines.”*

### **3.4.3 Address production, economic and time constraints**

Production, economic and time constraints have been experienced by both landholders who have and those who have not undertaken NVBMPs. Although landholders who have carried out NVBMPs found it to be very rewarding, the drought and the worsening financial situation for rural communities has made it difficult for farmers to pay their contributions. In fact, one farmer indicated that if he knew times were going to be this tough, he would have postponed the native vegetation work he has completed.

*“Even if there’s big incentives, sometimes just when things are a bit ordinary even finding that little bit you’ve got to put on top can be a problem. So probably in the short term I’ve nearly exhausted my, it’s a bloody enormous commitment and a lot of work. You’ve got to be very careful in farming, and you’ve still got to make your books balance, so your priority has got to be to generate some cash flow. I have to be honest: if knew such bad times were ahead, I would have postponed it.”*

The struggle to remain economically viable in times of drought and low water allocations has been difficult. Off-farm income has been sought, and is seen as vital for maintaining the farm and family lifestyle. However, off-property work can impinge on the time available for on-farm conservation works. MIL could look to overcoming some of the time constraints experienced by farmers by providing the labour component of works.

*“Around here many people do have their wives out working too –got to have supplementary income from somewhere... It is pretty hard to survive without having another income these days....”*

*“The amount of time that I’ve put into that project, just mentally and physically is huge. ...because it takes a lot of time to work out it all out what you’re going to do – and then the labour involved in it too... get a contractor in to put it up... but the logistics... got to run a farm as well... and then you are trying to make a living as well.”*

Farmers who have adopted NVBMPs have usually done so on areas that were of little production value or in areas that would enhance production. For example, when the majority of paddocks have already been cleared it is often not a problem for the farmer to fence off the remaining remnant vegetation because the area is of limited production value. However, if the recommended practice does not fit with the existing farming system, such as fencing off land currently in production, adoption is unlikely to occur. Only small-scale adoption of remnant vegetation protection can be expected if production loss is going to occur. Stewardship payments for conservation services should be considered as a way of enhancing adoption of NVBMPs.

*“And I would like to see the day when people get a genuine financial return. You’ve got ten hectares producing X number of biodiversity units, and therefore you’re entitled to twelve grand a year...and I think people understand that idea better, rather than just being paid for a fence.”*

*So basically it is just a money situation - as I said before in Europe there is figures of \$150-200 an acre every year is paid to that property owner. That’s basically what’s got to come here. Otherwise we are just kidding ourselves...we’re talking about the value of the land.”*

#### **3.4.4 Increase flexibility of criteria and best management practices to enhance trialability, learning and farmer confidence**

Flexibility in delivering the practice was an important part of the process of adoption for some, and is a major factor constraining adoption for others. The current incentive system does not appear to adequately take into consideration the need for different entry-points into a program to facilitate adoption or build confidence.

Consideration of landholder involvement in past programs (MIL, GA, Landcare or DNRM) could help to build a stepping stone between past native vegetation works and current incentives offered. Future programs need to be more user-friendly and take into account each individual’s farm situation.

*“I would say ‘I know this is not what the criteria is but this is what I want to do’ and [extension officer] will go, yeah, we will bend the rules there, we will do that and get the job done. [Extension officer] might have got a rap over the knuckles at some stage but [extension officer] got the job done and they should get credit for that”*

Receiving payment up front for works, rather than reimbursement, would improve the process for some farmers.

*“What would help would be - we pretty know exactly how much fencing exactly we have to do - and have the money before you start so you can actually go out and buy the material instead of having to do it first. It might take a couple of months to do it all then you’ve got to come up with the money to pay for materials and the contractor and then wait another month to get it back.”*

### **3.4.5 Provide recognition for past efforts**

Most landholders felt that the rural community is unfairly and harshly judged by the wider community, particularly those in the city. They also perceive a lack of recognition for environmental works completed by rural communities and the impact of past government policies which included mandatory clearing. This was backed up by comments from LWMP and NRM officers who revealed that landholders who have conducted native vegetation work feel they have received little recognition for their work.

*“The work that has been done by the farmers is not valued or recognised. Landholders are upset and have their backs up over this lack of recognition and undervaluing of the work that they have completed.”*

*“I actually said to the guy when I looked at the site, this is a really fantastic patch of veg, and you really should be proud of this. And he was chuffed – he said no one’s ever said that to me. He said ‘good to know that I’ve done something right.’ And I think there’s lots of people that are at that stage, they just want someone to tell them they’ve done something right and help them.”*

*“My argument has always been that farmers, if given a choice, will always do the right thing... If you go back to ‘63 when my father bought the farm next door - it actually came with a court order that gave him six weeks to clear the last of the lignum and saltbush off it...but that is only 40 years ago.”*

### **3.4.6 Reduce high rate of extension staff turnover**

Several farmers expressed concern over the high rate of turnover of MIL extension staff and highlighted the difficulty in developing meaningful and long-term relationships with extension staff. Trialling and adoption can be a long-term process requiring ongoing support and advice over several years.

*“The main thing that would help was if they had the same person working, same person with a high degree of capabilities working in the paddock for a few years rather than ...*

*I mean that's the difficult part. It's takes them a year or two to get the hang of it ... I'll be relying on his expertise a little bit too."*

*"Some farmers you may go out to, and they will have done a farm plan in three months, others you go to back year after year and maybe after three years they are signed up to potentially do a farm plan."*

MIL should aim to retain extension officers for longer periods of time to reduce the rapid turnover currently experienced. Increasing the wage of LWMP extension officers to match that of the CMA staff working in the region and providing a professional career development path could help achieve this aim.

### **3.4.7 Increase resources for one-to-one extension on farm**

The NRM officers identified that the most effective way to achieve landholder adoption of recommended practices was to show them how it can apply to their individual farm situation and encourage them to value native vegetation and wildlife by identifying species on the farmer's own property. One-to-one extension at the farm level was integral to this process.

*"Walking around with them, showing them what's there - that's really critical for changing the mindset with the landholders. Getting them to value what's there".*

The message was clear. Extension staff need to be positive, enthusiastic and accessible. They need to provide recognition for works already completed, while encouraging additional management strategies in a step-by-step fashion. It was evident in the landholder interviews that follow-up by extension officers was also important to build the confidence of some landholders. However, NRM officers said it was difficult to find time and resources to provide follow-up advice to landholders who have conducted NVBMPs, let alone encourage more landholders to become involved in the program.

*"If you're going to improve vegetation it requires management, management requires knowledge, knowledge requires support and understanding. We can't even meet the first initial visits let alone go back and help those people with management."*

*"If you don't have enough resources to put people on the ground to develop rapport and trust, then you'll never break down those barriers [fear over threatened species legislation]."*

*"We're asking why aren't these people keen – well I believe there's lots of people out there that are keen, I've got a list of 50. If you add the ones that the extension staff have that I don't have, that are not common, you could probably add another 20 or 30 easily. So that's 75 – say we could do four a day to do it effectively and that's without coming back to them, that's my year taken up on top of seed collection and direct seeding."*

## Conclusions and Recommendations

This research has shown that adoption of native vegetation best management practice is not an all or nothing process, but rather represents a continuum of trialling, learning and planning for native vegetation management. Different levels of adoption or non-adoption were revealed, from those who have gone above and beyond what is required to those who have conducted self-funded works or works through other programs, and those who do not wish or are unable to undertake NVBMPs.

Factors motivating landholders to adopt NVBMPs were strong conservation and stewardship goals and/or enhanced production and long term sustainability of the farm. Personality traits such as attitudes towards risk, a desire to seek new challenges, having a long term vision or a positive outlook were also important. Building knowledge through trialling and learning with the support of extension officers facilitated the adoption process.

Several landholders who have not yet adopted NVBMPs also expressed conservation and stewardship goals. However, they were constrained by other factors such as the opportunity cost of setting areas aside, not being eligible to meet the incentives criteria, their stage in life, incentives not appropriate for their farming system or location, lack of information, economic and time constraints or lack of contact with extension staff.

A summary of the key reasons for adoption or non-adoption is provided below:

**Table 3. Key reasons for adoption or non-adoption of NVBMPs.**

<b>Key reasons why landholders have adopted the practice</b>	<b>Key reasons why landholders have not adopted the practice</b>
<ul style="list-style-type: none"> <li>▪ Strong stewardship goals</li> <li>▪ Fits with existing farming system</li> <li>▪ Does not cause significant production loss</li> <li>▪ One-to-one contact with an extension officer through all stages of trialling and learning process</li> <li>▪ Confidence in the practice</li> <li>▪ Positive attitude towards risk and change</li> </ul>	<ul style="list-style-type: none"> <li>▪ Opportunity-cost</li> <li>▪ Economic and time constraints</li> <li>▪ Incentives or practice not relevant</li> <li>▪ Inflexibility of criteria</li> <li>▪ Lack of confidence in the practice</li> <li>▪ Not aware of how the practice can be applied</li> <li>▪ Lack of one-to-one extension</li> <li>▪ Relationship with agency</li> <li>▪ Stage in life</li> </ul>

The following recommendations are provided to encourage greater uptake of native vegetation best management practices and/or incentives in the Murray Irrigation Region. These recommendations acknowledge that the irrigation area covered by MIL has distinct social, historical and cultural characteristics that influence landholder willingness and capacity to engage in broad scale native vegetation conservation.

These unique elements need to be taken into account when designing incentive programs for the Murray CMA region.

### **1. Focus more on landholder and community engagement and less on targets**

Whilst setting conservation targets is important for biodiversity conservation and the outcomes of public investment, it is also important to recognise that landholder goodwill and commitment are critical to achieving such targets. Government policies and CMA/MIL programs need to move away from the purely target driven approach to biodiversity conservation and invest in more extension-staff to build landholder confidence and foster environmental values. Aim for consistent and long-term programs to monitor progress, learn from experiences and engage the broader community.

### **2. Provide opportunities for a wider range of landholders to participate in native vegetation management**

Be more inclusive. Include those who are interested in conservation but cannot meet the current incentives criteria. Provide lower level incentives and continue to provide on-farm advice and invitations to field days. Allow for trialability, partial adoption and different entry points into the program so landholders can slowly build confidence in recommended conservation practices and adapt them to their own circumstances. Find out what landholders goals are and tailor information accordingly. Provide substantial follow-up contact to maintain landholder motivation.

### **3. Allow more flexible implementation of criteria for incentives and recommended practices**

Incentives packages should address the constraints experienced by landholders, particularly at times of peak workloads and during drought. Incentive package eligibility criteria should be changed to provide support for landholders prepared to adopt improved practices, even if they do not meet current minimum standards. Cater for those who want to protect and manage native vegetation but do not have a need or desire for fencing or chemical weed control (eg use strategic grazing). Consider funding corridor plantings of lesser widths if provides farmers with a stepping stone to consider further works. Consider trialling a Bush Tender scheme where farmers can bid to carry out works based on their own costings and capabilities.

### **4. Provide greater labour support through contracts with professional or volunteer providers**

The significant economic, time and production constraints experienced by landholders warrants greater labour support. The cost should be covered by the incentives scheme and names of providers supplied to landholders.

### **5. Provide recognition for past efforts- big or small**

Recognition breeds confidence and pride. Train extension staff to work closely with landholders in giving encouragement, appropriate advice and recognition for their

achievements and the values on their property. Build on champion farmer stories by conducting regular farm walks, neighbourhood discussion groups, fun competitions, bus tours to other areas and award nights.

#### **6. Provide incentives to retain staff for longer periods**

Continue long term contracts for field staff and introduce higher salary rates that are commensurate with competing organisations. Consider introducing professional career development pathways to encourage ongoing employment.

## References

- Barr, N and Cary, J (2000), *Influencing Improved Natural Resource Management on Farms*, Commonwealth of Australia, Canberra
- Cary, J, Webb, T and Barr, N (2002), *Understanding Landholders' Capacity to Change to Sustainable Practices: Insights about Practice Adoption and Social Capacity for Change*, Commonwealth of Australia, Canberra.
- Curtis, A, and Race, D (1996), *Review of Socio-Economic Factors Affecting Regional Farm Forestry Development in Australia*, The Johnstone Centre, Albury.
- Curtis, A and Robertson, A (2003), 'Understanding landholder management of river frontages: the Goulburn Broken', *Ecological Management and Restoration*, vol. 4, pp. 45-54.
- Curtis, A, MacKay, J, Van Nouhuys, M, Lockwood, M, Byron, I and Graham, M (2000), *Exploring Landholder Willingness and Capacity to Manage Dryland Salinity: the Goulburn Broken Catchment*, The Johnstone Centre, Albury.
- Earl, G. and Cresswell, H. (2005), *Learning from the Heartlands experience*. CSIRO, Canberra.
- May, T (2001), *Social Research: Issues, Methods and Process*. 3rd edn, Open University Press, UK.
- Mendham, E. (2005). Factors affecting landholder adoption of native vegetation management practices in the Murray Irrigation Region. Honours Thesis. Charles Sturt University, Albury, NSW.
- Millar, J & Curtis, A (1999), 'Challenging the boundaries of local and scientific knowledge in Australia: Opportunities for social learning in managing temperate upland pastures', *Agriculture and Human Values*, vol. 16, pp. 389-399.
- Millar, J, (2001), *Listening to landholders: Approaches to Community Nature Conservation in Queensland*. National Forum on Nature Conservation on Private Land. Perth, Australia. 21-23 March.
- Rossmann, G and Rallis, S (2003), *Learning in the Field: An Introduction to Qualitative Research*. 2nd edn, Sage Publications, California.
- Pannell, D.J., Marshall, G.R., Barr, N., Curtis, A., Vanclay, F. and Wilkinson, R. (2006 in press), 'Understanding and promoting adoption of conservation technologies by rural landholders'. *Australian Journal of Experimental Agriculture*
- Vanclay, F (1992), 'The Social Context of Farmers' Adoption of Environmentally-Sound Farming Practices', in *Agriculture, Environment and Society*, G Lawrence, F Vanclay & B Furze (eds.), Macmillan, Melbourne.
- Vanclay, F (2004), Social principles for agricultural extension to assist in the promotion of natural resource management. *Australian Journal of Experimental Agriculture*, vol. 44, pp 213-223.



# Appendix 1 Interview Guides

## Landholder interviews

### Background (15min)

- How long have you been on the property?
- How many members of the family work on-farm/off-farm?
- What is the size of the property?
- What enterprises?
- What are your interests?

### Goals (15min)

- Why do you (like) live here (district or property)?
- What are you attempting to achieve on your property?
- What are your long term goals and plans?

### Native Vegetation (30min)

- What remnant vegetation do you have on your property?
- How do you manage your RNV?
- Why is it important/not important?
- What are your plans?

### Perception of support and services available (30 min)

- What would be useful to you to assist in managing your RNV?
- Have you heard of incentives offered by MI? If yes, how? Your views?
- What remnant vegetation works have you carried out?

### Information Sources (15min)

- Have you attended any field days/short courses/government programs?
- Where do you get your information from?

## MIL officer group interview and NRM officer interviews

1. What are the reasons for the low uptake of native vegetation incentives in your region?
  - What areas/ type of people have the best uptake, and why?
  - What areas/ type of people have the worst uptake, and why?
  - Do you receive any complaints?

- Do any landholders comment and what stopped them doing it?
2. What motivates some farmers to take up incentives and/or adopt best management practices (does one rely on the other)?
    - In your experience what have people said was good and bad about the process?
  3. Is there a problem or issue with the targets set, type of incentives offered or the way they are marketed?
    - Do you think the incentives are fair?
    - What has been the reaction when you approach landholders about NVBMPs?
  4. What is the best way to involve landholders in actively managing native vegetation if needed?
    - What approaches do you take?
    - What approaches do you find work the best?
    - Are there any approaches you would like to be able to take?