

# RIPRAP

RIVER AND RIPARIAN LANDS MANAGEMENT NEWSLETTER

## BUILDING CAPACITY for river and riparian restoration

We've been hearing a lot about community 'capacity' and 'capacity building' lately, but what do these terms really mean for people involved in riparian restoration at individual, group and institutional scales? In this issue of *RipRap*, we explore what 'capacity' and 'capacity building' mean for natural resource management and present some practical experiences of different groups and agencies around Australia.

*continued page 3*



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## RIParian lands: WHERE LAND AND WATER MEET



### From the Editor

The terms 'capacity' and 'capacity building' have become buzz words — you hear them all the time in relation to natural resource management (NRM), yet there is a lack of clarity about what they actually mean. This edition of *RipRap* will bring you up to date on the theory behind the idea of capacity building, as well as information about how different researchers and groups are practically building capacity in communities across Australia. The people contributing to this edition have been involved in a research project funded through the National Riparian Lands R&D Program that investigated whether capacity had been built in communities undertaking riparian restoration. This project has developed a 'capacity assessment tool' to assist people in working out where to direct resources to build the capacity they need to reach their NRM goals. The edition is timely, as Land & Water Australia's Social and Institutional Research Program is releasing its new publication *People make a difference*. This publication highlights that in order to fulfil triple bottom line NRM outcomes, we need to consider the social aspects of NRM. I hope you find this edition useful, and encourage you to follow-up on the articles and stories it covers.

# BUILDING CAPACITY for river and riparian restoration

By Don Thomson and Sharon Pepperdine

Details about the demonstration and evaluation projects can be found at [www.rivers.gov.au](http://www.rivers.gov.au)

A one-year research project, called 'Assessing community capacity for riparian restoration', has just been completed by LWA. The project aimed to identify what capacity means in practical terms, why it is important, and how 'capacity' might be assessed. The project involved re-visiting five of the regions that were part of Phase One of the National Riparian Lands Program Demonstration and Evaluation Projects to learn, from the range of people involved, about what enabled and constrained their riparian restoration activities.

In this issue of *RipRap*, we explore what 'capacity' and 'capacity building' mean for natural resource management and present some practical experiences of different groups and agencies around Australia. Through this issue of *RipRap*, we are also launching a new 'capacity assessment tool', specifically aimed at groups and agencies implementing, or planning to implement, riparian restoration initiatives.

## What is 'capacity'?

'Capacity' can be broadly defined as 'an ability to act'. However, this 'ability to act' encompasses a wide range of elements, which are all interrelated. They include things like knowledge, norms and values, the skills required to work as a team, and the opportunities and networks that communities provide. Collectively and separately, the elements of capacity are often thought of as stocks of assets, or 'capital'. The knowledge, skills and abilities of people (as individuals) are referred to as 'human capital'. The collective knowledge, skills and abilities of communities, as well as the networks and institutions that make up social systems, are referred to as 'social capital'. Just like 'financial' capital, 'social' and 'human' capital can be thought of as stocks of assets that have an assessable value. Social and human capital can also be enhanced with investment.

'Capacity building' broadly relates to some form of external or internal intervention aimed at enhancing the ability of individuals and

communities to act. Capacity development takes this idea further and recognises existing capacities, rather than focusing on building new capacities. For example, capacity development encompasses many techniques and approaches, including training, leadership development, participatory learning, etc.

## What does capacity mean, in practical terms, for groups and individuals tackling riparian restoration?

Our project explored the wide range of issues that enabled and constrained the riparian restoration efforts of individuals, groups and institutions across different catchments. However, we faced a big challenge. We needed a method that allowed us to consider how all these issues combined at different scales, and across different places and times, to impact on people's abilities to engage in riparian restoration. In reviewing current definitions of capacity we found them quite useful in understanding *what* capacity might be, but not very useful in understanding *why* capacity is important and *how* it can be 'enhanced'. We decided that what we needed was a different way of thinking about capacity.

We used a way of thinking about complex processes known as 'dialectics'. Dialectics is the study of flows and fluxes, and sees 'things' (resource condition, attitudes, behaviours, etc.) as outcomes of underlying processes. By looking at the problem from this perspective, we could appreciate that riparian land management is the outcome of many underlying processes that wax and wane in space and time. Furthermore, whether or not riparian management in one place and time is defined as 'good' or 'bad', depends upon the values, perceptions and knowledge of individuals, governments and the broader community hold at that time.



The full research report 'Assessing Community Capacity for Riparian Restoration' is now available for free from CanPrint. Free call 1800 776 616 (quote product code PR030553), as well as on the website at [www.rivers.gov.au](http://www.rivers.gov.au)



## BUILDING CAPACITY for river and riparian restoration

*We came to the conclusion that capacity should be thought of as what enables this process of capital (human and social) accumulation and decline — like a lubricating, or enabling, 'oil'.*

When this approach to defining capacity was presented to participants from various local, regional, State and Federal institutions at a workshop in Canberra in April 2003, there was general support, and after consideration of their feedback the following definition of 'capacity' was developed.

Capacity refers to the capability of individuals, groups and institutions to understand and deal with the enabling and constraining elements, dimensions and issues that drive the process of capital accumulation and decline (in all its forms) to produce desirable outcomes.

There are four principles that underpin this definition. Firstly, people must be able to *participate* in the processes of capital accumulation and decline. Secondly, individuals, groups and institutions must *learn* about, and from, the issues and processes so as to maximise the opportunities to influence better outcomes. Thirdly, through learning about the processes that influence outcomes in terms of riparian restoration, individuals, groups and institutions must *understand* how the processes interact to produce different outcomes. The fourth principle is the ability of individuals, groups and institutions to *deal with* or influence the processes to produce the desirable outcomes.

### Reconsidering capacity building

If capacity is thought of as the 'good oil', then 'capacity building' is all about enhancing the ability of groups and individuals to apply the oil to the right cogs to achieve the best outcomes from the underlying processes. In our study we



identified 35 key issues, events and qualities that people in the regions said had an influence on riparian restoration initiatives. We observed that the same issues or events have a positive (i.e. enabling) and negative (i.e. constraining) influence at different times and in different places. We referred to these issues, events and qualities as 'dimensions' of capacity because they have a variable influence and effect the riparian restoration outcome.

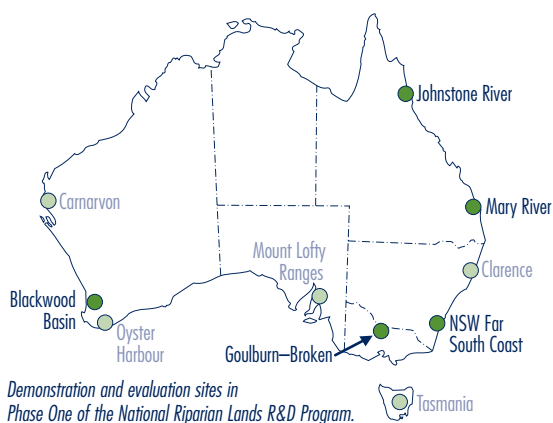
The next step of developing practical approaches for implementing these approaches to capacity and capacity development is to understand the *relative* importance of different dimensions of capacity and how they interact to produce different outcomes. To develop this understanding, we needed a method of simultaneously assessing all the dimensions of capacity, so that we can make more informed decisions about the 'what', 'where' and 'who' of capacity development.

The 'capacity assessment tool' (see next story) is designed to contribute to developing this understanding.

# ASSESSING CAPACITY for riparian restoration

## Background to the tool

An important outcome of the ‘Assessing Community Capacity for Riparian Restoration’ study has been the development of a practical tool to help policy and program designers, project managers and groups, assess the capacity of their regions to undertake riparian restoration. The ‘capacity assessment tool’ is based on the experiences of people in the five case study catchments of the Johnstone River, Mary River, Blackwood Basin, Goulburn-Broken and NSW Far South Coast catchments.



In each of the case study regions we used the project sites as a catalyst for discussions about the issues behind people’s positive and negative experiences of riparian restoration. We also ran focus groups with landholders, agency and catchment group staff. Interestingly, the key dimensions of capacity did not vary considerably between regions. Because of this similarity, we thought that these dimensions were an appropriate framework for a ‘capacity assessment tool’ that would be widely applicable. Table 1 outlines what those dimensions are.

Overall, our regional investigations confirmed that ‘capacity’ is very much about the skills and knowledge of individuals, their perceptions and values, social networks and relations, including feelings of trust, reciprocity, support and cooperation within and between institutions and between individuals. Issues of governance, administration, consistency, continuity, and the availability and accessibility of financial and other resources, are also important. We also found that

**Table 1: Dimensions of capacity included in the ‘Capacity Assessment Tool’**

Theme	Dimension
<b>1. Context</b>	Economic conditions, community cohesion and support, awareness of water quality/quantity issues, setbacks, community networks, community negotiation structures, complexity and cost of works.
<b>2. Values and perceptions</b>	Values, shared vision, skills in working with diverse values and perceptions, awareness, open mindedness and learning, perceptions of solutions, ownership of problems and solutions.
<b>3. Communications and empowerment</b>	Data availability, communications — targeting, communications — mechanisms, consistency of communications, cooperation between agencies, empowerment, inclusiveness.
<b>4. Program design</b>	Roles and responsibilities, financial security, program consistency, institutional consistency, flexibility, forward planning, transparency.
<b>5. Program delivery</b>	Decision-making, consistency of key people within agencies, personality of key people within agencies, skills and experience of key people within agencies, community ‘champions’, monitoring and evaluation, institutional capacity.

the physical and natural capital of the region can play a large role in determining the level of capital of other forms required to successfully manage riparian lands.

## The ‘Capacity Assessment Tool’

The ‘Capacity Assessment Tool’ is in the form of a Microsoft Excel spreadsheet, so it can be easily shared and stored for later reference. This means that the assessment process can be repeated at regular intervals to monitor changes. The tool is simple to use and self-explanatory, so no specific training is required.

There are seven steps within the tool (see Table 2 overleaf). Broadly, they involve: establishing some background facts, particularly in relation to the region and the project; the assessment phase (assessing the region/project on each of 35 dimensions in terms of condition and trend); and a weighting process to adjust the

**Table 2: Steps for using the self-assessment tool**

Step	Description
1.	Background information: details of the user, the region and the project
2.	Assessment phase — responding to statements relating to five themes: Socio-economic context Values and perceptions Communications and empowerment Program design Program delivery
3.	Weighting of importance of issues in the region (editable)
4.	Weighting of importance of issues in the life-stage of the project (editable)
5.	Priority-setting (optional, editable)
6.	Results (on-screen review or print, option of summary or full numerical results)
7.	Implications (on-screen review or print a report)

scores for the relative importance of each dimension (relative within the region) and for the different life-stage of the project/initiative. Results of the assessment are then presented as either a thematic summary or a detailed numerical results sheet. If desired, the tool can display recommendations about the priority of actions in response to each dimension. The last step is an ‘implications report’ which provides some pointers about how to respond to shortcomings in capacity, or how to maintain currently high levels of capacity, on each dimension.

There are many potential uses, and users, of the capacity assessment tool. However, it is important to stress that the tool is intended as an *assessment* tool, not as a *measurement* tool. There are some important reasons for this distinction.

*The tool is designed primarily as a guide to help program managers, policy developers, project managers and community groups think about, and work through, the issues associated with their ‘capacity’ to engage in riparian restoration works. It is the process of working through the tool that is important – the results or outputs of the tool should really only be seen as a record of that process.*

The main reason is that the tool relies largely on subjective assessments of current conditions and trends. The person(s) completing the tool will be making judgements about which ‘statement’ best applies to their region based on their perceptions of, and knowledge about, the region. This means that no two people will necessarily make the same assessment. Also, at different points in time, the same person might make a different assessment in relation to a dimension because their knowledge and/or perceptions have changed.

The following principles should be followed to maximise the positive outcomes of using the assessment tool:

1. That the users of the tool be those people directly involved in the design and delivery of programs/projects within their own regions. Policy and program developers may use the tool as a checklist of issues, or as a tool to guide the development of more comprehensive policies and programs in relation to social issues in NRM.
2. That the tool not be used to make judgements about others, or for comparing regions and projects.
3. That the limitations of the tool be clearly outlined to users.
4. That, where the tool is used by a group of people, the purpose of the assessment is clearly articulated.

## Who would use it, why and how?

There are four main uses for the tool.

1. As a ‘checklist’ of issues in relation to ‘capacity’ to help program managers, policy developers and groups identify the range of ‘capacity’ issues they might need to consider, and to start thinking about the features of programs or projects that might respond to or address these issues.



2. As a reporting tool to monitor changes in 'capacity' over time. Assessments could be used to report on regional targets, or simply to record current conditions and trends for later reference. By monitoring changes in 'capacity', and combining this with other data on progress towards regional targets, a picture might emerge over time that would help develop an understanding of how the dimensions of capacity interact in that region to influence different outcomes.
3. As a diagnostic tool, it can be used to identify strengths and weaknesses within the local community, institutions, and programs/projects. This knowledge would enable 'capacity development' initiatives and resources to be targeted more specifically and efficiently. As discussed above, by combining the results of the 'capacity assessment' with other monitoring outcomes, the relative importance of each of the dimensions of capacity could also be identified.
4. As a useful framework around which participatory research into issues of capacity and capacity development can be developed. For example, a range of perceptions of local conditions could be gathered by using the assessment components of the tool. These could be used as a focus for group discussions, or administered as a survey so that a 'regional average' could be determined. A focus group discussion around the statements for each dimension would yield very useful information on how different stakeholders and interest groups 'see' the region and/or project.

These potential uses for the tool provide some insight as to who might use the tool. The obvious users of the tool such as policy developers, researchers, program/project managers and groups spring to mind, but there are likely to be many others... including you!

If you want to have a closer look at the tool, and perhaps try it out on your project/program, you can download it from our website [www.rivers.gov.au](http://www.rivers.gov.au). We will ask you to register your name and contact details so we can contact you for feedback on the tool in 6–12 months time. Following the trial process, we will update the tool and provide it both via the web and on CD.

You can download the tool from [www.rivers.gov.au](http://www.rivers.gov.au)

**For more information**

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**NEW**



**River and Riparian Management Technical Guideline Update Three**

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# UNDERSTANDING individual and community

By Trevor Webb

Central to recent natural resource management (NRM) policy initiatives is the empowerment of regional communities to take responsibility for the design, development and implementation of regional catchment management. Underpinning this devolution of responsibility is the recognition that individuals, communities and catchment groups need to be supported and assisted if they are to achieve ecologically, economically and socially sustainable outcomes. These policy initiatives have drawn attention to the concepts of capacity and capacity building, and there has been considerable research interest in understanding these concepts in a NRM context.

LWA recently funded the Social Sciences Program of the Bureau of Rural Sciences to develop a framework that could be used to characterise the capacity of regional communities to adopt more sustainable NRM practices. The project built upon a body of knowledge and understanding about rural and regional Australia's capacity for NRM, some of which is described below.



## Defining capacity and capacity building

Capacity only makes sense in relation to some desired action or endpoint, in this context improved NRM is the desired endpoint. Capacity is a characteristic of some entity; some 'thing' has the capacity in relation to the desired action. In the context of capacity for NRM, we are primarily concerned with the capacity of individuals, communities and organisations. Community capacity then, refers to the ability of the community to identify its NRM issues and constraints, seek out and mobilise the resources needed to address these issues, and to manage and sustain itself through this process.

It follows that capacity building is a process of developing these abilities. At an individual level this may include the enhancement of NRM skills and knowledge through training and education. For a community, capacity building may involve fostering the development of positive interactions between members of the community to ensure they can work

co-operatively to achieve common goals. It is the investment in people, institutions and practices that enhances the community's ability to understand and deal with its needs and achieve its NRM objectives.

'Capitals', are the resources that individuals and communities draw upon in building their capacity and achieving their objectives. It is important to note that the *capitals* are different to *capacity* (the ability to draw on the capital for some desired action). While these capitals can be categorised in many ways, we have highlighted the following four types we consider important to NRM.

1. *Natural capital*: the renewable and non-renewable resources found in nature that are useful and required for human existence.
2. *Human capital*: the knowledge, health, skills and general ability of individuals to contribute to their own and others satisfaction.
3. *Produced economic capital*: the goods and services produced through human effort including both physical, financial and knowledge products.
4. *Social capital*: which is the 'glue' that holds communities together, it is a product of interactions and can be characterised in terms of structure (e.g. formal, informal) and its qualities (e.g. norms of trust and reciprocity).

Natural capital is an essential requirement for human existence and activity, and a central concern to communities dependent upon agricultural production. The main focus of NRM is developing and implementing management practices that maintain, and where possible enhance natural capital. Capacity for NRM is the ability of individuals, communities or groups, to draw upon their resources, the various capitals, to sustain and enhance their natural capital.

## Elements of capacity

At a finer scale, we have identified particular elements of the human, social and produced economic capitals that play an important role in the community's capacity for NRM.

*It is the investment in people, institutions and practices that enhances the*



# CAPACITY

The following table identifies the elements for each type of capital. Indicators under each element can be developed to assist in characterising community capacity.

## Elements of capital important to capacity building

Capital	Element
Human capital	~ Age and population
	~ Education
	~ Health
	~ Cultural diversity
Produced economic capital	~ Economic resources
	~ Physical infrastructure
	~ Knowledge infrastructure
Social capital	~ Social participation
	~ Civic participation and volunteering
	~ Governance

In characterising a region's human capital, a broad understanding of the region's population is gained. Different regions will have different concentrations of particular age groups, some will be experiencing a loss of younger people, while others may be experiencing an influx of professionally educated urban people. In each case, the local population remains a key resource in NRM. Understanding the dynamics and changes in the local population is an important first step to effective involvement of the community in NRM. A region's level of education is an important aspect of its ability to cope and respond to change. Through education, skills and abilities are developed and the ability to adapt is enhanced. Communities are not culturally homogeneous, and ethnicity may be an important factor in shaping individual and group responses to NRM challenges.

Regions will differ in their produced economic capital; some regions may be economically diverse while others may rely on one or two main industries. Others may have established networks of paid NRM facilitators or good access to regional universities and research and development institutions. The different combi-



*Importantly, an individual's or community's capacity will be unique.*

nations of these assets will have different implications for NRM. For example, the presence of a regional university campus can provide high levels of technical expertise that is regionally tailored. This may help NRM managers in assessing their current situation, provide a range of tools and techniques to achieve NRM goals and assist in the evaluation and monitoring of the NRM process.

All regions will have some degree of social capital but it will develop in different ways. Some regions may have high levels of social interaction between parts of their communities; others may have high rates of volunteerism; whilst some communities may have active NRM groups. For example, regions with active community landcare groups will typically have members with experience and skills of working in groups to develop plans, and may have well established skills in negotiation and conflict resolution. Social capital is important as NRM is an ongoing process of negotiating between people. The ability to draw on resources, work effectively in groups, and develop relationships of trust and reciprocity will influence the effectiveness of NRM.

*community's ability to understand and deal with its needs and achieve its NRM objectives.*

Importantly, an individual's or community's capacity will be unique. The combination of the resources available and the skills and abilities in leveraging these for NRM objectives will be distinct for each.

## Current and recent related capacity building projects:

**Farmer's NRM behaviour:** This set of projects seeks to better understand the farmer and landholder adoption behaviour with regard to more sustainable farming practices. Studies currently underway collect data including: landholder's awareness and knowledge of sustainable practices; their socio-demographic characteristics; and other relevant characteristics of their property. In collaboration with catchment management groups, these projects build capacity in communities and provide important baseline data for planning purposes.

**Social profiling and atlases:** Using social data from the Australian Bureau of Statistics these projects provide indicators of human, social and produced economic capitals, often in an atlas format. Projects to date have focussed on broad geographic regions (e.g. regional and rural Australia, catchment management regions) and on particular industry sectors (e.g. wine producing regions, commercial fishing). The 2001 edition of the *Country Matters: Social Atlas of Rural and Regional Australia* will be released later this year.

**Facing the future:** This project explores the social and cultural factors that influence the decision-making of farming families about their futures. It focuses on farming families responses to adjustment pressure, and the way this impacts on their capacity to maintain a sustainable agricultural enterprise.

**Regional planning skills:** This project developed a pilot process for investigating the skills and training needs that regional groups require to effectively participate in integrated natural resource management.

### For further information

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# ADAPTIVE MANAGEMENT — building capacity in our NRM institutions

By Sarah Ewing

Capacity building relates to some form of intervention aimed at enhancing the ability of individuals and communities to act. Our focus in this issue of *RipRap*, is with the range of activities by which we, whether as individuals, groups or organisations, can improve our capacity to manage the riparian zone.

Much of what is written on the issue of capacity building in natural resource management, relates to enhancing the ability of *groups* and *individuals* to do their work. But what of the *institutions* and *organisations* that shape the environment in which these groups and individuals work along our rivers? What might capacity building involve for them?

*But what of the institutions and organisations that shape the environment in which groups and individuals work along our rivers? What might capacity building involve for them?*

## Adaptive management and institutions

One capacity that is gaining increasing attention in Australia is 'adaptive capacity', that is, the extent to which our institutions allow for an adaptive approach to management. Adaptive management (AM) is an integrated, multi-disciplinary method for natural resource management. It is 'adaptive', because it acknowledges that our understanding of the natural resource being managed, such as a riparian zone, will change over time; management approaches need to respond to these changes. AM views policies as 'experiments' and management actions as the 'treatments'. It requires a deliberative, documented and explicit approach to each 'experiment', in which the effects are described and assessed, and then fed back into the next phase of the 'policy-as-experiment'. AM has been put forward in response to what Dovers (2003) refers to as policy 'amnesia' and our tendency to disregard the outcomes of previous experience, such that the same policy 'wheel' is reinvented time and again.

AM has captured the interest of policy-makers in the natural resource management sector and is rapidly becoming part of the rhetoric of policy statements and government ministers. In New South Wales, for example, the *Water Management Act (2000)* includes AM as a principle of water management:

The principles of adaptive management should be applied, which should be responsive to monitoring and improvements in understanding of ecological water requirements.

In South Australia, the Minister for Environment and Heritage has urged an adaptive approach to the shaping of regional water management policies, explaining that:

Adaptive management is an approach which recognises that our water allocation policies are really just ongoing experiments with natural systems about which we are continually learning more and more (Hansard, SA Assembly, 30 September 1999).

And, in Victoria, the River Health Strategy is built upon an adaptive framework. It suggests a capacity to learn from management decisions and to change management strategies on the basis of improved knowledge. As the strategy states, this is necessary because:

- ~ our knowledge of river health processes and how effectively they respond to the various management activities recommended in regional River Health Strategies is incomplete and unlikely to ever be fully adequate; and
- ~ our river systems and climate are highly variable and often system responses cannot be easily predicted at the planning stage (DNRE 2002: 131).

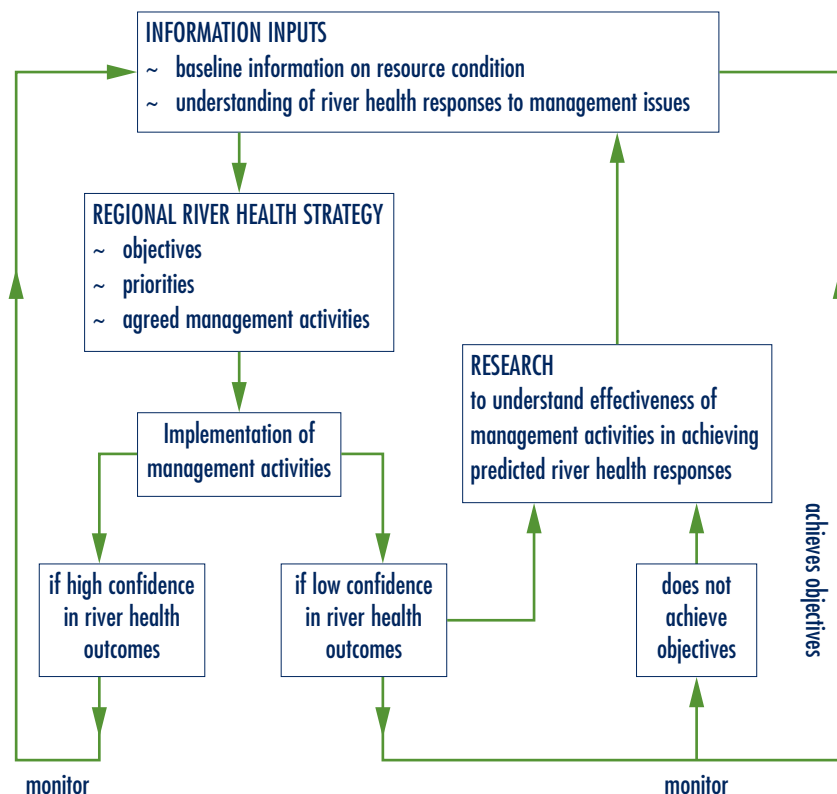
The adaptive management cycle for the management of river health in Victoria is described in the figure overleaf.

Given the prevalence of the AM idea, how then is the policy played out in practice? Do the institutions and organisations which influence management of the riparian zone, have the capacity to support an adaptive approach?



**Victoria's adaptive management framework for river health**

(DNRE 2002:132)



You could think of these features as something of a checklist for AM. It is not difficult to find examples where individual elements of this list have been enacted but, anecdotally, it is harder to find instances where all of them are integrated into the way in which institutions and organisations go about their business. Dovers (1999) proposes that some Australian resource management institutions and organisations have made ‘believable institutional attempts’, to move forward in a way that is consistent with these principles: these include Victoria’s (now defunct) Land Conservation Council and the Murray-Darling Basin arrangements. However, many newer NRM organisations, including those with influence in the riparian zone, have not yet been subject to close examination. It is important that this happens and that we heed the lessons of AM experience elsewhere. Ideally, riparian management should be supported by institutions with the capacity to pursue an adaptive approach.

Experience suggests that where AM has not ‘worked’, it is because of an unwillingness to embrace the idea of *policy-as-experiment*, particularly the need to monitor the effects of the ‘experiment’ and to feed back into the learning loop. For example, one long-celebrated example of adaptive management has been the case of the Florida Everglades, a large complex wetlands system in the United States of America. However, in a recent review, the National Academies’ National Research Council found that inadequate “feedback” channels are in place; and, information from those who are monitoring the ecology of the Everglades is not readily available to those implementing the overall restoration effort.

Closer to home, there are also examples where the adaptive idea has not been followed through. In Victoria, a Parliamentary Committee enquiring into the allocation of water resources noted that, in 1991, policy makers had called for an adaptive management approach to the allocation of bulk water entitlements; that is, “interim allocation combined with effective monitoring and provision of regular reviews to incorporate

### Features of an adaptive approach

Dovers (2003) provides a useful summary of the features of an adaptive approach:

1. respect for and combination of perspectives from the natural and social sciences;
2. recognition of uncertainty, complexity and long time scales;
3. seeing policy and management interventions as driven by a defined purpose, but explicitly experimental, consistently testing understanding and capabilities along the way;
4. wide inclusion of stakeholders in a purposeful and structured fashion; and,
5. design and maintenance of sophisticated mechanisms (institutions and processes) of feedback and communication between policy and practice across different situations.

The term ‘institution’ means more than just ‘bricks and mortar’; it refers to persistent arrangements, laws, processes, customs or organisations which work to structure aspects of the political, social, cultural or economic transactions and relationships in society (Dovers, 1999: 96).

the inferences of this monitoring". This was seen as necessary because of the "scientific uncertainty surrounding the needs for environmental flows and the expectation of better knowledge in the future" (ENRC 2001: 189). The Committee found that not all bulk entitlements had incorporated provisions that did, in fact, allow revision. Clearly, if AM is to have a chance of success, it is important that the learning loop be completed every time and that the links between monitoring, new information and management are firmly established.

## Thinking 'adaptively'

The purpose of this article has been to briefly introduce the merits of an adaptive approach. It invites you to consider whether there is room for more adaptive 'capacity' in those institutions and organisations within which, and with whom you work in the riparian zone. Importantly, it also asks whether there is a mandate for them to try different approaches, to experiment, monitor, adapt and learn.

### For further information

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Victoria's River Health Strategy visit [www.nre.vic.gov.au](http://www.nre.vic.gov.au).  
The Everglades review will be published shortly by National Academies Press. For details see [www.nap.edu](http://www.nap.edu).

## References

- Dovers, S. 2003, Processes and institutions for resource and environmental management: why and how to analyse?, in S. Dovers & S. Wild River (eds), *Managing Australia's Environment*, The Federation Press, Sydney, pp. 3–12.
- Dovers, S. 1999, Public policy and institutional R&D for natural resource management: issues and directions for LWRDC, in C. Mobbs & S. Dovers (eds), *Social, Economic, Legal, Policy and Institutional R&D for Natural Resource Management: Issues and Directions for LWRDC*, Occasional Paper 01/99, Land and Water Resources Research and Development Corporation, Canberra, pp. 78–107.
- Department of Natural Resources and Environment 2002, *Healthy Rivers, Healthy Communities and Regional Growth: Victorian River Health Strategy*, Melbourne.
- Environment and Natural Resources Committee 2001, *Inquiry into the allocation of water resources*, Parliament of Victoria, Melbourne.
- Thomson, D. & Pepperdine, S. 2003, *Community Capacity for Riparian Restoration: A Discussion Paper*, Unpublished draft report to Land & Water Australia.

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# CAPACITY BUILDING through extension

Jeff Coufts

The Cooperative Venture for Capacity Building and Innovation in Rural Industries has a 'shorthand definition' of capacity building as being about... *increasing the abilities and resources of individuals, organisations and communities to manage change.* Definitions taken from the National Natural Resource Management Capacity Building Framework (see page 25 for more information) described human capital as... *the capability of individuals* and social capital as *the level to which social networks, relationships and processes within a community support individuals to exercise their capabilities.*

These three definitions all focus on different aspects of capacity building. How that capacity is being built in Australian NRM was one of the first projects commissioned by the Cooperative Venture, with a national review of extension and education being offered in rural industries and communities. The National Extension Review is now in its second year. It has approached the review at a macro level by looking at the trends in extension and education across Australia, and at the project level by focusing on a range of extension/education projects across industries, issues and states. This two pronged analysis has allowed projects to be analysed in the broader context of what is happening around them, and enabled implications to be matched with future trends.

well as through less formalised avenues such as mentoring, self-directed learning, experiential learning and other personal and community growth processes. Extension and education initiatives can result from top-down intervention ('our policies or strategies have highlighted that this education/extension project is important — who can deliver it?') or from a community need ('our situation would benefit from training/ support in this area — where do we get it?'). Neither is necessarily better — but the match is critical.

## Extension and education models operating across Australia

As projects have been evaluated and analysed for this review, a number of distinct approaches or 'models' have emerged as operating across industries and communities, with each playing key and complementary roles within a capacity building framework. These are outlined as follows:

- ~ *The Group Facilitation/Empowerment Model:* This model focuses on increasing the capacity of participants in planning and decision-making and in seeking their own education/training needs based on their situation. The project will often provide or fund a facilitator to assist groups to define their own goals and learning needs and to help them realise these.
- ~ *The Technological Development Model:* This model is about working with individuals and groups to develop specific technologies, management practices or decision support systems which will then be available to the rest of the industry or community. It often involves local trials, demonstrations, field days and on-site visits.

This National Extension Review was complemented by two projects, one that looked at *fostering involvement in learning opportunities* and another exploring the *institutional arrangements* supporting capacity building. More information about these and other projects can be found at [www.rirdc.gov.au/capacitybuilding](http://www.rirdc.gov.au/capacitybuilding)

## The role of extension and education in capacity building

The National Extension Review found that capacity building — *...increasing the abilities and resources of individuals, organisations and communities to manage change* — occurs through both 'organised' extension and education activities, as

Extension and education in the context of the review relate to... *planned and proactive interventions to provide new information, experiences, skills and learning support to individuals or groups.*





# and education

- ~ *The Programmed Learning Model:* This model is about delivering specifically designed training programs/workshops to targeted groups of landholders or community members to increase understanding or skills in defined areas. These can be delivered in a variety of modes and learning approaches.
- ~ *The Information Access Model:* This model is about providing a range of blanket information which individuals and groups can access from a distance and at a time that suits them. It can be based on a website, information centre or other centralised locations.

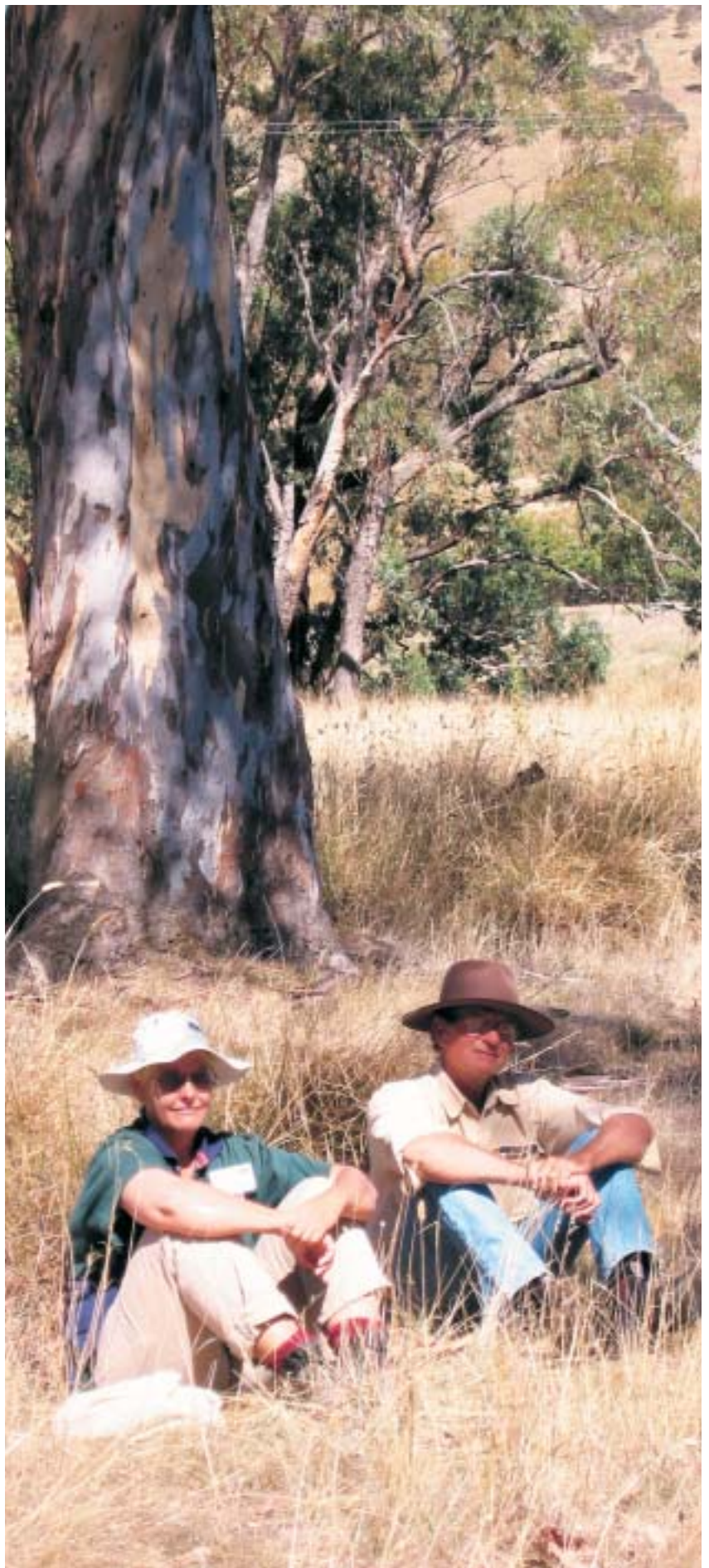
The analysis has shown that these different extension/education models work well together as a suite of complementary capacity building avenues. For example, members of groups in projects operating under the *group facilitation/empowerment model* provide a key source of participants in training offered through the *programmed learning model* as they are motivated to seek identified training. People who participate in *programmed learning model* initiatives often learn about, and are motivated to seek, information available in initiatives under the *information access model*.

## Implications

Extension and education interventions cover a range of complementary approaches to support capacity building. The power is in the mix of models. A one-off training workshop (programmed learning model) without access to on-going follow-up supporting information (information access model) could have very limited impact. Without groups operating under the *group facilitation-empowerment model*, participation in training events may be low. Without *technological model* interventions, adapting new knowledge to local environments may be slow in occurring. The challenge is to stand back and take a birds-eye view of the extension and education training needs to support capacity building in industries and communities, and not focus on one model or mode of delivery.

### For further information

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# BUILDING CAPACITY to untangle regional

By Alice Roughley

SIRP has been operational in Land & Water Australia for almost four years and has sponsored over 50 projects on diverse NRM topics. Many SIRP products are available at [www.lwa.gov.au/sirp](http://www.lwa.gov.au/sirp)

National Resource Management (NRM) can be a bewildering array of national priorities, regional planning and on-ground activities, to date with little correlation between them. A new project from LWA's Social and Institutional Research Program (SIRP) aims to change this, and promises to make sense of regional frameworks to meet the needs of resource managers and government.

The *Arrangements to Enhance Effective Use of Incentive Mechanisms in Regional NRM* project is being undertaken by AGTRANS in Queensland. Recognising that new regional arrangements for NRM are challenged with connecting policy, regional groups and on-ground property managers, SIRP has formed a partnership with the Consortium for Integrated Resource Management\* to establish the project.

This project aims to develop a flexible framework that will enable property managers to easily access information about available incentives. It will also provide assistance to package relevant incentives and the support to implement them. Regional resource management organisations will be able to advise and assist property managers, devising incentive packages in tune with economic circumstances and aspirations, as well as regional targets. Property managers will be assisted to implement incentives. As the effectiveness and appropriate use of different incentive mechanisms increases, the potential for optimal return on governments' investment and policy will be enhanced. Positive change in resource use patterns will be achieved at a local level, while keeping in line with specified regional sustainability targets.

The development of flexible, practical frameworks that connect regional plans and targets with on-ground action is a big ask, particularly given the different institutional arrangements and regulations in each state, and the differences in social and economic capacity between regions and sub-regions. The applicability of these arrangements should go beyond

the frameworks provided under current National Action Plan for Salinity and Water Quality and Natural Heritage Trust arrangements.

The project will address the need for more effective institutional arrangements to deliver market and non-market-based incentives. Within regions there is a strong interest in the potential to use various incentives to improve NRM outcomes. To date, there has been a tendency to focus on single incentives without understanding the potential for a wider range, or various combinations of incentives. The capacity of property managers to understand, access or adopt the incentives has also been missed. There is also limited understanding of the factors that facilitate the type of on-ground action needed to achieve regional targets.

The availability of a mechanism to tailor a suite of incentives to improve relevance at the local level is a significant knowledge gap. The way that incentives are packaged and/or delivered, and even which incentives are packaged, will differ according to the context of the problem and location. The social, economic and cultural aspects of take-up of incentives are often not adequately considered before an incentive is released, yet we know that local and individual abilities to access information, and the take-up of incentives varies enormously due to these factors.

In consultation with stakeholders, AGTRANS has established principles to guide the development of this framework for the design and delivery of incentive mechanisms. These principles take account of community aspirations, as well as the social and economic capacity and constraints to adopt proposed arrangements. Systematic approaches to delivery of programs and incentives have been successfully implemented in sectors other than NRM. Some of these areas include health, housing, education and finance. These arrangements and their applicability to NRM have informed the principles.

\* The Consortium includes three Queensland Government agencies: Primary Industries; Natural Resources and Mines and EPA; CSIRO and the University of Queensland and Griffith University. The Consortium facilitates collaborative research across and beyond the partnership.



# and natural resource management

A second stage of the project will trial the framework, with attention paid to the information, education and skills-development needs of regional groups. It will also consider the adequacy of institutional arrangements to facilitate the implementation of locally-relevant incentives.

The project has much potential to build capacity among resource owners, governments, industry and researchers to work creatively with incentive mechanisms to achieve NRM outcomes at least cost. The project is currently seeking additional partners for the second project phase, both to participate in the trial and/or to join the research funding partnership.

## For further information

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## SIRP brochure

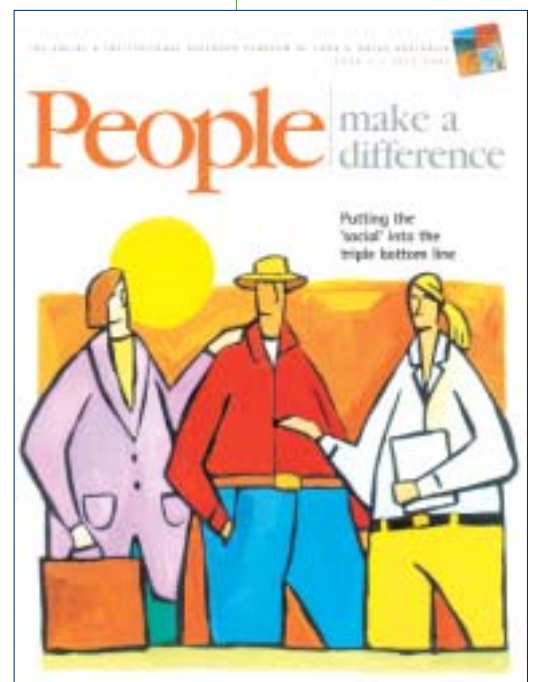
In this edition of *RipRap* you will find the complete guide to all the social and institutional research you needed to know about (but were afraid to ask).

SIRP emphasises the integration of project outputs with other relevant knowledge so that it is useful to target audiences in dealing with NRM issues and problems. Widespread communication, particularly to policy and advisory groups is very important, and this is an important feature of the program. Demand driven seminars and briefings on social and institutional research findings are available by contacting Dr Alice Roughley.

## People make a difference

It is widely recognised that social, economic and cultural factors are at the heart of sustainable resource and environmental management — and that it is people who make the difference. An early reaction to the dawning recognition that sustainable management would be a matter for both the social and physical sciences was that social scientists would change the behaviours of unsustainable farmers and others. Of course, we now realise that only individuals themselves can really change their ways. The current approach of social science in NRM is about communication, incentives and good policy.

The first issue of *People make a difference*, a collection of stories about men and women in NRM, is now available. Many of the stories in this issue are from SIRP projects. Others are from the Redesigning Agriculture for Australian Landscapes Program, Community Fellowships, oral history projects and postgraduate scholarship initiatives of Land & Water Australia. For your copy contact CanPrint on 1800 776 616 or get a copy from the website:  
[www.lwa.gov.au/downloads/PN030468.pdf](http://www.lwa.gov.au/downloads/PN030468.pdf)





Bend it like Beckham:

Lessons in multipurpose stream rehabilitation from our international colleagues

### SPORT

## Beckham's broken

by ROSS KAPITZKE

ENGLAND HAS MADE the quarterfinals of the Soccer World Cup and the whole country sweats on the condition of a bone in David Beckham's foot.

There is nothing to match the fanaticism of the English football fans as the pubs fill and the country stops to see if the recent injury to their national football treasure will hold up against Ronaldo and the other soccer maestros from Brazil in this do or die showdown for supremacy in the world's pre-eminent and truly international sport. English patriotism and dedication was not enough on this occasion to counter the flair of this football powerhouse from the other side of the world.

Meanwhile Australia, a self-berating world soccer minnow, which had stumbled at their World Cup qualification chance, watched in anguish and awe, and looked for lessons to learn as these champions again made their mark on world soccer. The Socceroos had the talent, they had the know-how, and they aimed high, but they were unable to meet the international challenge and match the "overseas stars".



to see and learn many lessons during my trips, but I also intended to demonstrate the integrity of the Australian NRM field to our international colleagues, and to make the most of my own expertise in planning and design for sustainability.

I was pleasantly surprised. Just as the Socceroos staged a rousing upset in their recent challenge match against Beckham and the English side early in 2003, I found that the Australian NRM industry has plenty to cheer about in their efforts in multipurpose stream rehabilitation and sustainable design. We can learn many lessons from overseas experiences and collaboration, but we can also be well satisfied with our own performances and expertise. Like many of our other all-conquering national sport teams, we continue to 'fight above our weight' in this international professional arena.

The purpose of the study tour, which took me to four countries in Europe (England, Scotland, Denmark, The Netherlands) and several provinces and states in USA and Canada (Washington State, Alberta and Ontario) was to examine international practices in stream rehabilitation, NRM and fish passage remediation at road-stream crossings. My interest was in the planning and design of multipurpose projects, and the evaluation of a number of conceptual frameworks, planning and design procedures, and technical practices in resource management and sustainable infrastructure design. To do this, I inspected numerous field sites on the study tour, and visited research and development organisations, stream rehabilitation and fish management/fishway design agencies, consultants and other natural resource practitioners and managers.

The study tour visits and discussions have provided an excellent context for me to evaluate the way in which Australian practitioners and managers commonly grapple with NRM and sustainable design issues. Through this experience I have drawn some between-country

The full report of Ross's study tour is available on the web at [www.rivers.gov.au](http://www.rivers.gov.au)

The international soccer fervour was all too apparent to me during the 2002 World Cup as I flew from country to country as part of a travelling fellowship awarded by LWA to examine international practices in stream rehabilitation. The World Cup soccer provided a common language for people around the world as the English patriots swooned over Beckham's curve ball ('bend it like Beckham'), the Brazilians indulged in Ronaldo's brilliance, and the Aussies dreamed of better times for our team. My international study tour focussed on multipurpose stream rehabilitation and NRM, and like the Socceroos and many fellow professionals who had gone before, I set off with confidence in my technical capacity and the professional standing of my work, but with some apprehension about how this might be dwarfed in an international arena flushed with 'overseas experts'. I expected



**Left:** River Skjern channel and floodplain pre-restoration  
**Right:** River Skjern channel and floodplain post-restoration



**Left:** River Tame M6 Motorway crossing, Birmingham  
**Right:** River Cole re-meandered reach, Birmingham



**Left:** Double barrel corrugated pipe culvert with baffle fishway  
**Right:** Large span box culvert with stream simulation fishway

comparisons on major aspects, and examined these issues in terms of pre-established conceptual planning and design frameworks.

My visits to a range of international agencies and sites, and my meetings with researchers, managers and practitioners from various disciplines in several resource management fields have shown that Australia's approach to NRM and sustainable design is creditable within an international context. Compared with Europe and North America, we adopt a relatively good mix of statutory, community and technical input, as is evidenced through our performance in multipurpose stream rehabilitation and urban stormwater management. We can continue to

benefit from careful transfer of technology in fields such as remediation of fish migration barriers at road culverts, where North American expertise will provide a foundation for development of techniques for Australian streams.

And so, in the modest profession of NRM ...we learn from international experts, we develop our own talent, and we mix it in the international arena. Likewise, in Australian soccer, we depend on international support, but we don't need England's David Beckham; we have our own superstars. Australian soccer needs a little more belief in itself, and another opportunity to show its wares in the big time. Perhaps the 2006 World Cup in Germany!

I would like to gratefully acknowledge the support provided by Land & Water Australia in funding a large part of this travelling fellowship. My trip was made very productive and worthwhile through the generosity and assistance provided by colleagues and others who I visited in the various countries. Refer to the website [www.rivers.gov.au](http://www.rivers.gov.au) for the full report on the travelling fellowship study tour.

### References

- Kapitzke, I.R. 2003a, "From vision to reality: The crucial role of environmental engineers in achieving sustainability", *Proceedings of the National Environment Conference*, Brisbane, 18–20 June 2003.  
 Kapitzke, I.R. 2003b, *Travelling fellowship report: Trips to Europe and North America, January 2001 and June 2002*, Land & Water Australia Project JCU 15.

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## SUSTAINABLE IRRIGATION PROGRAM

### Murray and Goulburn Rivers benefit from Sustainable Irrigation Program research

The results of successful trials in ways to stop excess polluting nutrients and sediment entering the Murray River system have been presented to Australia's peak irrigation bodies. Researchers say the trials have national implications, not just for stopping the flow of excess nutrients and sediment into Australia's river systems, but in helping to combat the huge crisis presented by growing salinity in our farmlands.

In 1996, a water quality study found very high nutrient loads entering the Murray River through the Goulburn Murray Water irrigation drainage system. The study suggested improved management was needed, and this resulted in the trial of ways to prevent nutrients entering waterways. By working with Goulburn Murray Water (responsible for irrigation storage and management, and the control of irrigation run-off for North East and Central Victoria), 80 metres of a large drain north of Shepparton at Invergordon was planted with various native plants, including sedges and giant club brush. Another control section upstream from the plantings was monitored to compare results.

Despite the effects of the drought (the drains only flow strongly after rainfall) the trials were very successful. The plants in the 80 metre section slowed down water flow and trapped sediment; the various nutrients attached themselves to the sedges and brush plants as particles. The turbidity levels lowered, and the water, now of higher quality, continued back into the river system.

The report on the successful trials has been presented to the Australian National Committee of Irrigation and Drainage and the six customer water service committees that Goulburn Murray Water consults. It was also presented to the Goulburn Murray Water Board at the end of June.

The full story on this trial by award-winning journalist Paul Lewer can be accessed via the Sustainable Irrigation Program's website: [www.npsi.gov.au](http://www.npsi.gov.au)

#### For further information

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NATIONAL PROGRAM FOR  
**Sustainable Irrigation**

## NATIONAL RIVER CONTAMINANTS PROGRAM

### Australian Biodiversity: Salt Sensitivity Database

Recently launched online at [www.rivers.gov.au](http://www.rivers.gov.au), the Australian Biodiversity Salt Sensitivity Database contains information on the sensitivity and tolerance of over 1200 species of Australian taxa to salt. The database is supported by interpretive notes as well as a statistical analysis of species groupings.

The Salt Sensitivity Database was compiled for LWA by Paul Bailey, Paul Boon and Kay Morris. It includes:

1. A methodology report and references.
2. The salt sensitivity database as an Excel spreadsheet.
3. A set of graphical analyses of field data for major taxonomic groups, and summary notes accompanying text providing interpretation of field and laboratory/glasshouse data for major taxonomic groups (included in Excel spreadsheet).

These are all available for download from our website at [www.rivers.gov.au](http://www.rivers.gov.au)

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## NATIONAL RIVERS CONSORTIUM

### Graduate Certificate in River Restoration and Management: New course available 2004

Charles Sturt University has been contracted by LWA to develop a Graduate Certificate in River Restoration and Management. This Graduate Certificate aims to meet the needs of natural resource managers in Australia and will provide students with a sound theoretical background and extensive practical experience.

There are four subjects in the Graduate Certificate course. The subjects undertaken in Semester 1 establish a background in river hydrology and ecology, providing a context for the restoration and policy subjects completed in Semester 2.

Graduating students will gain skills in the prioritisation, design, implementation and evaluation of river restoration projects. All subjects have a compulsory Residential School that forms an integral component of the practical core of this course.

This course is currently under development and its availability in 2004 is subject to approval by the University. Course content may also be subject to change. Course enrolment information:

- ~ Initial enrolment in Autumn 2004
- ~ Enrolment through Wagga Wagga campus
- ~ Normal course duration two semesters part-time, 18-week semesters
- ~ Cost per subject, approximately \$840
- ~ Distance education study mode
- ~ Compulsory residential schools (3-4 days per subject)
- ~ Students receive a hard copy mail package
- ~ All subjects have an online forum
- ~ Each student has e-box for official communication
- ~ Online or 1800 access to library resources
- ~ Submit assignments electronically, by fax or by mail
- ~ Exam centres throughout Australia.

#### For further information

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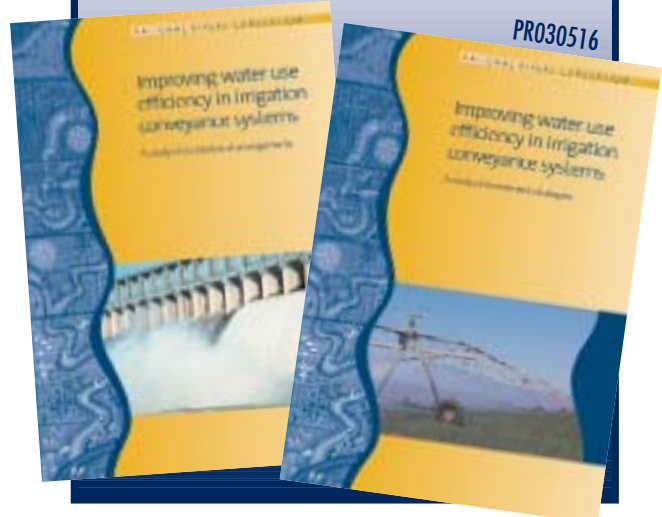
### Improving water use efficiency in irrigation conveyance systems

LWA has recently published two reports on water use efficiency to support the COAG water reform framework. The reports were prepared by Marsden Jacob Associates with funding provided by Agriculture Fisheries and Forestry – Australia. The study of **institutional arrangements** reports on the policy, legal and other institutional factors under which water authorities are established, and how these operate to promote or impede greater efficiency and sustainable use of water. The report suggests options for improving institutional arrangements whereby water use efficiencies can drive improvements in sustainability, and make water available for re-allocation to environmental or consumptive uses. The study of **investment strategies** reports on current government and industry strategies, activities and progress to reduce transmission losses, and identifies where the most significant potential gains can be made through investment in reducing transmission losses.

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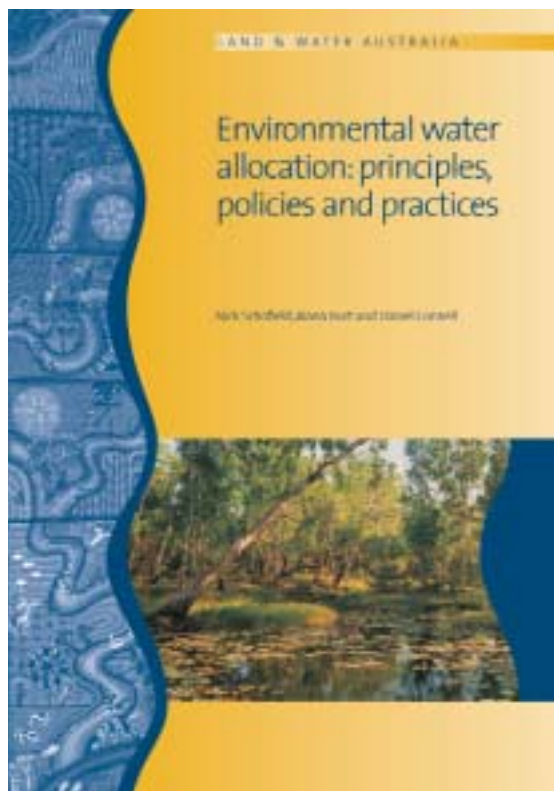


## Environmental water allocation: principles, policies and practices

The state of Australia's rivers, particularly icons such as the Murray and Snowy, is now firmly in the national spotlight, but how to improve the health of our waterways through environmental water allocations remains poorly understood. A new report from LWA is aiming to change this by providing a comprehensive analysis of the science behind environmental water allocation, as well as identifying key gaps in our knowledge.

The document has been prepared by Dr Nick Schofield and is intended to provide a comprehensive overview of the current state of knowledge for governments, communities, researchers and water resource managers as they work to come to grips with the best ways to manage rivers for environmental, social and economic health.

A summary of the report is now available for download from the [www.rivers.gov.au](http://www.rivers.gov.au) website, or in hard copy from CanPrint on 1800 776 616 quoting product number PR030541.



## THE Australian WATER MAP

*The Australian Water Map* is the first of its kind in Australia and draws together a wide range of water-related data into a single resource. The data presented on the poster-sized map (58 charts and over 400 spatial information points) has been independently reviewed by a multi-disciplinary technical steering committee with expertise in the water sector. Consequently, *The Australian Water Map* provides a balanced, factual and interesting view of Australia's water resources, covering topics such as rainfall and runoff, aquatic biodiversity, pollution, water use, water recycling initiatives and water history. It is a key resource for all individuals and organisations with an interest in water or the environment.

### For more information

Website: [www.earthsystems.com.au/map](http://www.earthsystems.com.au/map)

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# GROWING CAPACITY



By Kate Andrews

For 21 years, Greening Australia's work in native vegetation management has been underpinned by capacity building. Embedded in our mission is the philosophy to work **with** communities in vegetation management. In practice, this means that we bring people together, identify needs and gaps together, and act and learn together, thereby creating ongoing ownership and on-ground environmental outcomes. This approach mirrors community development models as opposed to the 'information down a pipe' or 'polyfilla in a crack' models.

Greening Australia's recently released *Changing Lives and Landscapes* programs highlight this experience and philosophy. Fundamental to these proposals is that they will be tailored to meet regional needs and capacities, rather than being one size fits all, and will provide national support to regional initiatives. Regional capacity building and knowledge brokering are fundamental to each program. The partnerships we are developing with leading scientific and research agencies, such as LWA (including the National Riparian Lands R&D Program), the CRC for Freshwater Ecology, and CSIRO will assist us and the communities we work with across Australia to access cutting edge techniques and information to tackle local and regional issues.

Encouraging and resourcing all of us to meet the environmental and natural resource management challenges we face requires the broadest possible definition of capacity. We all require much more than just the provision of information or technical advice. Our capacity

to participate and act, whether as individuals or groups, is influenced by countless factors — from our level of confidence, to our ability to resolve conflict, to our skill at accessing resources and information.

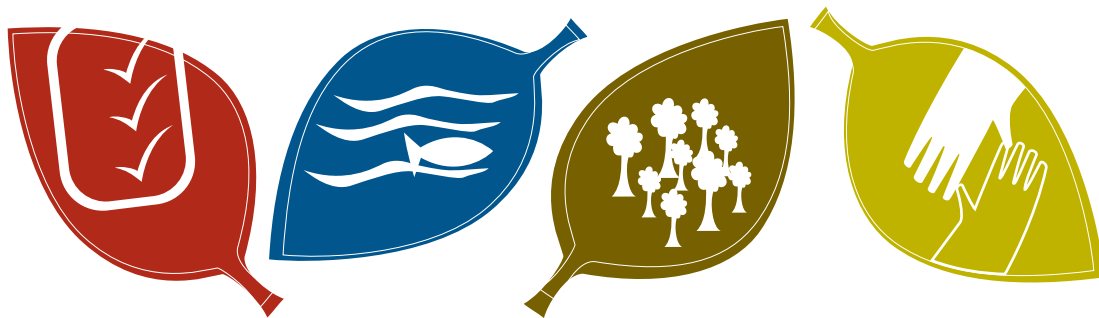
Greening Australia uses a range of tools and processes in capacity building — successful traditional tools such as demonstration sites, field days, training, publications, and one-on-one site visits and advice, along with less conventional tools such as joint problem defining, encouragement and motivation, and two-way communication. With these, we create wide community involvement in, and ownership of, projects. This requires working with diverse organisations and individuals such as local councils and school groups, landholders and company employees.

An essential element to developing capacity that is often underestimated is the establishment of networks and relationships that provide encouragement, motivation and support. It is much easier and more acceptable to discuss the provision of information and advice than to justify the unquantifiable and intangible elements such as support and motivation. Capacity building is more likely to occur when relationships are maintained over longer periods. Consistency and continuity build the trust required.

As a non-government organisation Greening Australia is well placed to take a lateral and innovative approach. Two projects (see over) from different ends of Australia illustrate the breadth of Greening Australia's capacity building work.

*Capacity building is more likely to occur when relationships are maintained over longer periods.*

*Consistency and continuity build the trust required.*



To order your Changing Lives and Landscapes information pack telephone 02 6281 8585 or email [general@greeningaustralia.org.au](mailto:general@greeningaustralia.org.au)

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THEME

RESEARCH

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IT'S A WRAP

INFORMATION

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## Aboriginal Landcare Education Program

In 1994, the Northern Land Council and Greening Australia in the Northern Territory set up the Aboriginal Landcare Education Program (ALEP). ALEP is funded by the National Landcare Program and the Commonwealth Government's Contract Employment Program for Aboriginals in Natural and Cultural Resource Management and covers the 'Top End' of the Northern Territory. ALEP assists communities to manage their country by using traditional local knowledge and providing advice about contemporary technologies. ALEP provides a land care education and awareness program to Aboriginal communities to develop and implement a range of vegetation-related activities, focusing on environmental health, community development and the sustainable management of surrounding rangelands and waterways.

A key to the program's success has been the partnership between Greening Australia and the Northern Land Council. Working in partnership with the Northern Land Council's Caring for Community unit, ALEP undertakes natural and cultural management through two-way education and training, development of sustainable vegetation related businesses, and assisting access to resources. ALEP is working with over 30 communities, offering practical training and linking people to natural resource management experts. The fundamental platforms of the program are employment of Aboriginal people, working in partnership with Aboriginal groups, and building the capacity of communities to run their own programs. The program's success is its ownership and engagement by Indigenous people.

## Bidgee Banks

Just recently, the Greening Australia project 'Bidgee Banks' won the United Nations Association Excellence in Land Management Award. The 1690 kilometre long Murrumbidgee River is one of the most important catchments in Australia's Murray-Darling Basin. Land clearing,

grazing activities, erosion and sedimentation within the catchment are, however, contributing to water quality decline and loss of vegetation.

The Bidgee Banks project targets streambank erosion hot spots for revegetation and structural repair, and conserves high-grade remnant vegetation with stock proof fencing. A model example of rapid and effective community environmental action, Bidgee Banks is a Natural Heritage Trust-funded partnership between Greening Australia, the NSW Department of Land and Water Conservation and riparian landholders. Bidgee Banks demonstrates how capacity building through community involvement and a commitment to farmer friendly, cost effective on-ground delivery can improve river health and contribute to basin wide sustainability.

The examples above demonstrate how capacity building is embedded in Greening Australia's work. They show that successful capacity building is based within the context of partnership, draws upon a wide range of tools (conventional and innovative), and that it is ongoing. Capacity building is not just for people 'out there', it is something all of us in NRM should participate in and benefit from.

### For more information

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*Gundaroo Creek in 2001.  
A Bidgee Banks project.*



# [www.greeningaustralia.org.au](http://www.greeningaustralia.org.au)

## Commonwealth



### National Natural Resource Management Capacity Building Framework

The Natural Resource Management Capacity Building Framework provides a common, consistent and complementary approach to capacity building as a guide to all jurisdictions in planning and implementing capacity building investments. While it is initially focused on supporting the NAP and NHT processes, it also provides a potential framework for other programs with NRM capacity building components. This includes Commonwealth, State and Territory agencies, regional government and non-government organisations, as well as others involved in capacity building at many different levels.

Under the Framework, capacity building is defined as a range of activities by which individuals, groups and organisations improve their capacity to achieve sustainable NRM. Capacity in this context includes awareness, skills, knowledge, motivation, commitment and confidence. While regional bodies are a key target audience for capacity building, it is equally an issue for stakeholders such as landcare groups, indigenous communities, industry sectors, local government, State/Territory and Commonwealth Government agencies.

Capacity building for NRM goes beyond the traditional top-down approach of enhancing skills and knowledge through training and provision of technical advice. It focuses on enhancing genuine community engagement in all aspects of NRM, from planning to on-ground actions. This means that the framework supports activities that foster social cohesion within communities, and build both human and social capital.

#### Capacity building as a key investment under the NAP and NHT extension

To assist natural resource managers and users within communities to deal with complex NRM issues, the Commonwealth, State and Territory Governments, in partnership with communities, will build on previous initiatives by making

further investments through long-term, strategic programs. Through the NAP and the NHT extension, governments will invest in activities and projects over the next 5–7 years, to address issues of salinity, water quality, biodiversity and sustainable natural resource use in general. Emphasis will be placed on strengthening planning and delivering investments at the regional level, with enhancing the capability of stakeholders to be actively involved at all stages of NRM planning and implementation a critical component of this investment. Increased capacity to be involved engenders local ownership over issues and improves the uptake of existing and newly developed sustainable NRM practices and processes.

NAP = National Action Plan  
NHT = Natural Heritage Trust

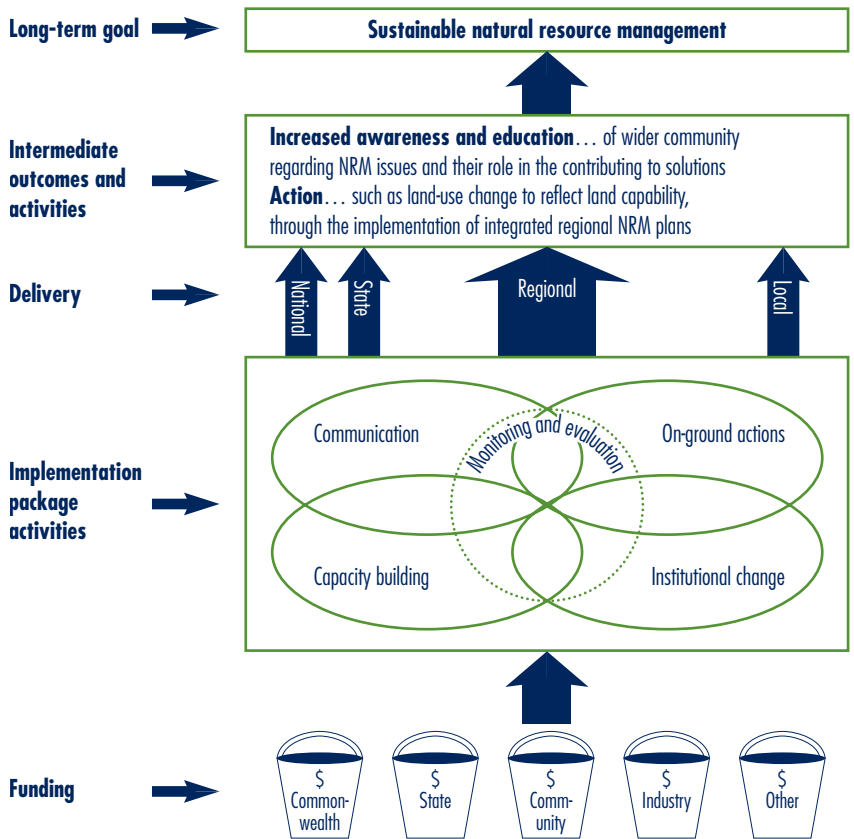


Figure 1: Conceptual model of integrated Government support to sustainable NRM.



### Activity areas of the capacity building framework

Community engagement in NRM decision making and implementation is a critical outcome of capacity building investments. Four broad activity areas have been identified as the vital pillars for achieving community engagement, with each area interconnected. It is the combination of enhancing the *ability to act* through provision of knowledge and skills, and fostering *motivation to act* through awareness raising and the provision of facilitation and support, that should lead to effective community engagement in sustainable NRM.

The four key areas are specified below. Bilateral agreements between the Commonwealth and States/Territories will provide further detail on the activities within each jurisdiction. Regional NRM plans will specify the activities within these areas to be invested in, and the resource management targets being sought by these investments.

1. **Awareness:** Individuals within the community being aware of regional NRM issues, and understanding the link between these issues and the long-term viability of the community.
2. **Information and knowledge:** Natural resource managers and users able and willing to access the necessary information, data and science — biophysical, social and economic — to make sound NRM decisions.
3. **Skills and training:** Natural resource managers and users equipped with, or having access to, the necessary technical, people management, project management and planning skills to participate in the development and implementation of sustainable NRM at the property, local and regional scales.
4. **Facilitation and support:** Support systems in place to ensure the engagement and motivation of the community, build social capital and enable skilled NRM managers and users to exercise ownership over regional NRM decision-making processes, and effectively implement actions arising from these processes.

### Participants in capacity building

The participants in capacity building are those involved with natural resource management and planning, including:

- ~ Regional integrated NRM groups and key stakeholder groups;
- ~ Landholders, their representatives and other resource users;
- ~ Indigenous communities;
- ~ Regional and local community-based groups and organisations;
- ~ Scientific and research organisations;
- ~ Local government, State and Commonwealth agencies and elected representatives;
- ~ NRM service providers and managers, including facilitators and coordinators; and,
- ~ Technical and financial advisers and consultants.

### Monitoring and evaluation

Given that NRM outcomes are only achievable over the long term, monitoring the achievement of intermediate outcomes, such as attitude, practice and behaviour change, is critical in assessing the impact of short-term investments of NRM programs such as the NAP and NHT. Capacity building activities are key mechanisms through which these intermediate outcomes can be realised. Monitoring and evaluation of the effectiveness of these activities in bringing about the desired change should be an integral component of developing and implementing a capacity building plan.

### For further information

If you would like more information about the National Natural Resource Management Capacity Building Framework go to [www.napswg.gov.au](http://www.napswg.gov.au)



## NATIONAL NATURAL RESOURCE MANAGEMENT CAPACITY BUILDING FRAMEWORK





## Landscapes of the mind: values and perceptions that have helped/hindered work in Bega

Riparian restoration work on the NSW Far South Coast is entering a new phase of accelerated adoption over a broad scale. Far South Coast water users and the Bega Valley dairy industry have committed to a raft of river health initiatives as part of negotiations over access to water. Agreement on a ten-year water sharing plan for the Bega River catchment is linked with a commitment to achieve ambitious targets for river health improvement. Targets cover riparian fencing and rehabilitation, wetland fencing, nutrient management and water efficiency across all commercial irrigators and dairy farmers. This agreement was forged around the South Coast Water Management Committee table. It recognises that securing environmental flows alone, in the absence of improvements to the river corridor, will not deliver river health in a much-modified system like the Bega River. An integrated approach is essential.

A range of implementation programs have been developed to meet the agreed targets, as part of the 'Integrated Bega River Health Package'. Achievement of these targets will require an exceptionally high level of farmer 'buy-in' over the next five to ten years. Solid support from Bega Cheese, including a significant investment in the Integrated River Health Package, and in development of a Dairy Farm Environmental Management System, gives cause for confidence that farmers will participate.

### 'Landscape of the mind'

A key aspect in determining the capacity of farmers to buy-in to environmental programs is to be found the 'landscape of the mind'. Previous work on attitudes to riparian restoration on the Far South Coast was undertaken as part of the National Riparian Lands Program (Project BVS1: details on the [www.rivers.gov.au](http://www.rivers.gov.au) website).

One aspect of this work looked at the values, beliefs and world views of landholders as they applied to riparian land. A set of 12 'Myth

Buster' information sheets was produced to try to challenge the beliefs that were acting as barriers to riparian restoration. Another key finding was that *about half of any group of landholders surveyed actually identified grassy river banks cleared of native vegetation as 'good' riparian zone and saw heavily vegetated riparian land as undesirable.*

It is a truism, but worth noting, that any landholder has to believe that a project is sensible and worth doing before he or she will undertake it. Willingness to participate in riparian restoration is based on the landholder's beliefs and values, which are in turn informed by their world-view about the fundamental function of a riparian zone and what it should look like.

The challenge for the Integrated Bega River Health Package is to protect remaining riparian values and to restore 80% of degraded riparian land to a basic level of functional 'river health'. Key functional issues for riparian restoration in the Far South Coast's erosive, granitic-based catchments are to: recover bed and channel stability; to manage riparian weeds; and, to promote riparian habitat recovery.

### Revised tactical approach to extension

In order to meet this challenge we have adopted a revised extension approach for the Integrated Bega River Health Package.

The conventional natural resources extension model, applied to riparian restoration, has worked in the past on promoting riparian values in the hope that landholders would come to appreciate the need to adopt and protect them — that they would 'see reason' and have a change of heart about riparian values.

On the NSW Far South Coast this approach has been moderately successful with new settlers on small properties and with a small but growing band of commercial farmers who have embraced environmental values. The Landcare movement has been the keystone for this work and for the

*It is a truism, but worth noting, that any landholder has to believe that a project is sensible and worth doing before he or she will undertake it.*

success to date. Unfortunately this approach has not yet 'converted' the large majority of commercial farmers who manage the vast majority of riparian land.

The problem partly arises when the extension officer, trained in a natural resources discipline and employed as a 'change agent', brings his or her values into the equation. The world-view that informs these values is probably completely at odds with the world view of at least half of the landholders in the target group. This half says that a good riparian zone is clean of vegetation, has no weeds and gets flood waters away quickly. The extension officer's vision of revegetation and riparian habitat is viewed as a recipe for reversion to weeds, vermin and useless, untidy scrub. The extension officer, in attempting to convert the landholder is seen as a well-intentioned but possibly dangerous fool with no understanding of the way things really are in the bush. Whilst there is potential for a serious value clash, the dialogue rarely gets far enough. Values, based on a deep level understanding of 'the way things are', are also closely connected to emotions. Challenge that understanding, or the values themselves, and you can expect an emotional response. The extension officer who pushes his or her view of what makes a healthy river (which is of course 'right', based on their own world-view), is likely to be called arrogant, an idiot, or worse.

From the extension officer's perspective the farmer's resistance is based on stubbornness, conservatism and ignorance of 'the facts'. If the exchange of views lasted long enough to expose emotions then the landholder is likely to be seen as, likewise, non-caring, arrogant, an idiot, or worse.

The likely success rate from this extension approach is low. From this perspective, the capacity for landholders to achieve accelerated adoption of riparian restoration is limited by an inappropriate extension strategy. Even with all the other capacity factors (e.g. incentives, technical support) in place there will be little progress until the farmer's world view of riparian function is accepted and acknowledged as a reality.

### Tactical approach

The approach adopted for the Integrated Bega River Health Package is to accept, respect and work **WITH** landholder values, rather than to try to convert them.

This approach was developed during the Riparian Restoration Demonstration and Evaluation Project (BVS1) on grazing properties at Cobargo. The project deliberately worked with commercial farmers who were initially reluctant to do much to change their riparian land management. The project explored how far these farmers were willing to go in riparian restoration, while remaining within the comfort of their own set of values. Riparian land restoration plans were drawn up and works implemented that were consistent with what the farmers were comfortable with. Key concerns with riparian fencing and rehabilitation were explored and addressed. Concerns included loss of grazing income, weed and pest animal proliferation, untidiness, and access to stock water. Common ground between the two opposing world-views was found in that both the farmers and extension officers were concerned about river bank and bed erosion and wished to address it.



**Cobargo Site 3: Harold & Alec Tarlinton's beef grazing property**

*Management actions for Site 3 were to fence the riparian zone, permit natural regeneration, do some very limited replanting of tubestock, allow continual stock access to water in left / foreground and strategically graze behind fence. Note that the site was fairly heavily grazed during the 1997/98 and 2002/03 droughts but has recovered.*

*The approach adopted for the Integrated Bega River Health Package is to accept, respect and work WITH landholder values, rather than to try to convert them.*



Management fences were established and, in most cases, gates were installed. Rather than total stock exclusion, strategic grazing regimes were adopted. The findings speak for themselves. Five years after fencing the strategically grazed reaches have changed from degrading to recovery trajectories. Native riparian vegetation has improved significantly, *Phragmites*, *Lomandra* and other riparian plants are now stabilising sediment loads and rebuilding the channel bed. The creek is returning towards a functional level of river health. The farmers are satisfied that they have not suffered financially (the objective is to achieve a cost-neutral result for grazing productivity as a result of the strategic grazing regime). Some minor advantages (easier to shift stock) and disadvantages (a little harder to spray weeds) have been discovered. By and large the farmers' values and view of riparian land functions have changed little.

These findings have been incorporated into the new extension approach for the Integrated Bega River Health Package. With this approach we are confident that we can achieve broad-scale adoption of strategic grazing regimes that will achieve the ambitious program targets. We have explored the 'landscape of the mind' as a critical

part of human capacity; and have identified that we need to include the capacity for the professional extension officer to change tactics to suit the challenge.

We still need to do more work on the impacts of different strategic grazing regimes on a range of riparian and wetland situations — this work will provide information to help to improve local farmers' capacity to choose the most suitable management regime with confidence that it represents 'best practice'. We also intend to trial the new capacity assessment tool over the coming year as a means to identify what other aspects of capacity we may need to address. The tool will be trialled with a range of groups including a Landcare/catchment group, a water management committee, a team of professional extension officers, a Catchment Management Board which runs capacity programs, and a group of State agency managers responsible for natural resource programs.

**For further information**

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COBARGO

**Left:** Cobargo Site 3 at start of project works in 1997.

**Above:** Cobargo Site 3 in 2003.

**Above:** Cobargo Site 3 in 1999.

*Left foreground is grazed continuously; right background is grazed strategically (crash-grazed and then stock removed before damage occurs, and area allowed to recover, several times/year). Number of 'cow-grazing-days per year' is roughly equivalent for both treatments. Value of drought fodder reserve is relatively high in the strategically grazed area. Blackberries are a potential threat; but the entire area (fenced and unfenced) is kept weed free. Note that wombat holes appear to be evenly distributed throughout the fenced and unfenced areas.*

*What is important is that they didn't need to change their beliefs and values in order to achieve the desired changes in recovery of riparian health status.*



## Community capacity building, formation of the Southern ACT Catchment Group

In response to community concerns for the integrated management of southern ACT environs, a jointly funded project between the NHT and Environment ACT was initiated in 2001 to assist community groups to develop and implement sub-catchment plans in southern ACT. The *Tuggeranong-Tharwa* and *Weston-Woden Sub-catchment Plans* are the first catchment wide planning efforts to be undertaken in the area.

The planning process provided the impetus for the formation of the Southern ACT Catchment Group (SACTCG) who quickly assumed responsibility for the implementation and further development of both plans. The SACTCG is a 'group-of-groups' with a membership total of 27 Landcare, Parkcare, Waterwatch and other community groups in Southern ACT, concerned with the integrated management of the local environment.

The catchment group enables people from a number of community groups to get together and exchange information about current projects and projects they would like to undertake. This has many capacity building benefits, and is a useful way to promote landcare activities and the sub-catchment plans. For example, telling others what landcare activities have worked and what has not, can help others achieve more on their site and make sure that valuable resources (such as volunteer time) are used in the best possible way. When common interests/concerns are revealed it can also lead to collaborative projects, so that even more is achieved for the environment and the benefit becomes catchment-wide.

In addition, many community groups want to be consulted more diligently and comprehensively, about developments that could affect the future of 'their patch'. The SACTCG is a conglomerate of like minded community volunteers that care about the future health, vitality and management of the entire region and to this end, there is weight in numbers. The catchment group takes a leading role in opening communication channels between the community and Government and promoting landcare, ensuring the concerns of environmental volunteers are legitimately dealt with, considered and incorporated.



### SACTCG Project: Restoration of Yarralumla Creek.

*Some images of the creek and the front cover of the final consultants report.*



*When common interests/concerns are revealed it can also lead to collaborative projects, so that even more is achieved for the environment and the benefit becomes catchment-wide.*

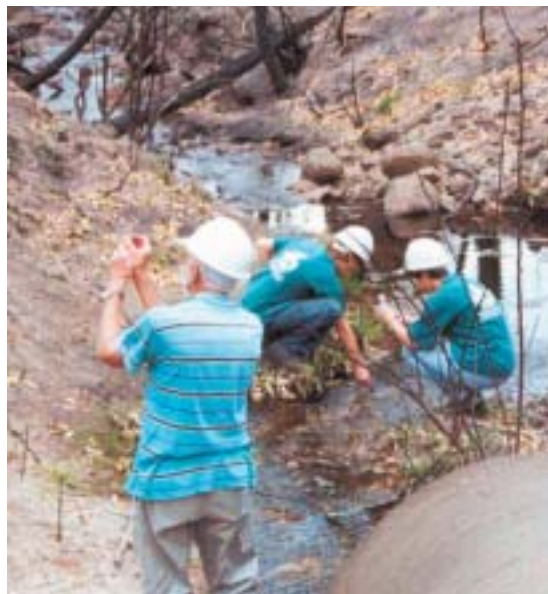


Affiliation with the SACTCG has enabled small community groups (who have traditionally found it difficult to access funds for community projects) to become more involved with on-ground works and landcare promotion in the community. In particular, devolved grant projects have been a major success because they enable a more streamlined approach to handling grant monies, reporting and paperwork centralisation. These type of projects have also enabled the SACTCG to promote a 'no mess-no fuss' funding option to those sectors of the community not previously involved with landcare. Since May 2002, the SACTCG has been successful in attracting over \$130,000 for revegetation, weed control, riparian fencing and the creation of a water quality monitoring network, \$95,000 of which has been funded from the Commonwealth Government's EnviroFund.

A project that has had real success since the January 18th fires that devastated southern ACT, is affectionately known as C.A.M.P.F.I.R.E: *Community Assessment Monitoring Program for Impacted River Ecology*. Working in collaboration with the Cooperative Research Centre for Freshwater Ecology and ACT Waterwatch, the SACTCG has developed a community monitoring network to monitor the ecological affects of the bushfires on our waterways. The SACTCG has put together an efficient 101 person team that monitors pH, EC, turbidity, dissolved oxygen, ortho-phosphate, and macro-invertebrates. SACTCG facilitates training, data collection through the catchment group website ([www.sactcg.org](http://www.sactcg.org)) and all the necessary equipment through an EnviroFund grant. At present, volunteers have devoted over 350 hours to the monitoring strategy, established 35 monitoring sites using components of the ten Waterwatch kits provided by SACTCG.

#### For further information

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**SACTCG Project:** *Community Assessment Monitoring Program for Impacted River Ecology (C.A.M.P.F.I.R.E) in partnership with ACT Waterwatch, in response to the January 18th fires.*





## Capacity building in the Mount Lofty Ranges of South Australia

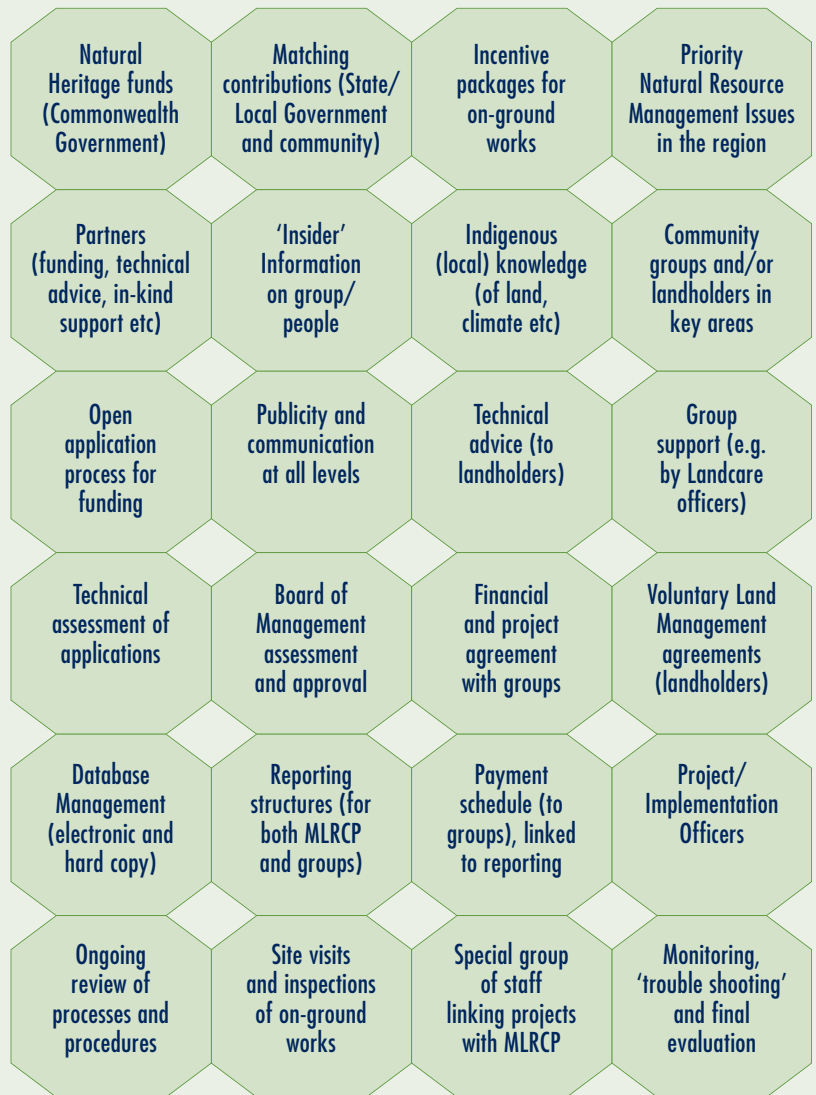
The Mount Lofty Ranges form the backdrop to the city of Adelaide, with its population of one million. The area has high rainfall, fertile soils, is an important primary production area, contains unique flora and fauna, supplies most of the water used by Adelaide and small towns in the region, is in demand for rural lifestyle and urban development, and is a popular tourism, recreation and holiday destination.

In this setting, the Mount Lofty Ranges Catchment Program (MLRCP) was established in 1993 and aimed to accelerate on-ground action towards sustainable use and development of the natural resources of the Ranges. The Program was a partnership between the community and three levels of government, with major funding of \$2 million (per annum) from the NHT. This was more than matched by contributions from the community, local and State governments.

On-ground outputs were achieved through the provision of 'devolved grants', a process whereby the Commonwealth Government passes on some financial responsibility for project approvals and administration to regional organisations. Devolved grants were offered at two levels: major on-ground works (up to \$150,000 per project, offered once a year) and community involvement grants (up to \$10,000 per project offered four times a year). In a typical year, \$150,000 of NHT funds were allocated to 20 groups for community involvement grants and \$1 million to 15 groups for major on-ground works. This required an efficient but continually evolving system of capacity building, both by the MLRCP Board, its staff and within the community.

### What did we learn?

Through the devolved grants process, we developed many systems and procedures, collectively called the *Ingredients of success* (see Figure 1). Each component was necessary to make the scheme successful.







Some revolve around reliable sources of funding and other contributions, such as:

- ~ NHT funds;
- ~ matching contributions (State/Local Government and community); and,
- ~ incentive packages for on-ground works (to encourage landholders to undertake the required priorities).

Others focus on priorities and partners, particularly:

- ~ understanding the priority natural resource management issues in the region; and,
- ~ multiple and diverse partners (for funding, technical advice, in-kind support).

The scheme could not operate without community readiness and willingness to take on projects, including:

- ~ community groups and/or landholders in the key areas;
- ~ indigenous (local) knowledge of land, climate, weeds etc;
- ~ support from Landcare officers and others where there are significant environmental issues, but no existing community group to lead the process;
- ~ 'insider' information on the social environment;
- ~ general group support, e.g. providing information or referral to training and technical expertise; and,
- ~ access to technical advice to landholders or the group, at the right time and in the right way.

There needed to be open, transparent and equitable systems for the groups to obtain funding:

- ~ effective publicity and communication at all levels;
- ~ an open application process;
- ~ technical assessment of applications, and providing feedback; and,
- ~ Board of Management assessment and approval.

The MLRCP needed to establish its own administration processes and reporting structures, including:

- ~ database management systems (electronic and hard copy); and,
- ~ custom-built data management system for administration, tracking and reporting.

In addition, community groups need to be supported in the tasks of:

- ~ financial and project agreements; and
- ~ payment schedule, linked to reporting site visits and inspections of on-ground works at appropriate times.

Larger projects needed additional human resources to implement them, including:

- ~ funding of project/implementation officers
- ~ Voluntary Land Management Agreements with landholders.

And the whole process needed to be flexible, including:

- ~ the invaluable team of about 15 individuals from the MLRCP, various State agencies and community groups who acted as the link between each major on-ground works project and the MLRCP;
- ~ ongoing review of processes, procedures and linkages; and
- ~ monitoring, "trouble shooting" and final evaluation.

## Conclusion

Delivering major and complex programs for on-ground change in natural resource management is full of challenge, in the complex chain from Commonwealth Government to individual landholder and landholder groups. To a large extent, meeting that challenge relied on the willingness of everyone involved to be flexible, positive, and to work together to devise credible, practical and cost-effective solutions. This experience ensured that we valued the human and social capital of the region and derived multiple benefits from capacity building.

## For further information

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## Three of the essential ingredients

(from left)

- 1 A community group ready and willing to work on priority NRM issues.
- 2 Technical advice to landholders at the right time and in the right way.
- 3 Landholder's "matching" contribution of time and labour.

*Photos by Simon Stanbury*

*for the Onkaparinga Catchment Water Management Board.*

## Building community capacity in the Mary River Catchment

### Background

The Mary River Catchment is one of the most ecologically and economically diverse catchments in Queensland, covering 9595 km<sup>2</sup> from the Blackall Ranges near Maleny, to Fraser Island in south-east Queensland. In the late 1980s, local NRM agencies and the community realised that the Mary Catchment was one of the most degraded in Queensland. Whilst this finding was of concern, it was a catalyst for action, and the Mary River became a pilot for Integrated Catchment Management (ICM). Since 1993, the Mary River Catchment Coordination Committee (MRCCC) has been dedicated to rehabilitating the catchment. In order to achieve this goal, the MRCCC has used a number of different extension philosophies, view and practices to build capacity in the community for improved NRM.

### Getting started

Jock Douglas, one of the founding fathers of Landcare, followed three steps in realising the Landcare vision. These are:

1. formation and development of the concept, idea or proposal;
2. sell the concept and build a critical mass of people who will drive it; and,
3. timing.

When introducing new projects in the Mary Catchment, Jock's three phases are supplemented with Kotter's 8 Steps to get new projects started. Kotter's 8 steps are to:

1. establish a sense of urgency;
2. create a guiding coalition;
3. create a vision;
4. communicate;
5. empower stakeholders;
6. celebrate short-term wins;
7. broaden the change; and,
8. embed the change in the culture.

(Source: John Kotter, Harvard School of Business)

When we apply the two extension theories to what has happened in the Mary River, we can see that the ICM concept had its gestation in the devastating floods of 1992. The community at this time expressed severe concern over the degraded state of the catchment, providing a *sense of urgency* to motivate action and the *timing*

to do something about the degraded state of the Mary River. The MRCCC took on the role of the *guiding coalition* described by Kotter, and became a key reference point for the community in dealing with land and water issues.

As a result of the 1992 floods, and the findings of a community survey conducted by Cooloola Shire Council, riverbank rehabilitation was identified as the single biggest environmental issue affecting the Shire. The results of the survey were *communicated* throughout the catchment by a coalition of the Cooloola Shire Council and the MRCCC. This led to the catchment community identifying that the most effective mechanism for riverbank rehabilitation was to devolve funds direct to the landholder — thereby generating a community attitude towards riverbank rehabilitation that was '*can do*' rather than '*cannot do*', and *empowering* local people to manage the change in land and water management practices that was required to rehabilitate the river. This was the impetus for the establishment of the Voluntary Riverbank Restoration Grants Scheme in 1995. This Scheme has been very *successful* in the Mary River and has been used as a model by other catchments seeking to promote community driven change.

To *broaden the change*, LWA, assisted the MRCCC with the establishment of a series of demonstration sites throughout the catchment to show how a number of different riparian zone issues could be resolved. These projects were new for the region, and generated fantastic community interest and involvement, not just from the Mary Catchment but also beyond. Today, these demonstration sites continue to spark considerable interest, particularly because they have proven to be successful. To *embed the change in culture*, bi-annual monitoring and evaluation of Rivercare Projects is undertaken by the MRCCC. Results and advice derived from the monitoring program are then provided to the landholders, providing them with evidence of the impact their actions are having on river health.

### For further information

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Bob has worked in the Water Resources and Catchment Management field for the Department of Natural Resources & Mines for over 20 years, based in the Mary River Catchment. He recently commenced employment as a Consultation Officer for the Department of Main Roads.

We needed to generate a community attitude towards riverbank rehabilitation that was '*can do*' rather than '*cannot do*'.





## Visioning

*Change would be easy if it weren't for the people* — finding a common vision can be difficult and time consuming — often it is easier to define and work from the **anti-vision** — what the community *did not want*. This approach was used in the Mary River Catchment with the advent of the National Action Plan for Salinity and Water Quality (NAP), as there was uncertainty about how NAP would unfold and what the vision for the catchment should be under the new arrangements.

A useful starting point was the setting up of expert working groups to focus on the task of defining what the community did not want. These working groups worked with local extension staff to run visioning workshops with more than 100 participants. The process:

- ~ initiated a discussion on what individuals did not want in their catchment;
- ~ asked the participants to draw their vision of 10 years into the future; and,
- ~ used different techniques to form groups of 4-5 to discuss that vision.

Despite the diversity of the groups, the visions were remarkably similar. The big question then became not *'what'* they wanted for the future but *'how'* they were going to achieve those goals. Bob Dick's (1991), FIDO model was a useful tool to progress the 'How to get there'.



Figure 1: Adapted from Dick (1991) FIDO Model

Techniques like FIDO are particularly useful when working with groups and individuals. This is because when working with individuals you need to acknowledge their feelings about the issue, before looking at ways of addressing it.

How someone feels about a particular issue reflects their values, beliefs and attitudes, each of which guide behaviour. Psychologists tell us that

our values and beliefs drive our attitudes, which in turn drive our behaviours. According to Vaughan and Hogg (1989) attitudes are just clusters of feelings, likes and dislikes, behavioural intentions, thoughts and ideas. Behaviours are 'in your face' and obvious, whereas attitudes, values and beliefs are progressively harder to determine.



Figure 2: A simple behavioural model

Taking the time to understand the values, beliefs and attitudes that guide individual and group action is important to developing strategies that will lead to long-lasting change. For example, figures issued by the Department of Primary Industries in 2000 showed that only 23% of primary producers in Queensland are viable. When faced with these percentages, it is important to accept that in developing, for example, a Catchment Strategy, both **short** and **long** term *benefits* of changed land and water management practices need to be included, as well as incentives to assist those with limited resources.

## In summary

Extension activities in the Mary Catchment have attempted to follow some of the unwritten 'laws' of capacity building:

- ~ People don't resist change — they resist *being* changed — so involve them and allow them to make **choices**, if you can make a choice then the opportunity exist to make a better choice.
- ~ When people make choices — they generally take **responsibility**.
- ~ Things are this way because someone let them get this way — **education** is a major key — people don't know what they don't know.
- ~ Perception is reality. People who 'lose' or perceive that they are losing something will find a way to 'win' — so **clarify perceptions**.
- ~ Some people get involved because they want things to happen — some are involved because they don't want things to happen — clearly define **needs and fears**.

## References

- Dick, R. 1991, *Helping Groups to be Effective*, 2nd Edition, Interchange, Chapel Hill, Queensland.
- Kotter, J. 1998, *Leading Change*, Penton Publishing and Marketing.
- S. Garrod & R. Williams, Transcript from the Science Show, 22 September 2001, ABC Radio National.
- Vaughan, G.M. & Hogg, M. 1989, *Introduction to Social Psychology*, 2nd Edition, Prentice Hall Australia Pty Ltd.

Remember people often do not remember what you said; however, they will remember how you made them feel.





## Building capacity in the wool industry for NRM to be integrated with farming systems

The most comprehensive survey of wool growers' attitudes toward on-farm environmental practices has revealed Tasmanians are more proactive in managing their natural resources than any of their counterparts on the mainland. The survey of 1500 wool growers found that those from Tasmania are more likely than their counterparts across Australia to have adopted NRM practices in the past, and intend to in the future.

The "Best Practice Survey", which was conducted by independent market analysts Down to Earth Research, is a core component of the wool industry's new national Land, Water & Wool (LWW) program. LWW is a partnership between Australian Wool Innovation Limited and LWA that focuses on sustainable and profitable wool production. The survey revealed that nine out of ten wool growers across Australia considered NRM as an important part of their farm business, and 91% were either doing something about it now or had taken some action already.

The survey is the most comprehensive look at Australian wool growers' attitudes to NRM, highlighting their current practices and needs for information and support.

The survey found that Tasmanian wool growers tended to be the greatest advocates of NRM when it came to improving water quality and managing native vegetation differently to other areas on their farm. Compared to the national average of 55%, the survey found that 67% of Tasmanian wool growers with land adjoining waterways had adopted enhanced



NRM practices to maintain or improve water quality. The most popular methods of protecting water quality were to limit stock access to waterways and retain or replant vegetation along waterways. In addition, 73% of Tasmanian wool growers with native vegetation on their farm adopt special practices, such as fencing off and lighter grazing, to manage these areas more sustainably.

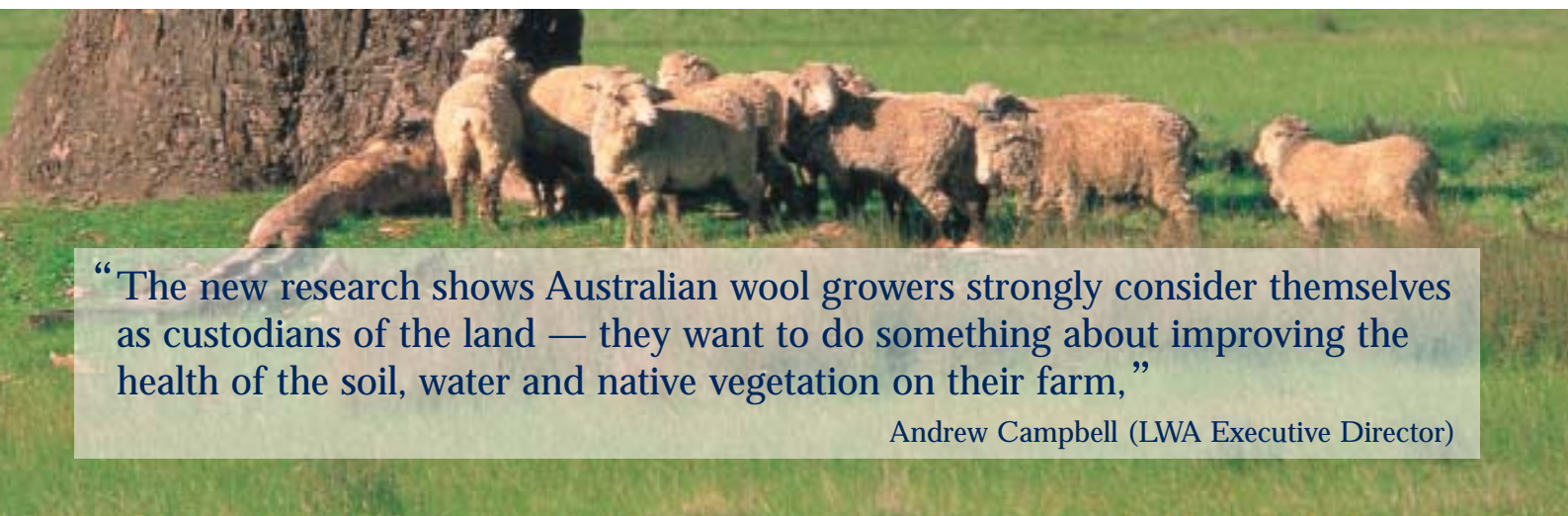
However, there still remains a great deal of work to be done, as according to the survey, 93% of wool growers across Australia are confident about their knowledge of NRM but almost half would like more information or support to help them manage it on their farm. Information needs vary between states, but in particular there is demand for assistance to develop whole farm plans, native vegetation and salinity management information and financial support.

The data from the survey will be used to refine LWW, the projects it invests in and measure the achievements of the LWW initiative to ensure it is relevant to wool growers. It will also inform those working on the LWW-Rivers and Water Quality project sites in Tasmania (see the website [www.rivers.gov.au](http://www.rivers.gov.au) for more information about these projects).

### For further information

If you would like a copy of the survey or more information about the projects being funded through LWW contact:

Fleur Flanery  
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“The new research shows Australian wool growers strongly consider themselves as custodians of the land — they want to do something about improving the health of the soil, water and native vegetation on their farm,”

Andrew Campbell (LWA Executive Director)



## Principle ingredients in the development of community engagement

Two of the principle ingredients in the development of community engagement for natural resource management, indeed any engagement program, are time and trust. Both need to be invested in, with one expended and the other hopefully earned, often with interest. We know that in many NRM based organisations, usually under resourced and overworked staff, have little time to focus upon the involved process of building a considered and long term community building program. By the time the project is scoped, funded, staffed and set running; community input is brought in at the end, and then presented to the community for feedback. A sign-off, consultation ticked-box approach results, which is neither rewarding for the organisation or the community involved.

*Two of the principle ingredients in the development of community engagement are time and trust.*

West Gippsland Catchment Management Authority (WGCMA) has taken on an investment in time, as part of the development of a community engagement framework. This investment seeks to build into its operations a community consultation structure that sits within the process of strategic plan and policy development, information exchange and project funding decision making priority setting. Fifteen months into the first stage, the WGCMA has, through the appointment of two community development officers, facilitated the establishment of a new Implementation Committee and

asset-based Portfolio Group structure, and seen a far greater level of liaison, communication and cooperation between NRM staff and the representative community group.

The new structure enables the WGCMA to more effectively inform, engage, involve and empower its community, as it recognises that investing in people and communities is equally as important as the on-ground work. Empowered communities bring about changes from a stronger sense of ownership of the programs that are affecting and impacting upon their environment. They are better able to understand and address issues leading to improved NRM outcomes for their region.

The WGCMA is investing in the building of its community capacity through its

*... investing in people and communities is equally as important as on-ground work.*

Implementation Committees and Portfolio Groups that serve as conduits for the sharing of information and knowledge, and provide the ongoing support that is vital for its success. The Authority believes that this structure is vital for our representative community to develop their understanding and ownership of the drivers of sustainable NRM.

Community capacity is built on the skills and abilities of individuals, and the relationships between those individuals, in an environment where there is trust and cooperation. Effective community engagement can help build that trust.



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## Capacity building in the Blackwood Basin

The Blackwood Basin Group is the leading community managed natural resources management group within the Blackwood Basin in the south west of Western Australia. The group has developed a community driven approach to on ground funding of landcare projects that recognises social and economic issues as being the main challenge to sustainable management of natural resources. A survey of the region revealed that over half of the landholders in the basin identified farm profitability and commodity prices as strongly influencing their decisions about undertaking landcare work (Blackwood Basin Group, 1999). The survey also showed that a lack of resources — financial, labour and time — were limiting farmers' efforts more significantly than attitudinal factors.

The reduced terms of trade and the perceived and real gaps between economic realities and implementation of sustainable practices, contribute to insecurity and uncertainty about landcare activities. In this environment, it was felt that there was an urgent need to respond to calls for increased integration of social and economic factors into landcare planning. Funding for the majority of landcare projects within the basin was received through the NHT, and traditionally individual landcare projects have been restricted to such activities as tree planting and fencing of riparian zones to exclude stock. Within the Dumbleyung landcare zone, most landholders had carried out as much tree planting and fencing as they thought was economically viable for their farms. They wanted to move on in their efforts to larger integrated projects that would have catchment wide benefits.

### Dumbleyung: A capacity building case study

With significant expertise and experience held amongst local landholders in the zone, the logical trend was towards greater decision making powers closer to home. Processes to aid community decision-making were developed through public meetings and other participation process initiated by the Blackwood Basin Group. Landholders were invited to suggest alternative ways of implementing landcare related activities that were acceptable to the farming community.



Salinity and rising water tables were, and still are, the main issues facing Dumbleyung farmers. It was identified that both short and long-term solutions were required that addressed these issues and contributed to on farm productivity. Ideas put forward included water harvesting, perennial pastures and fodder crops, saltland revegetation using saltbush, and establishment of oil mallees and other tree plantings. It was acknowledged that cost sharing arrangements for the more commercial activities that had landcare benefits would be different to cost-sharing for conservation activities.

Landholders were led through a process to identify local and wider community benefits, with cost-sharing arrangements also discussed. The activities and cost-sharing arrangements were then negotiated with the NHT. Once this had been achieved, the Dumbleyung Landcare Zone Committee coordinated a devolved grant program aimed at providing incentive funding for farmers to implement the landcare activities identified through the consultation process.

The capacity of the Dumbleyung community to implement land management practices has been increased through support provided to them to develop their own mechanisms for addressing natural resources management issues. Ownership of the farmer incentive program by





Above: Owen Dare Dumbleyung.  
Left: Oil mallee alley plantings.  
Below: Saltbush and sheep grazing.  
Digital images.

the local committee has resulted in a good uptake of incentive projects and knowledgeable management of the program. This combination has led to an increased capacity to deliver community identified farming initiatives that contribute to the short and long term viability of farms. The success of this approach has been recognised by other landcare groups within the region and similar programs have been developed to suit local environmental conditions and encourage sustainable farming practices.

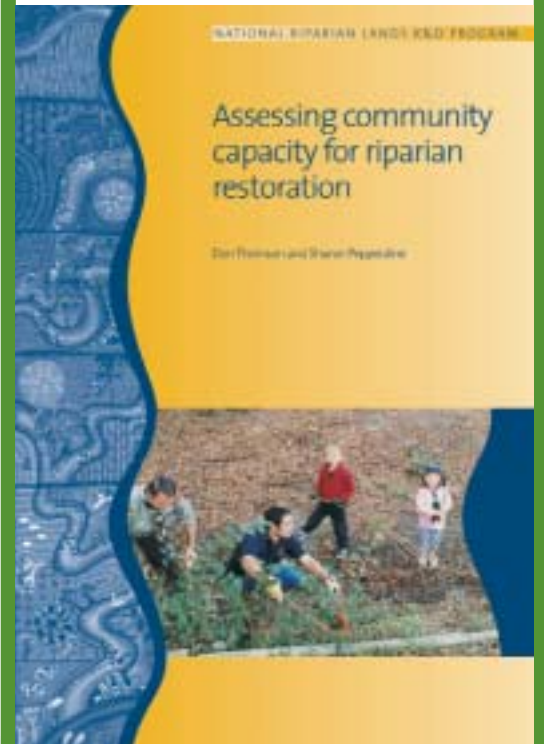
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# RiverLandscapes

## The Community Assessment Tool and Capacity Building for Riparian Restoration

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