

## Development of Community Based River Planning on the North Coast of New South Wales

*Peter Boyd<sup>1</sup>, Tony Broderick<sup>2</sup>, Sharon Cunial<sup>3</sup>, and Fiona Nagel<sup>4</sup>*

**SUMMARY:** The concept of community based river management plans has been an initiative of the New South Wales (NSW) Department of Land and Water Conservation (DLWC) Rivercare Program since 1992. The development of river plans is an effective means of understanding the nature and behaviour of individual river systems. It provides a tool for identifying and prioritising areas of conservation significance and problem areas requiring rehabilitation strategies. With the development of the Rivercare Program and increasing community demand, it became necessary to stream-line and improve the original planning process. A series of informative and interactive Rivercare workshops has been developed on the north coast of NSW. This new planning process aims to provide an approach to river restoration and management that enables and encourages all community members to contribute; to identify and work to group objectives that foster group ownership of the Rivercare Management Plan; to facilitate informed community based river management decisions by making technical information relating to the riverine environment available; incorporating lessons learned from past river management practices; and to ensure the planning process is time efficient and scientifically rigorous by reflecting contemporary methods of stream process and health assessment. This revised planning process ultimately hopes to empower communities with the knowledge and skills required to manage the complex array of river management problems facing us now and in the future.

### THE MAIN POINTS OF THE PAPER

- The revised planning process aims to allow more informed decision making by the community with greater education and understanding of the catchment and river processes responsible for the varying character and behaviour of streams.
- Rivercare planning on the North Coast of New South Wales aims to shift community objectives away from simply achieving "river stability" to a more holistic goal of achieving "river system functioning."

### 1. INTRODUCTION

The process of completing community based river planning on the north coast of NSW was developed in the last year for two primary reasons. Firstly, there has been a recognition that successful planning and implementation of river rehabilitation works is dependant on community participants understanding complex river system processes responsible for the varying character and behaviour of streams. Community support of rehabilitation strategies is critical for their success. It appears that such support can be gained from a community that understands why certain approaches are required. It is anticipated that this will result in greater acceptance, support and maintenance of river rehabilitation work and therefore greater success rates.

Secondly, increasing awareness of the importance of ecological considerations is apparent in government policies and research institutions. However there is still a need to broaden community objectives for river planning from the common one-dimensional goal of river stability to more holistic goal of "river health" and overall "ecosystem functioning".

In response to the above two points, a series of workshops were developed and incorporated into the north coast Rivercare planning process that will allow more informed decision making by the community groups and encourage community planning objectives to encompass more holistic principles. This paper details the basis for these changes, outlines the new workshop series and provides comment on future directions for this revised Rivercare planning process.

### 2. THE IMPORTANCE OF PLANNING

River planning is an effective means of understanding the nature and behaviour of individual river systems. It provides a helpful tool for river management by identifying and prioritising areas of conservation significance and problem areas requiring rehabilitation strategies. This also allows for a more strategic and coordinated approach to the permitting of river rehabilitation activities under the relevant legislation by authorities. A planning process which fosters community involvement and stewardship of the landscape is the most effective approach to achieving river rehabilitation as implementation is largely effected through active community participation and

<sup>1</sup>River Management Officer, NSW DLWC, PO Box 796, Murwillumbah, 2484, Tel: 02 66725488, Fax: 02 66723473

<sup>2</sup>Rivercare Officer, NSW DLWC, Locked Bag 10, Grafton, 2460, Tel: 02 66402075, Fax: 02 66402088

<sup>3</sup>Rivercare Officer, NSW DLWC, PO Box 149, West Kempsey, 2440, Tel: 02 65620708, Fax: 02 65628728

<sup>4</sup>River Management Officer, NSW DLWC, PO Box 582, Coffs Harbour, 2450, Tel: 02 66530115, Fax: 02 66523936

ownership of plans and projects. The DLWC has a long term goal where streams and waterways are managed in an ecologically sustainable way by landowners and community groups without major government funding or frequent technical advice (Outhet, 1996).

### **3. BRIEF HISTORY OF RIVERCARE PLANNING**

The first community based Rivercare planning process was devised for the Manning Catchment Management Committee in the early 1990s (Gardiner, 1996). The property planning approach was adopted which used an activity guide, A1 sized aerial photographs and a number of information overlays. Information including property infrastructure, environmental and geomorphic features as well as management options were progressively added to each layer of the plan. The development of this planning process brought together the collective expertise and experience of the Department and the landholders. This was the first step in prescribing management solutions on a catchment or sub-catchment basis rather than on an ad-hoc basis.

The main aim of the plans was to maintain the productivity of the land and reduce the amount of agricultural land lost to erosion (Raine and Gardiner, 1995). The original planning process allowed for on site discussions with landholders relating to river processes, management problems and rehabilitation options. In response to the growing interest in river rehabilitation, a series of Riverwise notes were produced that provide landholders with simple, straightforward management options, design and construction considerations for common river problems. Whilst being a valuable resource, the Riverwise notes were not designed or intended to detail and discuss the complex array of fluvial processes responsible for problems arising in a given stream system.

The Rivercare staff on the north coast have recognised that the information gap that exists between identifying management problems and deriving solutions, can inhibit management options from being fully understood, accepted, supported and maintained. There is a need for the landholders to have a greater understanding of the basic catchment and river processes influencing variations in river morphology and behaviour. A series of workshops have been developed to provide the information to fill this gap.

### **4. THE REVISED PLANNING PROCESS**

This informative and interactive workshop series has recently been introduced by the north coast Rivercare Program to supplement the river planning procedure set out by Raine and Gardiner (1995). The workshops have been designed to provide community groups who are river planning an opportunity to increase or enhance their understanding of physical and ecological

processes operating within and beyond their riparian zones.

Combined with riverwalks, the workshop series intends to establish and expand a common level of awareness and understanding in order for community groups to make informed and appropriate river management decisions.

The purpose of the workshop series is to:

1. Provide an opportunity for the community to be involved and contribute to every stage in the planning process.
2. Identify and set group objectives that fosters community ownership of the river management plan.
3. Increase community understanding and aid informed community based river management decisions by discussing technical information relating to the health of the riverine environment.
4. Ensure the planning process is time efficient and technically sound by reflecting the latest techniques in stream process and health assessment.

The workshop series is as follows:

#### **Workshop 1**

- Presentation of aerial photograph enlargements.
- Identify and set group objectives for river management planning.
- Discuss key principles in river management planning.
- Explain how to use aerial photographs in the river management planning process.

#### **Workshop 2**

- Introduction to catchment and river processes (abiotic and biotic) and how they relate to stream system health and functioning.
- Commence riverwalks with group, discuss and apply theory from workshops to stream system.
- Riverwalks may initiate review of group objectives.

#### **Workshop 3**

- Identify and discuss the symptoms and causes of typical river problems in the group's catchment and beyond.
- Link the discussion to the objectives of the community group.

#### **Workshop 4**

- Field observations and discussions arising from riverwalks are related to current research trends (e.g. river reach analysis).

- River reach boundaries (or process zones) as identified during the river walks are translated onto the river management plan. The group is encouraged to comment.
- An overview of the river system and its typical reach boundaries and processes are discussed. A number of representative sites can be visited by the group as part of this workshop to illustrate the different river reaches identified.
- Appropriate management options are discussed and confirmed, ensuring they are consistent with landholder needs, group objectives and natural stream processes operating in identified reaches.

The river planning process is designed to meet the needs of the community group. In this way, the workshop series is flexible and easily adapted to the requirements of different groups. The material prepared for planning workshops is arranged into a number of interchangeable information modules. The flexibility of this system is also advantageous as it can be easily linked into other DLWC programs, such as Farming For The Future (FFTF). Landholders undertaking property management plans through the FFTF program can simply add a riparian management overlay and benefit from customised river management workshops and field days. Further to this, the information presented throughout the Rivercare management workshops may be easily adapted for other uses such as agricultural events, field days and other presentations.

The development of this flexible workshop series has arisen from the increasing need for the community to be more aware of broader causes for given problems within the river. It allows community groups to be better equipped to target management solutions at the cause rather than symptom of a river problem. The process encourages a greater understanding before management options are discussed.

Management options are largely determined by project objectives established at the planning phase. Many previous river works have been focussed on flood mitigation and structural control without having catchment and river health as a serious objective (Nagel, 1995). Whilst these works may have reclaimed substantive alluvial flats and attained relative river bank “stability”, river “ecosystem functioning” was not retrieved. Raine and Gardiner (1995) recognised the role of riparian vegetation in maintaining channel form and contributing to river health, however, stronger links still need to be drawn between physical processes and river structure and their influence on ecological health.

Awareness of the importance of ecological considerations has been reflected in policies and objectives of many government resource agencies, however there is still a need to transfer this information and awareness to the landholders and other stakeholders along rivers.

Various components of the river ecosystem are already recognised by many landholders as a resource and as having important aesthetic and ecological values. For example, deep pools are perceived as providing a reliable water source and good swimming and fishing holes. Increasing this awareness will enable more landholders to establish links with physical changes in the landscape, their management practices and the health of their river ecosystems.

Figure 1 provides a summary of the development of community based river planning on the north coast of NSW.

## 5. CASE STUDY: River Planning on the Camden Haven River, North Eastern NSW.

The Camden Haven River forms part of the greater Hastings River catchment of northern NSW. The Camden Haven is a relatively small system covering approximately 200km<sup>2</sup>. Forestry, dairy production and beef cattle grazing are the major industries in the valley. Rural subdivision has occurred in parts of the catchment but the main population centres around the townships of Kendall, Lorne and Comboyne.

Formal “Landcare” activities have been occurring in the catchment since late 1994 when the Camden Haven Landcare Group was incorporated. The major focus of the group has been on raising the general awareness of land management issues and practices, exotic weed management and riverine issues. The effectiveness of the group has been assisted by the broad representation by members of the various interest groups, particularly the dairy industry, and the group’s strong interest in the health of their catchment and river system. In 1997 the group received funding through the Total Catchment Management (TCM) Small Projects Funding Scheme to undertake a river planning process along a river length of 27km. This included 20km of the main trunk stream and 7km of tributaries Black Creek and Upsalls Creek.

The NSW DLWC north coast’s planning framework was used by Damon Telfer, River Planner formerly based in Kempsey, to guide the landcare group through the Rivercare planning process, which commenced in mid August 1998. The group was encouraged to contact their neighbours and other members of the local community to seek their involvement in the Rivercare planning. This strategy proved highly effective with many members of the community not previously associated with the landcare group participating in the three month process. In fact, much interest was generated and the landcare group doubled in size from 12 to 24 members during this time.

The group worked through three evening workshops addressing issues such as “Why Rivercare Plan?” and “Objective Setting”, “Catchment and River Processes” and “Typical Stream Problems and Treatments”. Attendance increased at each successive workshop.

Riverwalks commenced after the second workshop with attendance varying from 4 to 9 persons over a period of 4 days. An extra day of riverwalks was held on an area outside the initial Rivercare plan focus area to cater for the demand from new group members. The process culminated in a field day that concentrated on common issues and problems encountered in the different parts of the Rivercare Plan area including tidal, main trunk stream and tributary reaches, and practical options for addressing the various issues. Sixteen people attended the field day. A BBQ ended the day on a social note with much lively discussion and friendly conversation.

The Rivercare plan and accompanying Riverguide notes were presented to the group on 23 November, 1998. Comments from the group were very positive. The group has used the information from the planning process to determine priorities for action based on geomorphic/scientific, social and economic values. They intend to submit three applications for funding in early 1999. These include a priority bank stabilisation project, a consortium based stock management project and an application to extend the river planning process to a further 20 km of trunk and tributary streams in the catchment. As a local dairy farmer Paul Issac commented: *“We have learnt a lot about our river...and now we work more effectively as a group than landholders in isolation.”*

## 6. THE FUTURE

It has been our experience on the north coast of NSW that community group objectives broaden with increased understanding of the physical and ecological processes of their river systems (Woodroffe and Broderick, these proceedings). A future endeavour of north coast Rivercare staff is to facilitate this broadening of community objectives from “river stability” to “river health” and overall “ecosystem functioning” by providing information relating to these processes. This will eventually involve greater participation of the north coast Aquatic Ecosystem staff during the Rivercare management planning process.

Further development of the community based Rivercare management planning process, discussed herein, provides the opportunity to achieve this. Projected modifications to the current workshop series are outlined below:

- **Workshop two:** will be complimented by a presentation which relates river structure, flow patterns and riparian vegetation to habitat structure, ecological function and water quality.
- **Workshop three:** relevant water quality and ecological problems associated with both the terrestrial and aquatic environments will be discussed. Typical problems include off stream sediment and nutrient sources, riparian habitat

- degradation and fragmentation, aquatic weeds, algal growths and loss of instream habitat and biota.
- **Workshop four:** existing terrestrial and aquatic habitat types which characterise particular river reaches will be identified and related to river structure and behaviour. Potential threats to these habitat types and management options to protect, enhance and maintain these will be discussed during the final workshop. An additional future objective of north coast Rivercare staff is to investigate systematic methods for undertaking effectiveness assessments of river rehabilitation works with the use of ecological and geomorphic parameters. Due concern has been shown for the rarity of systematic post-project evaluation despite increasing numbers of river rehabilitation projects (Kondolf and Micheli, 1995). Evaluation assessments are critical if lessons are to be learned from past mistakes and if river rehabilitation is to advance (Nagel, 1995). It has been suggested that efficient and thorough evaluation methods need to be established at the planning phase of a rehabilitation project (Kondolf and Micheli, 1995; Berger, 1991). In this way, evaluation can be used not only to judge specific rehabilitation works, but also the appropriateness of the broader river planning objectives. Meaningful evaluations should judge the success of particular rehabilitation works and broader river plan objectives in relation to an understanding of river reach characteristics and varying river behaviour as identified through the revised Rivercare planning process outlined herein. This will ensure that river rehabilitation techniques are consistent with the natural variability of a given river system. Successful works should be judged as “working with mother nature not against her”. It has been suggested that to further foster community “ownership” of rehabilitation works and river plans generally, landholders can be involved in the collection of relevant information during the evaluation process (Outhet et al, these proceedings).

## 7. CONCLUSION

The use of community based river management plans is essential for effective river rehabilitation strategies. However, success of river planning and rehabilitation measures can be limited if management options are not fully understood, accepted and maintained by community groups. Effective rehabilitation work can also be hampered if objectives for the work focus solely on river stability rather than the more holistic goal of system functioning.

The north coast Rivercare staff have revised the Rivercare management planning process in an effort to encourage more effective river rehabilitation work by empowering the community with adequate knowledge

and understanding of the natural variability of their river system. River planning objectives and successful rehabilitation works will only be achieved if they recognise complex processes that underpin river system functioning and are consistent with geomorphic variability of river forms and behaviour.

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# THE DEVELOPMENT OF RIVER PLANNING ON THE NORTH COAST

RIVER PLANNING IS IMPORTANT for effective systematic river rehabilitation work

A COMMUNITY DRIVEN PROCESS is critical for long term success in river rehabilitation work

RIVER PLANNING COMMENCES with goals initially focussed on river stability and erosion control

GREATER UNDERSTANDING by researchers and managers of complex river system functioning and geomorphic variability of river form

Recognition of INFORMATION GAP between current technical knowledge of researchers and river managers and the current community understanding of river systems

WORKSHOP SERIES developed recently on the North Coast of NSW empowers the community with adequate knowledge and understanding of the natural variability of the river

RIVER PLANNING can occur with INFORMED COMMUNITY INPUT as well as SCIENTIFICALLY RIGOROUS TECHNICAL INPUT by DLWC

INFORMED DECISIONS can be made that reflect true understanding of natural variability of river systems

COMMUNITY UNDERSTANDING ensures management options are accepted, supported and maintained

River management aims to achieve "SYSTEM FUNCTIONING" or "river health" rather than "river stability"

MANAGEMENT ACTIONS ARE MORE EFFECTIVE in the long term as they work with the natural behaviour of the river system not against it