

Opportunities for sustainable riverine management in the Queensland Murray-Darling Basin

C. Ellway*, G. Murphy*, L. Merton*, D. Baumgartner** and A. Hempseed***

* Queensland Natural Resources & Mines, PO Box 2, Warwick, Queensland, Australia

** Queensland Natural Resources & Mines, PO Box 350, Roma, Queensland, Australia

*** Queensland Natural Resources & Mines, Locked Bag 4, Goondiwindi, Queensland, Australia

Abstract The RiverReach program has provided significant material, planning and educational resources to communities throughout the QMDB over the last three years. The devolved granting process has proven to be a valuable mechanism for the initiation of on-ground works and as a platform for the delivery of educational and awareness raising activities. The range of riverine management projects developed among riparian communities reflects both the socio-economic and the environmental circumstances. An increasing knowledge of riverine management issues among both the community and practitioners and a growing acceptance of the need for riverine management within the community has increased opportunities for sustainable riverine management in the region. While the range of riverine management issues is diverse, and their integration complex, the combination of all three aspects (financial assistance, technical advice, and awareness raising) has enabled significant management outcomes to be achieved.

Keywords devolved grants; financial assistance; QMDB; Riverine management; RiverReach; technical assistance

Introduction

RiverReach is a community based riverine management program jointly funded by State and Commonwealth Governments through the Natural Heritage Trust over a three-year timeframe. The aim of the RiverReach project is the “Implementation of sustainable riverine management in the Queensland section of the Murray-Darling Basin”. The project is based with the Queensland Department of Natural Resources and Mines in Warwick located on the eastern side of the Basin. The project staff consists of a Project Manager and four full time staff (a riverine planner and three technical officers).

The Queensland section of the Murray-Darling Basin (QMDB) has a large catchment area of approximately 260,000 km² which is slightly larger than the State of Victoria (228,000 km²) or about one quarter of the Murray-Darling Basin (1,060,000 km²). There are four major river catchments: the Condamine (24,500 km²), Border Rivers (38,500 km²), Maranoa Balonne (64,000 km²) and the Warrego Paroo (130,500 km²).

Two of the objectives of the RiverReach Project are:

- to encourage and support community based on-ground works and measures which will maintain or improve the condition of river systems;
- to provide a means by which the practical aspects of on-ground works may be demonstrated.

Prior to June 1998 when the project commenced, a comprehensive method for the implementation of community based riverine management did not exist in Queensland. Riverine programs in other States have given insight as to how the project might be developed and implemented. An example is the NSW RiverCare experience where community involvement in the planning and implementation of works is viewed as essential (Boyd *et al.*, 1999; Outhet *et al.*, 1999).

Methods

Community based riverine management projects were implemented as an outcome of a devolved grant process which defined development, evaluation and approval stages for project proposals. The process employed by RiverReach comprises a number of steps:

1. Advertising for Expressions of Interest
2. Expressions of Interest received from Community of Interest
3. Site Inspections by Technical Staff
4. Provision of Riverine Management Workshops to Community Group
5. Project Proposal Planning and Development
6. Assessment of Project Proposal by RiverReach Project Management Committee
 - 6.1 Proposal amendments – recycle back through 5
 - 6.2 Proposal acceptance – proceed to 7
 - 6.3 Proposal rejection
7. Approval by Project Management Committee
8. Project Management Agreement signed by Project Group
9. Provision of Funding to Project Group
10. Implementation of On-ground works
11. Project Monitoring and Reporting

Project Identification. A number of avenues are available to RiverReach from which to solicit community based on-ground works proposals. The primary method selected was to advertise widely throughout the catchments for Expressions of Interest in riverine projects from community groups. Secondly, over 220 organisations including catchment management, Landcare, water user, agricultural, producer, local government, River Trust, conservation, indigenous and educational groups were approached individually to register interest in developing riverine management projects.

In order to provide some guidance to the project groups on the scope of projects that RiverReach would consider, the Project Management Committee established guidelines and evaluation criteria under which applications for on-ground works would be approved. Criteria used in the evaluation of project proposals included:

- concurrence with catchment strategies and action priorities
- alignment and integration with other natural resource management strategies
- community interest and commitment
- urgency for implementation
- community access and value for demonstration of best practice
- cultural heritage value
- habitat conservation value
- appropriate cost sharing and public benefit.

Provision of Riverine Management Workshops. Receipt of Expressions of Interest (EOIs) enabled riverine technical officers to familiarise themselves with the project proposal site and conditions, initially assess the merits of the proposal, interface directly with interested groups and provide information and awareness raising in the form of Riverine Management Workshops.

Project Proposal Planning and Development. Proposal planning occurred through the delivery of the Riverine Management Workshops and enabled time, resource and financial frameworks to be developed for the Project Proposal.

Assessment of Project Proposal by RiverReach Project Management Committee. The Committee considered adherence to the criteria and guidelines established for devolved grant proposals and enabled discussion and resolution of technical, funding and implementation difficulties.

Project Management Agreement (PMA) signed by Project Group. The PMA documented an agreed basis for the implementation of the Project and set time frames for the completion of the project, future management arrangements, auditing, reporting and monitoring requirements.

Implementation of on-ground works. Works usually commenced once funding was released to the Project Group.

Monitoring and reporting. Progress reporting is required during, at completion of, and following implementation of works.

Project constraints and limitations

Project delivery. The amount of time required to actually develop a process for devolving the grants themselves and to ensure agreed outcomes were met, delayed the initial advertising for Expressions of Interest.

A major constraint is the need to deliver the project over a large and geographically diverse area (Ellway *et al.*, 1999). The delivery of project services in terms of education, planning, inspection, administration and monitoring is extremely time consuming given the number of staff and the large area involved. In these circumstances it is essential that groups have a clear direction on how the project is required to proceed and are well grounded in terms of reporting and works completions aspects. For individual projects to proceed satisfactorily, proponents need to be fully committed to the project.

Technicians and all other stakeholders are assisted by a thorough understanding of macro processes and experience in many fields including vegetation management, engineering and riverine processes. While revegetation is often seen as a preferred method of riparian rehabilitation in coastal areas it is usually not an option over large semi arid regions or in remote areas. One unanticipated external force was that of drought. Two revegetation projects in higher rainfall areas were hampered by two seasons of below average rainfall, which reduced seedling survival rates.

Results

Community uptake. Sixty-six Expressions of Interest were received from three Calls over three years. EOIs were received from the following catchments: Warrego Paroo (16), Maranoa Balonne (10), Condamine (30) and Border Rivers (10). The higher number of EOIs received from the Condamine catchment reflects the higher population and the greater number of rural holdings in the catchment.

Landcare and Catchment Management groups, Local Government Councils, primary producer groups, indigenous groups and community groups were targeted recipients for the Calls for Expressions of Interest. Broad-scale public advertising was also employed to solicit enquiries and Expressions of Interest. EOIs were received from the following sectors of the community: Rural Enterprise (11), Community Groups (19), Landcare or Catchment Groups (26) and Local Government Councils (10).

The results show that most of the EOIs originated from Landcare, catchment management or community groups particularly in the Condamine catchment, however there were also significant responses from rural enterprises and local government authorities.

Proposal development and approval. The receipt of Expressions of Interest enabled Riverine Planning workshops to be provided to all potential project proponents for at least the first two calls. This stage enabled delivery of information on riverine process, problems and rehabilitation through Riverine Management Workshops coupled with the detailed advancement of project proposals. This enabled education and awareness raising activities to be delivered to a wide range of riparian stakeholders within the Basin. Once Project Proposals were fully developed, they were subject to evaluation and approval for funding by the Project Management Committee.

Not all Expressions of Interest proceeded successfully to Project Proposal stage. Twenty-five devolved grant projects have been or are currently being implemented across the QMDB. The number of devolved grant Project Proposals developed in catchments comprise: Warrego Paroo (9), Maranoa Balonne (1), Condamine (11) and Border Rivers (4). In the first call, another two EOIs resulted in the development of a Strategic Riverine Enhancement Plan for a larger catchment area together with the development of two riverine management demonstration sites. One other EOI from the first call led to the development of a demonstration site requiring an engineered solution for bank slump rehabilitation.

All devolved grant groups have agreed to allow public access to these sites for demonstration purposes. The majority of project sites have signage indicating the nature of each individual project. Four of the more urban project sites are equipped with information shelters which contain a series of posters describing riverine processes, management problems and rehabilitation techniques.

In the third call, far more EOIs were received than could be accommodated within the constraints of staff, time and funds. These constraints foreshortened the number of proposals available for full development and the ability of staff to provide education and awareness raising workshops to the proponents. Had sufficient resources been available then the number of projects successfully developed would have been much higher. Eight of the thirty EOIs received from the third call were short-listed for further development and seven of these proceeded to full proposal development.

Successful project proposals were developed from the following proponent groups: Rural Enterprise (3), Community Group (4), Landcare or Catchment Group (13) and Local Government Council (5).

Approximately one half of the original EOIs received from the first two calls failed to develop into successful project proposals for a wide variety of reasons. These included:

- lack of on-going commitment to proposed rehabilitation
- outside the criteria of the RiverReach project
- inappropriate cost sharing arrangement
- excessive weed invasion of riparian zones
- inability of group to change current management practices
- inappropriate riparian management proposed.

Results indicate that EOIs received from Catchment Management and Landcare groups, and Local Government Councils, were most likely to be successfully developed into riverine management projects. If the results from the first two calls are examined, the success rate is greater than 50%. This may well reflect prior experience with externally funded projects.

Devolved grant projects encompassed a wide range of on-ground works. Often riverine projects encompassed multiple management aspects. These included: bank stabilisation using active revegetation (13), bank stabilisation using natural regeneration (11), stock management fencing (9), urban stream planning and management (8), riparian introduced plant management (7), off-stream watering points (4), multiple use rehabilitation (3), avulsion (stream breakout) management (2), instream vegetation or debris

management (2), buffer zone rehabilitation (1), bed control structure (1) and toe protection structure (1).

Financial assistance. Funding was offered to groups on the basis that they support the project with an equivalent amount of in-kind input comprising machinery hire, labour, materials, or other inputs, to on-ground works and project development. In all instances, the value of group input will exceed that of direct funding. Table 1 shows the value of devolved grant projects by catchment. The total project value consists of: (a) funds devolved by RiverReach to the group (b) in-kind contributions by the group and (c) other contributions to the project by third parties. It can be seen that projects with a total value in excess of one million dollars have been or are currently being implemented in the QMDB through the RiverReach project.

Discussion

There are social, economic and environmental benefits that accrue from the adoption of riverine management best practice.

Community responses to the project

The response to the calls for Expressions of Interest from several community sectors shows that communities are aware for the need to manage riverine areas to halt perceived riverine degradation. Perhaps the most encouraging aspect of the RiverReach initiative has been the willingness of the broader community to partake in a process of on-ground riverine management. The number of EOIs received (66) through the three calls was satisfactory particularly for the third call where far more proposals were received than could be accommodated within the constraints of staff, time and funds.

The idea of protecting riverine systems has been high on the agenda of many producers and land managers in the QMDB. Unfortunately, the opportunity to undertake riverine management is limited by the lack of available funds or a shortage of appropriate information and techniques. Many initial enquiries to RiverReach made by individuals and organisations revealed that they were interested, but constrained by the lack of technical, information and financial resources.

Even more encouraging than the initial uptake of RiverReach by the community, was the high number of people who, once involved, were keen to inform neighbours and friends. This highlights a number of key components that were crucial in the successful community uptake of the program including: original offers of assistance must be well publicised and well articulated, and objectives, procedures and outcomes must reflect the combined expectations of local resource management needs and local community members.

There is evidence of positive attitudinal change within the project groups, which is seen in amendments day to day management of riparian areas and to an extent, other landscape

Table 1 Devolved and contributed funding for devolved grant projects across the QMDB

	Warrego Paroo	Maranoa Balonne	Condamine	Border Rivers	Total QMDB
Funds devolved by RiverReach (\$)	182,300	8,900	169,500	93,400	454,100
Preliminary in-kind contributions from project proponents (\$)	219,300	7,800	217,300	40,600	485,000
Preliminary third party and other contributions (\$)	85,900	25,400	10,100	12,100	133,500
Total QMDB	487,500	42,100	396,900	146,100	\$1,072,600

systems. Such changes are affirmed in the Future Management Agreements completed by project groups.

Project implementation approaches: strengths and weaknesses

Project delivery. The devolved grant process worked well and justified the time spent initially in planning the devolvement framework. This format has since been successfully utilized in several other riverine management programs. RiverReach increased the community skills base for riverine management and demonstrated practical aspects of on-ground works.

Time constraints and the need for the RiverReach project to be delivered over a large area resulted in a tendency for the development of numerous smaller projects, and this was viewed as essential in order to invoke a wider response to calls for riverine management proposals. If future devolved grant assistance is provided, more effort could be directed at fewer but larger projects enabling a closer integration of riverine and landscape management practices. On an even larger scale, there are opportunities for sub-catchments in the QMDB to be managed for riverine health outcomes. In addition, a targeted approach towards ecologically more sensitive areas might provide substantial gains in biodiversity conservation outcomes.

Access to information. The devolved grant mechanism not only provides for the initiation of on-ground works but serves as a platform for the delivery of information on riverine processes and management. However, delivery of planning and management workshops needs to be carefully tailored to the needs of the group or enterprise. When the RiverReach project commenced, detailed workshop material needed to be developed to assist the project planning process. The development of this riverine management workshop series was integral and pivotal to the delivery of education and awareness raising activity and the eventual successful development of project proposals incorporating agreed outcomes.

While considerable fluvio-geomorphological information is available for consumption there has been a shortage of practical ecological information about riverine processes in inland areas. Lack of research and technical information on weed control in riparian areas inherently means that there is an inability to arrest what is becoming an increasing threat to riparian biodiversity. Two weed species, Lippia (*Phyla canescens*) and Mother-of-Millions (including *Bryophyllum tubiflorum*) pose considerable threats to the integrity of riparian vegetation communities.

Technical support. Riparian landholders in the QMDB have in some cases been living with and working beside rivers for decades, and have invaluable local knowledge to impart to other riverine managers. However, there is still a demand for detailed technical advice on riverine processes and treatments for problems. It must be noted that this technical advice is often useless unless it is economically and socially feasible for the landholder to implement.

Initially, lack of knowledge of inland riverine systems, riparian vegetation communities, habitats and processes hampered project development. At project commencement in 1988, very little information was available on the ecological workings of ephemeral systems in western areas. Since then, major gains have been made in this area, as shown in Young (2001).

Science was an issue for many of the stakeholders from the point of view that it was difficult for them to handle the complexity of issues that became apparent in the Management Workshops. In some situations there is a lack of adequate information to fully support riparian rehabilitation efforts. In two circumstances, landholders were willing to

offer their continued in-kind assistance to enable continued data gathering at trial sites. Both trial sites involved the determinations of management conditions favourable to natural and assisted regeneration in riparian areas.

Financial assistance. The culmination of the development of each project proposal was the signing of the Project Management Agreement, which effectively committed both parties to project implementation within an agreed timeframe. While financial incentives invoked strong interest from community groups and while the development of project proposals drew responses of commitment from stakeholders, often this commitment waned if the process became too long, too complicated or too time consuming.

On the other hand, where groups were willing to commit to increased commitment to the on-ground works, RiverReach was able to fund longer term monitoring trials to provide more information on rehabilitation techniques.

What do communities need?

Project delivery. Results have demonstrated that communities do need technical support, educational material and financial assistance. As the RiverReach project and many other similar programs throughout Queensland have shown, there is community demand for assistance in the form of education, technical advice and financial assistance to implement community-based riverine management projects. The commitment from primary producers is apparent, however the methods of rehabilitation and the finances to do it, have not previously been readily available. Good technical advice that is feasible for implementation is integral to providing opportunities for sustainable riverine management in the QMDB.

Access to information. Extension sheets, planning workshops and advisory seminars have been sought by enterprises, community groups and local government in an effort to progress riverine management initiatives outside those funded through RiverReach. This underlines the continuing need to provide this material at relatively short notice. Addressing the information shortage within the broader community was inherently the most difficult, and often the most important aspect of the RiverReach initiative.

Technical support. An understanding of fluvial geomorphology and land management and its application to riverine systems is a complex field, but essential to the understanding of riverine processes and management. Transferring a level of understanding that encompasses basic principles without being overwhelming to stakeholders was a task that favored trial and error. What people responded to in one area did not guarantee it in another. What on-ground measures worked in one catchment was not necessarily what worked in others. This is where experienced, well educated technical officers prove essential for project success.

The input of technical assistance to individual stakeholders and community groups is essential if community based riverine management is to proceed. Stakeholders need to incorporate riverine management into their regular property management activities. Much of this activity is relatively straightforward and once demonstrated as best practice within the community, adoption will often follow among proactive managers. However, numerous riverine management problems require recognition and action from larger organisations, particularly local government authorities.

Financial assistance. It is obvious from the rapport that currently exists with community groups that sustainable riverine management does require financial intervention. However such intervention must remain in the hands of local stakeholders wherever possible.

Often the problems obvious in riparian areas are inherited as a result of poor land management practices of the past and rectification is beyond the financial or technical scope of incumbent landholders. While the “Titanic Theory” (Rutherford *et al.*, 1999) may indicate that badly impacted areas should be wait-listed, our experience suggests that assistance should be given to those community groups who are prepared to improve riverine management practices and learn from previous mistakes.

Support is required for those who place appropriate values on the sustainability of natural resources within a framework of economic return. Those who are limiting stock numbers, have low erosion, good pasture, have conservation areas, business plans, property management plans, etc. should be supported above those that are in it solely for subsidies on infrastructure. Government can play a constructive role in encouraging sustainable riverine management as it has done with this project.

Conclusions

The RiverReach project has supported community based on-ground works designed to maintain or improve the condition of the riverine systems. It has also raised the community skills base for riverine management and demonstrated practical aspects of on-ground works in the QMDB. RiverReach has promoted an action learning approach to riverine management through planning and on-ground action informed by the best available scientific knowledge. The key to sustainable riverine management is to incorporate economic social and environmental issues in the development of all management regimes. It is important for success in the long term that these issues not be seen as mutually exclusive but as integrated. RiverReach has demonstrated that the three aspects of information, technical assistance and financial support are integral to the ongoing delivery of sustainable riverine management in the QMDB.

References

- Boyd, P., Broderick, T., Cunial, S. and Nagel, F. (1999). Development of Community Based River Planning on the North Coast of New South Wales. In Rutherford, I. and Bartley, R (eds) *Proceedings of the Second Australian Stream Management Conference, Adelaide, South Australia*. Vol. 1, pp. 87–92.
- Ellway, C., Murphy, G., Merton, L. and Wallace, R. (1999). RiverReach – Answering the challenge of implementing sustainable riverine management in the Queensland section of the Murray-Darling Basin. *Second International River Management Symposium. Brisbane, Queensland Australia. 29 September – 2 October 1999. Speakers Papers*. Riverfestival, Brisbane. pp. 189–194.
- Outhet, D., Adamson, G., Armstrong, J., Graice, J., Hader, W., Lorimer-Ward, K., Massey, C., Nagel, F., Pengelly, S., Raine, A., Shephard, M., Smith, T., Wem, P. and Young, R. (1999). Evolution of Stream Protection and Rehabilitation in NSW. In Rutherford, I. and Bartley, R (eds) *Proceedings of the Second Australian Stream Management Conference, Adelaide, South Australia*. Vol. 1. pp. 487–492.
- Rutherford, I., Jerie, K., Walker, M. and Marsh, N. (1999). Don’t Raise the Titanic: How To Set Priorities For Stream Rehabilitation. In: Rutherford, I. and Bartley, R. (eds) *Proceedings of the Second Australian Stream Management Conference, Adelaide, South Australia*. Vol. 2, pp. 527–532.
- Young, W.J. (ed) (2001). *Rivers as Ecological Systems: the Murray-Darling Basin*. Murray Darling Basin Commission, Canberra, ACT, Australia.

Reproduced with permission of copyright owner.
Further reproduction prohibited without permission.