



Rivers reborn

Greening Australia's spirit is leading a rousing community buy-in to its ambition to revive Australia's struggling rivers. Julian Cribb reports.

Above: A wetland in Marsden Park, NSW, fed by one of the creeks River Recovery will target as part of its Hawkesbury-Nepean campaign.

Glen Klatovsky, Greening Australia

Tackling a crisis that extends far enough to reach halfway to the Moon sounds like a recipe for heartbreak. Yet Carl Binning is undaunted. In fact, he's optimistic that Australians will be first in the world to return their river systems to something approaching a natural balance.

His reasons are that it's feasible – and it's already happening. In the valleys of the Yarra, Hawkesbury-Nepean, Derwent, lower Murray, Hutt, Katherine, Boorowa, Burdekin and Coliban rivers, communities, government bodies, farmers, enthusiastic school children, greenies, private companies and dedicated individuals are banding together to work a quiet miracle.

For the first time since European settlement, Australia's abused and sclerotic arteries, its rivers, have a hope of renewal.

'At one level it's about restoring our rivers to something a platypus would want to swim in,' says Binning, the head of Greening Australia, the nation's leading hands-on, non-government environmental restoration body.

'But it is also about sparing the nation the vast expense of having to desalinate, decontaminate and filter every drop of water we use.'

And it's about a whole new take on the word 'infra-

structure'. In place of concrete and steel, the sinews of Australia's 21st century infrastructure may well consist of trees and vegetation, wetlands, water plants and animals, and natural water cycles, all helping to support humans and the continent's other forms of life.

For quarter of a century volunteers and partners of Greening Australia have been proving that partnership works in landscape recovery. Their achievements include planting nine million trees and shrubs, establishing 15 000 km of tree lines, rescuing half a million hectares of native vegetation and building enough fences to girdle the Equator.

An example is Greening Australia's Bidgee Banks partnership, which in less than 30 months engaged 262 land managers, rehabilitated 1340 hectares of river-banks and saved another 830 hectares of remnant vegetation. 'This shows what can be achieved when a community is motivated to save its river,' says Binning.

'It's not that governments and communities elsewhere are doing anything wrong, it's just that there hasn't been much urgency until recently. The crisis in our rivers is now plain and we have the funds to do something about it.'

Aiming far and wide

Today, Greening Australia's community partnership formula is focusing on its biggest challenge yet – the restoration of 22 000 km of the nation's most degraded and damaged river systems under the nationwide River Recovery program.

‘When you consider the magnitude of the task of restoring Australia’s water, it can look hopeless. People feel helpless because of the sheer scale of the challenge of making sick rivers healthy again,’ Binning says. ‘However, we know, scientifically, that it is possible to restore a river’s health and water quality through some fairly straightforward actions.’

The science of river repair has to do with how, and how much, to intervene in effecting changes in river health, says eminent CSIRO scientist Dr Brian Walker, a member of the River Roundtable that provides scientific and technical advice to the project.

‘The ability of rivers to repair themselves equates, in scientific terms, to the notion of self-organisation in complex systems. Self-repair (or self-organisation) of any system, including a river, has limits,’ Dr Walker cautions.

‘The river can self-organise within various “healthy” states, up to some limit. But beyond some threshold change in river state the system cannot recover, and its dynamics lead it to a different kind of state – usually undesirable.’

‘We need to know the thresholds in river states beyond which they cannot self-repair. It is already plain that many of our rivers are now in such states and will need our help if they are to have any chance of recovery. Then we need to know how much we have to intervene to get the river back beyond the threshold into a functional state where it is able to process pollutants, or salinity, or whatever is causing the “unhealthy” condition, and maintain itself without further intervention,’ Dr Walker says.

River restoration is about renewing Australia’s environment – but it also promises an economic return,



River Recovery is undertaking practical environmental restoration and protection work on nine key rivers across Australia. Community engagement will be key to its success. Greening Australia

says Binning. ‘The cost of cleaning dirty water is huge, and will become greater as river degradation increases. This affects the price we pay for water, the public investment needed to cleanse it, and the impact of dirty water on agriculture and food production, manufacturing, recreation and tourism, households, people’s health and safety, and native wildlife – on every aspect of our lives.’

‘When you do the sums, it turns out to be massively less costly to restore a river than to cleanse increasingly filthy water.’



The critically endangered spotted handfish will benefit from River Recovery efforts on Tasmania’s Derwent River.
Barry Bruce, CSIRO Marine Research

Investments return in river health

The investment needed to return 22 000 km of our worst affected streams to something approaching good health is substantial – around \$650 million, or \$30 000 for each kilometre of river. Yet, as infrastructure projects go, it’s a bargain. ‘In the 1950s, the Snowy Mountains Hydro Scheme was about using water to grow food and power industry. It cost \$6 billion in today’s dollars,’ Binning says.

While the cost of river restoration is small in infrastructure terms, Binning is frustrated by the fragmented nature of water management in this country: enough money has already been committed to turn things around, but people are holding back.

‘The work is simple – getting people to act is the challenge. Governments are doing their best, especially through the National Water Initiative which has enough funds to make a real difference, but getting everyone to agree on what to do and how to go about it is frustrating the whole process.’

A shared vision and strong local leadership would get the job done: ‘Just hard work and commitment on the ground,’ he says.

Restoring our rivers is arguably Australia’s most vital infrastructure project, Binning argues, servicing not only agriculture and industry but also the whole nation and its environment. It will cost a tenth of what the Snowy scheme did – and deliver a far larger result.

‘That’s because we’re building it with natural systems, scientific understanding and community involvement instead of with concrete, explosives and bulldozers. We’re working with nature, rather than against it.’

Restoring a river has another great advantage: unlike normal infrastructure, it never wears out. A natural system needs little upkeep in the long run because it is self-renewing.

Backing grows

The fact that big companies have chosen to invest in River Recovery is an indication that corporate Australia too sees it as an investment. Alcoa of Australia Managing Director Wayne Osborn says ‘Alcoa and Greening Australia have been partners for over 20 years, working together on tree planting projects across Australia. The River Recovery program enables us to build on those achievements. It’s a good fit too because of the proximity of major rivers and waterways to our operations around Australia. A healthy river system is important to us both as a company and as part of the local community.’

‘Scientists have been researching river management issues in Australia for over a decade now and in order to translate that science into on-ground action, we all need



A *Salvinia molesta* infestation on the Hawkesbury-Nepean, North Richmond, NSW; one of the effects of high nutrient loads coming out of South Creek catchment. River Recovery in NSW will turn its attention to rehabilitating South Creek.

Glen Klatovsky, Greening Australia

to become involved. That includes government and business leaders. The fact that this project is being managed by Greening Australia, a highly respected organisation, made it an easy decision for us to get behind it.

‘Alcoa is proud of its record in forest rehabilitation and we see the health of our rivers and waterways as something that requires similar long-term commitment from the whole community. Alcoa has committed over \$2 million over three years to the project.’

Just as significant are the social benefits that River Recovery promises, Binning says. ‘There’s almost nothing so empowering to a community as watching its local river come back to life, through its own efforts. It gives a tremendous sense of present achievement as well as of doing something for generations to come.’

‘Everywhere we’ve run a major project the enthusiasm, goodwill and commitment are tangible – from school children, farmers, government people, conservationists and companies, large and small.’

‘A river is intrinsic to the community it serves. Besides providing their water and food, it is the place where they rest, play, fish and enjoy their landscape. It’s part of their identity. Many Australians discovered it as children on family outings, and there is a powerful bond between our local river and us. To watch it recover and flourish once more gives many people deep joy.’

Binning believes that this intimate connection value has been severed through past and present water management, which distances people from their rivers.

‘We know that water is valuable. That’s why people are always fighting over it. But our management practices have pitted governments against farmers, farmers against farmers, and other users. As a result, we’re so caught up about water rights, we’ve forgotten about the rights of our rivers, which provide the water in the first place.’



Greening Australia is using tools and techniques developed by Australia’s leading science and research organisations to carry out its national River Recovery program. Greening Australia

‘We need to reconnect people with their rivers and empower them to change this attitude.’

Support across many partners

The secret ingredient in Greening Australia’s formula for success is partnership across all levels of the community, from large government agencies to the smallest volunteer groups, from great corporations to farming, conservation and indigenous organisations, from scientific bodies to urban renewal groups.

At one level, River Recovery embraces bodies like Land & Water Australia, CSIRO, the Murray-Darling Basin Commission, the e-Water CRC and Alcoa Australia. At another it involves thousands of volunteers up to their knees in marshy billabongs and muddy creeks, clearing weeds and pests, planting trees, shrubs and native grasses, fencing-off and generally returning the rivers and their banks to a semblance of their natural function.

The project is, in one sense, live science. The precise formula for restoring each river is unknown and the recovery workforce has to experiment – under scientific guidance – with a range of methods to find the ones that deliver the best results. Enthusiasm alone is not enough: every person taking part also receives state-of-the-art training in conservation and restoration methods.

‘Because all rivers are different we need a set of test cases that bracket the range of conditions, and we need to adopt an adaptive management approach to repairing these rivers, using a developing model of how rivers respond to the planned interventions, monitoring the results, modifying the model based on these results, and so leading to a generic understanding of how to get rivers into states where they can repair themselves,’ Dr Walker explains.

‘Achieving this will ensure that the right kinds and appropriate levels of river management are implemented, for various types of rivers. In the past, as with many areas of natural resource management, much time, effort and money has been wasted in inadequate and inappropriate interventions. The River Recovery program has been planned to follow a sound scientific approach and, provided it sticks to it, it has a high likelihood of success.’

Binning adds, ‘It means we are learning more about our land, Australia, and how it functions, as we go. This is pioneering in an entirely new sense. The knowledge we gain today by restoring our rivers will be in use a

thousand years from now. Maybe tens of thousands, if we last as long as our indigenous folk have.'

Nine rivers for recovery

Nine rivers totalling 10 000 kilometres have been selected after an exhaustive nationwide evaluation as pilot projects for River Recovery. The cost is estimated at \$150 million, put up by government, industry, the community and landholders.

Each river presents its own unique challenges, but the broad approach to recovery includes:

- fencing off rivers for at least 30 metres on either side;
- establishing off-site stock water;
- protecting high-value river sites where habitat is still intact;
- stabilising eroding stream banks with vegetation;
- eradicating weeds and pests;
- replanting and rehabilitating vegetation to act as a natural filter for water;
- educating and improving the management of landholders, industries and other river users to prevent future decline; and
- training a new generation of Australians to understand and care for their local river.

Three contrasting rivers, which together epitomise both the challenges and what can be done, are Tasmania's Derwent, Sydney's Hawkesbury-Nepean and NSW's Boorowa.

The Hawkesbury-Nepean River is one of Australia's most vulnerable urban rivers. It supplies drinking water to almost four million people and is suffering acute degradation due to urban growth, changes in flow regime, nutrient pollution and invasive weeds. With the help of the Hawkesbury-Nepean Catchment Management Authority and Blacktown City Council, Greening Australia has helped marshal an \$800 000 program to try to bring it back. The Greening Australia team is focusing on five waters – South Creek, Bungarribee, Breakfast, Werrington and Claremont creeks, which are all in urgent need of repair. Work is already under way to revegetate their banks, remove invasive water and land plants, clear rubbish and control erosion.

On the Boorowa River 300 kilometres further south, salinity is the big issue. Greening Australia put \$100 000 on the table to start the project, and this was promptly supplemented with \$25 000 from electricity firm Transgrid and \$700 000 from the Lachlan Catchment Management Authority. The Commonwealth has chipped in with a \$100 000 grant to aid fish habitat recovery, which will consist mainly of removing existing barriers to fish passage and establishing groynes and woody debris to enhance the fishes' habitat.

Thirty landholders along the Boorowa banks have volunteered to help and many have already begun revegetation projects, fencing and earthworks.

Lori Gould, Greening Australia's River Recovery project manager, says that on top of this, community support has been eye opening. 'It's potentially a huge project. We wanted the community involved from the start – and we certainly have impressive support now,' she says.

On the upper Derwent River, the issues are loss of vegetation, pesticide and nutrient runoff from agriculture, salinity, erosion and the resulting decline of native



species all along the river, down to the critically endangered spotted handfish in its estuary. It is early days, but the work of restoration has started with water use efficiency workshops for landholders, seed collection days for revegetation, the planting of shelterbelts and erosion control at two sites. Hydro Tasmania has put up \$10 000 to fund GIS mapping and planning. Further funding under the national Landcare program will support landholder education and fencing projects throughout 2006.

Facing the future

River recovery is about quality water for the future – but it is also a test of our national character as Australians, Carl Binning believes.

'Will we be known as the country that, being very short of water, squandered and despoiled the little that it had?'

'Or will we be the country that pioneered, for ourselves and others, the scientific and practical community know-how that restored rivers to life?'

'This is a true measure of our identity as Australians, able to understand and adapt to the place in which we live, rather than compelling it to adapt to us.'

Our rivers will recover, Binning believes, when enough Australians want them to – and act on their wish.

Signs of success. Direct seeding by Greening Australia is shown to be healing a characteristically large erosion gully and salt scald in the Boorowa District of the Lachlan catchment in NSW. This image illustrates the scale of work that lies ahead for River Recovery, and in particular the Boorowa River.

Toby Jones, CEO Greening Australia ACT & SENSW

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