

From planting willows to pulling them out: the evolution of riparian management in Victoria

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Key Points

- Riparian management has changed in Victoria from planting willows for erosion control by river improvement trusts to planting indigenous species for a range of environmental and social values by catchment management authorities in partnerships with landholders and other partners.
- Implementation of a successful on-ground riparian program requires the right institutional framework, underpinning policy and strategy, secure funding and good stakeholder and partner relationships.

Abstract

Riparian management in Victoria before the 1990s largely meant planting willows. Since then, particularly after the formation of catchment management authorities (CMAs) in 1997, the emphasis has been on using revegetation with indigenous plants, weed management, fencing and off-stream stock watering to maintain or improve the condition of riparian areas. Between 2002 and mid-2016, over 10,000 kilometres of waterways have been fenced and over 35,000 hectares of riparian land protected across Victoria, with several waterways being more than 80% fenced and protected.

Strong policy and funding have underpinned the Victorian Riparian Management Program. The *Victorian Waterway Management Strategy* (DEPI, 2013a) and its predecessors provided policy and strategic direction for how riparian management was implemented – from the general framework such as how the CMAs deliver the program by working with landholders in voluntary partnerships, to resolving operational issues and obstacles to the implementation of on-ground riparian work. Improvements to the licensing of Victoria's Crown water frontages have also been a key component of the program.

A dedicated plan - the *Regional Riparian Action Plan* - was released in 2015. It is a high priority for state government with over \$40 million allocated to its implementation for five years. It outlines policies and actions for the future of riparian management in Victoria.

Although undertaken in Victoria, the lessons learnt from riparian management in the state are transferrable and far reaching, well-beyond jurisdictional boundaries.

Keywords

Riparian, waterway, Crown water frontage, Victoria, catchment management

Introduction

Riparian land – land abutting waterways – has a range of important environmental, social, cultural and economic values. Healthy riparian land provides habitat for native flora and fauna, protects streambanks from erosion, helps to improve water quality by filtering run off, has significant cultural values and provides recreational opportunities.

In Victoria, riparian land is comprised of a mosaic of freehold and Crown land (known as Crown water frontage). Crown water frontages (CWFs) are strips of public land that run alongside certain rivers and wetlands. They were set aside by

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colonial administrators along major waterways between 1850 and 1890 mainly to protect commercial development related to inland shipping, to provide for public access to waterways for domestic and stock purposes, for fishing and for general recreation (Cabena, 1983; Hollingsworth and Northey, 1985).

About 30,000 kilometres of Victoria's 170,000 kilometres of riparian land is CWF. About 22,000 kilometres of the CWFs are within cleared catchments (the other 8,000 kilometres are in larger public land blocks such as parks and State forests). CWF can vary from a few metres wide to kilometres wide, with the average width being about 20 to 40 metres. At present, about 17,000 kilometres of the 22,000 kilometres of CWF within cleared catchments are managed by the adjacent landholder under about 10,200 licences issued by the Department of Environment, Land, Water and Planning (DELWP). Just under 9,000 licences are for 'productive purposes' (mainly grazing with a few for cropping) and over 1,200 for riparian and conservation purposes. These licences are typically renewed every five years, with the next renewal scheduled for October 2019. Crown water frontages create opportunities for managing riparian land for public benefit but also add an extra element of complexity and difficulty to riparian management in Victoria. CWFs are unique in Australia and found in very few other places worldwide.

In 2010, 23 per cent of riparian land in Victoria was in excellent or good condition, 43 per cent in moderate condition and 32 per cent in poor or very poor condition (DEPI, 2013b; note: 2 per cent of stream length had insufficient data to allow its condition to be determined).

Riparian management in the 20th century: from local trusts and willows to CMAs and native vegetation

River improvement trusts were established in Victoria during the 1950s based on a growing concern about soil erosion and the condition of Victoria's waterways in the 1930s and 1940s. This erosion was often due to the considerable drainage of farmlands that had occurred, resulting in a faster flow of water that then led to desnagging and more erosion. These trusts were mainly in the eastern part of the state which had suffered the most bed and bank erosion due to severe floods. The trust districts were relatively narrow and mostly included only landholdings directly abutting the waterway. They were financed by rates from these riparian landholders and subsidised by loans from government. Their principal focus was to ensure that the stream could convey flood flows and to stabilise stream banks to prevent loss of farming land (Geraghty & Vollebergh, 1996).

Bank erosion control works using hard engineering, along with the large-scale planting of willows, was actively undertaken for the next forty years (see Figure 1). The use of old car bodies was even sometimes used as an erosion control technique (see Figure 2). Note the distinct lack of any revegetation with anything resembling native vegetation in either photo. The prevailing view was that native vegetation wasn't as good as willows at stabilising banks (Ladson et al, 1997).



Figure 1 (left). Willows planted on the Mitta Mitta River, NE Victoria, 1945 (source: DELWP)

Figure 2 (right). Car body erosion control on the Thomson River, SE Victoria, 1962 (Source: DELWP)

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The 1980s saw a period of introspection and change in the waterway and riparian management sectors. The Regional Drainage and Stream Management Task Force (1984), Standing Consultative Committee on River Improvement (1984) and the State of the Rivers Task Force (1987) examined the way Victoria was managing its waterways which led to many of the river improvement trusts expanding their boundaries to include tributary streams, becoming ‘whole-of-catchment’ river management boards.

In the 1980s, the use of willows as a stabilisation tool was slowing down (Ladson et al, 1997). There was a growing trend in river management to undertake planting with native vegetation as an adjunct to stream stabilisation works. Many of the current riparian successes in Victoria date from this time as revegetation has been established over the past 20 years. For example, the Genoa River in East Gippsland had suffered extensive damage in floods during the 1980s and extensive revegetation by the East Gippsland River Management Board commencing in 1993 and continued by the East Gippsland Catchment Management Authority meant that during floods in 2011, the Genoa River suffered minimal damage (see Figure 3) (Alluvium 2011).

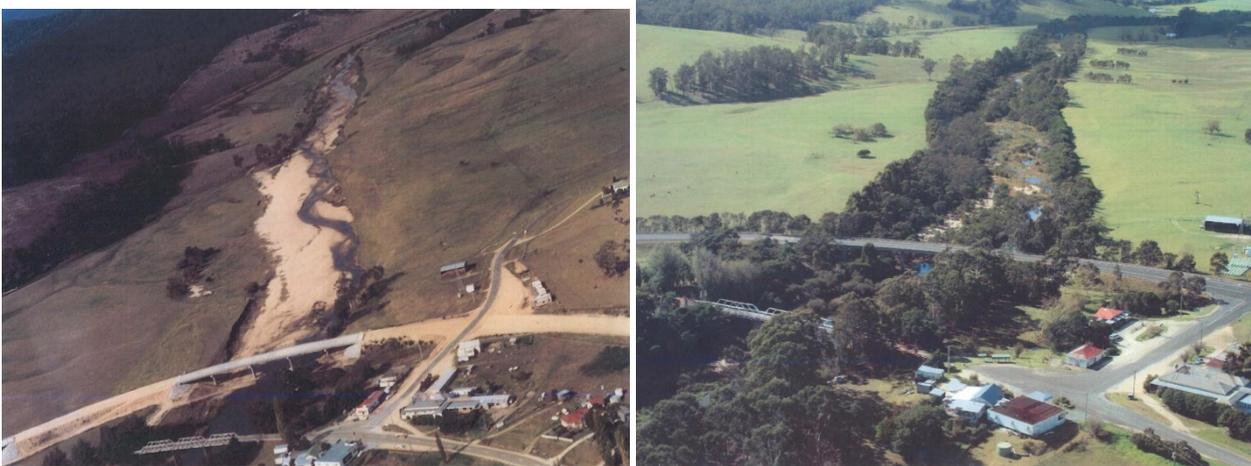


Figure 3. Genoa River, East Gippsland, in 1989 (L) and 2009 (R)

During the 1990s, undertaking riparian revegetation with natives was no longer just considered important to aid in stream stabilisation, but also thought to be important for other values e.g. creating ‘corridors’ of vegetation, improving water quality and supporting many instream ecological functions, as well as recreational access on Crown frontages.

The formation of catchment management authorities (CMAs) in 1997 was a critical further step in improved riparian management. Important considerations in the formation of CMAs was to ensure that waterway management powers covered the whole state and to preserve the ability for regional resources to be obtained through existing waterway rating powers (Catchment Management Structures Working Party, 1997). The rates were either paid directly or through municipal contributions. However, the CMAs’ rating power was abolished in 1999/2000 based on an incoming government’s policy position to abolish them.

Interestingly, the Catchment Management Structures Working Party (1997) recommended that CMAs manage Crown water frontages. This was accepted by government at the time and the intention for CMAs to manage CWFs was included in the initial guidelines provided to CMAs upon their creation (NRE, undated)

Furthermore, during this period, there were no comprehensive, catchment-based plans for determining where riparian management works were best undertaken. There were planning frameworks with narrower

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objectives or geographical coverage, such as the river trust master plans of the mid 1980s (which typically focused on the need for erosion control works and other major channel change such as the potential for breakaways) and a range of locally based 'revegetation management plans'. There was limited integrated planning for riparian management. For example, during the first few years after CMAs formed, most of their riparian funding went to projects across all the catchment, based on expressions of interest by landholders. This had many positives including engaging with the wider catchment community but was considered to spread the resources too thinly and not focus on what might be considered priority areas.

Riparian management in the 21st Century: Statewide policy, funding and partnerships supporting on-ground works

The importance of high level policy

During the last few decades of the 20th century, the focus was on the development of an institutional and legislative framework for waterway and riparian management. However, there was no real statewide policy articulated for what the state's objectives were for the management of waterways and riparian land. Agreed government policy is important as it helps to support and validate the efforts put into riparian management by CMAs working with landholders.

Victorian River Health Strategy

The *Victorian River Health Strategy* (VRHS) (NRE, 2002) (the Strategy) provided, for the first time, a statewide policy and implementation framework for riparian management. The Strategy stated that "Wherever possible, the management and restoration of riparian land should assist in river restoration, maintenance of healthy rivers and landscapes, and the protection of cultural and social values". This was important recognition by government of the broad range of values of riparian land.

The Strategy noted that the capacity of riparian land to perform its ecological functions while maintaining its cultural and social values, depended upon its width, connectivity and the quality, quantity and structure of the vegetation present. Consequently, the major threats to riparian land are those which affect one or more of these key attributes (NRE, 2002). In practical terms, the major threat to these attributes in most cases throughout rural and regional Victoria was unmanaged stock access to riparian land (SKM, 2000; EarthTech, 2005; Land and Water, 2007).

Much of the emphasis since the release of the Strategy was, and continues to be, working with landholders abutting waterways to undertake riparian management projects, especially fencing and revegetation, often to repair earlier waterway damage such as erosion and avulsions. But should we focus these works, rather than spread them throughout the catchment? And if so, where?

Regional river health strategies

Regional river health strategies were prepared by CMAs in the early-mid 2000s under the auspice of the VRHS. They were eight-year strategies, focused on a 'protect the best and maintain the rest' philosophy where the 'best' meant those with the highest values including environmental, cultural and social values as well as the more traditional economic values. Priority for works was based on the threats to these values. CMAs could now target riparian management in the highest priority rivers based on many factors, not just as a response to erosion control, and focus on partnerships with landholders to improve stock management.

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Victorian Waterway Management Strategy

The *Victorian Waterway Management Strategy* (VWMS) (DEPI, 2013a), which replaced the 2002 River Health Strategy, reinforced the policy position of the VRHS and stated that “The objective for the management of riparian land, particularly Crown frontages, is to maintain or improve its condition to support environmental, social, cultural and economic values.” A new suite of regional waterway strategies was also prepared by CMAs, providing an updated set of priority riparian land for on-ground work. These strategies used a different decision support tool to establish priorities, but the general approach was the same, namely to consider the range of values of the waterways along with what threatened these values.

The VWMS articulated what was operational practice - that the Government would continue to achieve its objective for riparian management by providing funding to CMAs to work in *voluntary* partnerships with landholders to undertake on-ground riparian management activities. These activities typically included stock management fencing, revegetation and vegetation enhancement, weed management and the provision of off stream stock watering infrastructure.

This policy position highlights one of the keys to the riparian program’s successful implementation – voluntary participation by landholders. The position is often put forward by a range of interests: Why not just make it compulsory for all waterways to be fenced out, especially Crown frontages? It’s not that simple. Rural landholders with riparian land and their representatives like the Victorian Farmers Federation have typically been supportive of the riparian program *if participation is voluntary*. For the state’s long-term goal for riparian land to be achieved, namely that its condition be improved to support a range of values, landholders will need to accept responsibility to maintain in the long term reasonably wide (say, 20 metres) fenced and vegetated areas of riparian land.

This may not be achieved if fencing was compulsory such that fences were then erected on the top of the bank by landholders. Or, if CWFs were involved and licences were cancelled, for example, then landholders would bear the fencing costs on the Crown-freehold boundary but they would no longer manage the licensed land thus passing the costs of pest plant and animal management of 30,000 kilometres of CWF to government. Furthermore, fencing on the Crown boundary may not be the best alignment for riparian management outcomes.

However, the voluntary approach has many CMAs saying “We’ve run out of willing landholders. Now what?” Their approach has been to shift to another priority waterway in the region and continue efforts to increase landholder adoption – through education, improvements to program design and delivery, funding approaches and addressing issues identified as barriers to adoption. Other approaches could be to shift funds to lower priority waterways with willing landholders or to shift funds to other CMA regions with more willing landholders. Of course, such approaches may not prove popular with all CMAs.

Regional Riparian Action Plan

The popularity of riparian programs with successive governments saw the release in 2015 of the *Regional Riparian Action Plan* (DEPI, 2015), with an additional \$40 million of funding from 2015/16 to 2019/20 to accelerate on-ground delivery of riparian works. The plan has targets of 2,490 kilometres and 28,190 hectares of riparian land where works have been undertaken to protect or improve its condition working with over 1,800 landholders. A specific commitment to delivering the plan is included in the current Victorian government’s latest water sector policy document *Water for Victoria* (DELWP, 2016a), demonstrating the importance placed on riparian management compared to 20 to 30 years ago.

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The importance of a secure funding source

The Victorian Government provides millions of dollars annually to riparian protection and improvement projects through CMAs. If this funding wasn't available, having policies about riparian management practices would be less necessary. In turn, agreed government policy helps support and validate the CMAs' work with landholders.

With the abolition of their rating powers, CMAs were left to rely on the uncertainty of Government funding to undertake their programs, including riparian management. Subsequently, in 2004, government introduced the 'environmental contribution levy', collected by rural and urban water corporations – the concept being that the collection and distribution of water had a negative impact on water environments so the funds collected from the levy could go some way to reparation.

Between 2004 and 2014, nearly \$150 million of the total collected went to CMAs for waterway health (Aither, 2015). A sizable proportion of these funds was used by CMAs for riparian management. The levy is still subject to government funding decisions. However, it has provided a more secure and substantial funding base for CMAs for riparian management than relying on funding through general government funding allocations.

The combination of agreed government policy and relatively secure funding provide a sense of certainty for CMAs to develop and grow their on-ground riparian programs through improving their ability to deliver larger programs, regional knowledge base, staff capacity and regional relationships.

The importance of partnerships

CMAs having good relationships with regional stakeholders and partners is a major reason for the success of the riparian program. Being connected with landholders is critical for on-ground delivery but so too are relationships with Landcare, Traditional Owners, local angling and other recreational groups, other community groups and other agencies (like water corporations, regional DELWP and local government). These relationships can add value to on-ground works through additional funding and labour to undertake riparian work.

Just as importantly, the resulting projects can deliver broader benefits to a wider section of the community – for example, working collaboratively with water corporations to offset wastewater discharges or to improve water quality upstream of offtakes, or working with local anglers to improve habitat in areas of high fishing use. Working with landholders and community based groups also leads to improved well-being and social connection for these partners, more than just on-ground riparian outcomes.

Local support for riparian programs also leads to good traditional and social media coverage – and avoids bad coverage – which in turn helps maintain the popularity of the program with governments.

Good relationships with stakeholders are equally important at a statewide level. Peak bodies for farmers, Traditional Owners, environmental interests, recreational fishers and Landcare are involved in state level policy and strategy decisions as well as simply being kept informed of progress of the riparian program's implementation. The key way this is achieved in Victoria is through the Riparian Forum, a high level forum for partners and stakeholders to consult and collaborate regarding the development and implementation of riparian management policies, programs and actions. It includes many peak bodies for interest groups as well as relevant government departments and agencies. This close collaboration between the riparian management program and the peak farmers' representative body – the Victorian Farmers Federation at a state level has diffused much of the 'heat' involved in implementing programs which impact on landholders.

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Addressing barriers to implementation

A major effort of the Victorian riparian program over the last decade has been to deal with barriers that may impede the implementation of on-ground riparian works but are beyond the capacity of an individual CMA to resolve.

Many of these barriers are issues of concern to landholders who are considering undertaking riparian projects. These issues have resulted in landholders refusing CMA incentives to undertake riparian work. Examples of the work undertaken include the development of controlled grazing guidelines for when a landholder asks “But can I still graze my riparian land?” (DELWP, 2016b & 2016c), information about fire behavior on riparian land as some landholders assume that riparian areas are fire wicks (CFA, 2016 & 2017), and guidelines for flood-prone fencing for landholders complaining that fences are washed away in floods too easily (DELWP, 2015).

For Crown water frontages, the riparian program has made it easier for landholders who fence Crown water frontages to get access to stock water (DEPI, 2013c), established ‘riparian management’ licences which reflect that some of the frontage is fenced and managed for environmental management purposes and are granted with reduced or no fees (DELWP, 2015b), assisted licensees by publishing a plain English guide to licence conditions (DELWP, 2017a) and developed a series of fact sheets about Crown frontages and what the community can and can’t do on them (DELWP, 2017b).

On-ground riparian achievements

Because of the riparian management program’s approach, between 2002 and mid-2016, over 10,000 kilometres of waterways were fenced and over 35,000 hectares of riparian land were protected with much of it being revegetated (VCMC, 2016).

Several waterways in the state are substantially fenced and protected. For example, the lower Snowy is completely fenced and revegetated from the national park to the estuary while agricultural reaches of the King Parrot and Ryans creeks (Goulburn River catchment) are about 75% and 80% protected from stock respectively.

After two years of implementation of the RRAP, more than 1,500 kilometres and 26,000 hectares of riparian land have been protected and improved, 61% and 92% respectively of the five-year targets (DELWP, 2017c).



Figure 4. King Parrot Creek, a Goulburn River tributary, showing extensive revegetation

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An audit of riparian projects showed that the works have generally been maintained - where fencing was erected it was still preventing stock access to sites at 86% of the sites and landholders had been involved in long term management at 93% of sites (Ede, 2011).

Regarding Crown water frontages, in July 2018 there are 1,112 riparian management licences (since their inception in 2010) and 128 conservation licences covering nearly 9,200 ha of Crown frontage, of which over 7,100 ha is fenced and protected. Riparian management licences have proved popular with landholders who want to 'protect the riparian environment' but are not too keen on a 'conservation' licence. There have also been many achievements in the way Crown frontages are administered and managed. Compliance processes have been improved with dedicated staff employed to undertake inspections and operations. A dedicated staff member to administer riparian management licences and be the conduit between CMAs and the DELWP has been employed. In addition, changes have been made to regulations to protect Crown frontages and changes to legislation are currently mooted.

The future

The 1970s to late 1990s saw constant institutional reform in waterway and riparian management. The pace of this change has slowed in the early part of this century as CMAs have just passed their twentieth birthday. This has resulted in state government and CMAs developing successful relationships with regional and statewide partners, a relatively secure funding model, statewide and regional strategic approaches to riparian management, and an increasingly nuanced operational approach to deliver significant on-ground riparian outcomes. However, this does not mean that the riparian program in Victoria will not continue to evolve and adapt to new circumstances.

For example, there are several issues, which will certainly be more of a focus for riparian management in the coming years. These issues are already a factor in riparian management today, but will be even more so over the next five years.

Consideration of climate change will increase. Higher temperatures and reduced rainfall in south-eastern Australia will impact waterways through reduced flows and higher water temperatures. Improving the condition of riparian land will help mitigate some of these impacts by regulating in-stream temperatures by shading waterways. Improved riparian land also provides habitat and enhanced connectivity for plants and animals seeking more suitable environments due to climate change impacts (DEPI, 2015). Furthermore, planting any vegetation helps to sequester carbon and more and more evidence is emerging that riparian plantings are particularly beneficial due to fertile soil and higher soil moisture (Maraseni & Mitchell, 2016). Therefore, protecting and enhancing existing vegetation and revegetating riparian land is a practical response to climate change.

The impact of climate change on the implementation of on-ground riparian programs will also be more of a factor - increased fire and floods destroying fences and regions becoming drier and hotter meaning some plants native to that area may no longer be able to grow and survive. In response, the riparian program will need to pay even more attention to the construction and siting of fences in flood prone areas, the potential for the use of new virtual fencing technology and consideration of 'climate ready revegetation' approaches.

There will also be more focus on the social and recreational benefits of access to riparian land, especially Crown water frontages, with recreational users having better access to information about the location of frontages and recreational objectives for the improvement of riparian land being an even bigger factor in choosing priorities for work. The promotion of the mental health benefits of healthy riparian areas and waterways for landholders and the public is also an area likely to receive further attention.

CMAs partnering with Traditional Owners (TOs) and other Aboriginal Victorians in prioritising and undertaking riparian works as well as more direct management of riparian land by TOs are also likely to be more frequent in the coming years.

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CMA's will continue to improve their on-ground delivery approaches to ensure that funding bodies receive good value for money, for example through more systematic auditing of existing riparian work and improved approaches to allocating funding to landholders.

Partnerships with agency stakeholders such as water corporations and local government are likely to increase to ensure mutual and broader benefits from riparian programs, such as recreationally focused projects with local government and wastewater offset projects with water corporations.

There will also continue to be a strong focus on Crown frontages – the creation of more riparian management licences, better resourced compliance, changes to legislation and changes to licensing arrangements.

In the foreseeable future, the current approach to riparian management seems reasonably robust, with incremental improvement rather than radical overhaul. The next Waterway Management Strategy is due in 2021. This will set the strategic direction for riparian management throughout the 2020s.

Finally, as more and more riparian work is undertaken, questions arise like “How will we know when we’ve done enough?” Given that the degradation of riparian areas occurred for over 100 years, it may be some time yet.

Conclusion

Victoria’s riparian program has moved in 60 years from planting willows on significantly eroded areas along major rivers, to maintaining and improving high priority waterways using stock management fencing, revegetation with indigenous plants, weed management (including willow removal) and the provision of off-stream stock watering infrastructure. The reasons for the success of the program have largely been due to:

- changing perspectives about the value of riparian land – including environmental, social and cultural values, as well as the agricultural benefits like grazing
- an improved understanding of the quantifiable environmental benefits of riparian protection – for water quality, instream ecological processes and the like
- underpinning state policy
- a better institutional framework for undertaking riparian management – catchment management authorities with regional strategies for priority setting
- higher levels of investment from a secure funding base
- CMA's developing good working relationships with landholders and other regional partners
- ensuring important interest groups – including those representing farmers, environmental concerns, anglers - have been included in developing the strategic approaches for riparian management
- creating a program with strong bipartisan political support.

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