



Using long-term monitoring to improve the effectiveness and efficiency of riparian management.

Background

In Victoria, agencies including the Department of Environment Land Water and Planning (DELWP), Catchment Management Authorities (CMAs) and Melbourne Water invest significant resources in riparian management interventions along waterways. These interventions aim to improve vegetation condition and manage bank erosion and contribute to long-term improvements in the condition of our waterways. While it is expected that these management interventions will achieve these aims, long-term monitoring is needed to:

- demonstrate the impact and effectiveness of riparian management interventions
- determine how long it takes before change occurs
- understand why these interventions are sometimes more successful in some locations than in others, and
- understand if the way management interventions are carried out influences success.

This understanding will help identify ways we can improve the effectiveness and efficiency of management and better target future investment.

What is RIMP?

The Riparian Intervention Monitoring Program (RIMP) is a statewide, long-term program developed by DELWP. The program is working with CMAs and landholders to establish long-term monitoring sites to assess the impact and effectiveness of riparian management across the state. The program began in 2014 and is

expected to continue for at least 10 years. It focusses on the most common management interventions: weed control, replanting of native vegetation and management of livestock access by fencing or other measures.

Several approaches have been developed to gather evidence to assess where, when and why management interventions improve vegetation and bank condition. These include:

- **Paired sites:** monitoring well matched intervention and control (unmanaged) site pairs before and after works are implemented.
- **Past intervention sites:** monitoring similar sites that have had the same intervention applied at different times can provide insights about the rates of change over time.
- **Before and after works:** when a well-matched control (unmanaged) site is not available the intervention site is monitored before and after works are implemented.

Each approach differs in the quality of evidence it provides. The most rigorous is the paired intervention and control (unmanaged) sites and this represents the core component of RIMP. Other approaches will be applied to complement these sites or provide early insights into longer term responses.

Selection of paired monitoring sites

The paired sites component of RIMP involves assessing vegetation and condition or bank stability at sites where management interventions are planned, and at similar control sites where there are no management interventions. Comparing changes that occur at intervention sites with those that occur at

Riparian Intervention Monitoring Program (RIMP)

control sites tells us how much change is due to the management interventions. Without control sites, it is hard to be sure that the changes we see at intervention sites result from management interventions or from changes in environmental conditions (e.g. rainfall). Having a large number of sites spread across the state also allows us to understand how differences in climate, catchment land use or local conditions influence the effectiveness of the management interventions.

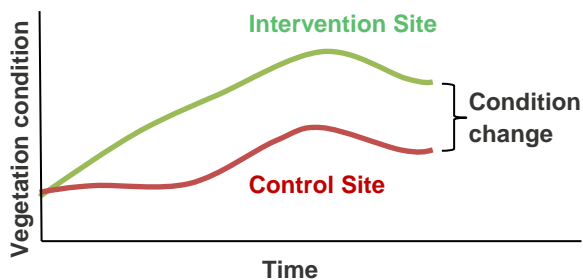


Figure 1: Possible changes in vegetation condition in control and intervention sites over time (the difference between sites represents the change due to management).

What is being monitored?

RIMP monitors responses of riparian attributes to management interventions within a robust experimental design. The monitoring methods will quantify changes in the following riparian attributes:

- invasive vegetation cover
- native species composition
- native vegetation cover
- cover of bare ground
- vegetation structure
- recruitment of native trees and shrubs
- native vegetation extent and continuity
- bank stability

Who is involved and what is their role?

The program represents a collaboration with different organisations and landholders. The success of the project relies on the following contributions:

- **DELWP** - the program leader, liaise with CMA staff to identify suitable sites, engage botanists to monitor the sites, analyse results and use learnings to inform adaptive management.
- **CMAs** - identify intervention and control sites across Victoria, liaise and work with landholders to implement particular management interventions.
- **Landholders** - work with CMAs to implement particular management interventions, and allow access to their land for botanists to carry out monitoring.
- **Botanists** - undertake field monitoring, liaise with landholders and CMAs, and provide data to DELWP.

What's happening?

RIMP has established nearly 40 paired intervention and control sites across Victoria since June 2014. Sites will be resurveyed three years and again five to eight years after management. The first round of 3-year post works monitoring will begin in Spring 2017. Additional monitoring sites will be selected in the future, where there is a need to improve representation across CMAs or to evaluate responses of high priority rivers to management. The program will also work with CMAs in the future to establish experimental sites to test different practices or to address key knowledge gaps.

This project is part of a \$222 million investment by the Victorian Government announced in the Water Plan, *Water for Victoria*, to improve the health of waterways and catchments. This funding will support an accelerated riparian works program across regional Victoria delivered through the *Regional Riparian Action Plan*. RIMP will play an important role in demonstrating outcomes of the Action Plan and will support the government's commitment to improving knowledge and information about waterways and providing better reporting back to communities.

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