

## Cost sharing and funding allocation approaches used in Victorian riparian management programs

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### Key Points

- Improved approaches to sharing costs between government and landholders require rigorous and transparent approaches based on clear economic principles.
- Victorian CMAs use a wide range of approaches to prioritisation and allocation of funding.
- Preferred cost-sharing approaches should be those that provide the best value for money.
- Ranking and prioritisation of projects should be ranked on the basis of BCR = [public benefits /public cost for on ground works].

### Abstract

This paper describes the findings from a project, *An investigation into cost sharing and funding allocation approaches used in Victorian riparian management programs*, undertaken in 2014/15 by Natural Decisions Pty. Ltd. for the Victorian Department of Environment, Land, Water and Planning.

How best to share costs between government agencies and landholders for riparian projects requires rigorous and transparent approaches that are both practical and based on clear economic thinking.

The project was designed to investigate the current approaches CMAs adopt for cost-sharing and funding allocation for riparian management activities and analysing their advantages and disadvantages as well as looking at other possible models and approaches for apportioning costs between landholders and CMAs and making recommendations about preferred approaches.

The results revealed that cost sharing has become more sophisticated and complex over time in response to an evolving policy landscape, shifts in landholder participation and commitment and an awareness of varying public benefits of projects. We found there were significant differences in the approaches used to set incentive rates/levels of funding, calculate public benefits and estimate landholder contributions. In addition the choice of delivery mechanism was a strong factor in the evolution of cost sharing arrangements.

Drawing on economic principles and knowledge of current practice, our recommendations focused on ways to achieve efficient allocation of funds for the best possible outcomes, in terms of generating public benefits<sup>1</sup>, for waterway health. We recommended moving away from approaches that seek to share costs using an arbitrary set of rules for landholder contributions or linking incentive rates to the level of public benefit. Our recommended approach enables selection and funding based on value for money and a consistent and robust

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<sup>1</sup> Public benefits are the level of benefits (these can be environmental, social and/or economic) that accrue to all stakeholders other than the specific landholder involved in the project

assessment of public benefits. We developed a Benefit:Cost Analysis metric that gives consideration to factors such as who undertakes the works, landholder contributions and landholder commitment to the long term management of riparian works.

## **Keywords**

Benefit: Cost analysis, riparian, cost-sharing, incentives, public benefits

## **Introduction**

In Victoria (as well as nationally and internationally) there is substantial government investment in riparian maintenance and improvement projects implemented through the Victorian Waterway Management Program. This investment is implemented by Catchment Management Authorities (CMAs) through regional work programs to maintain or improve the condition of waterways through their role as waterway managers under the Water Act 1989 (DEPI 2013).

The projects involve CMAs working collaboratively with landholders on both crown frontages and private land to undertake works such as stock management fencing, revegetation, weed management and the provision of infrastructure to support off-stream stock watering. Typically these works are paid for through cost-sharing arrangements between landholders and government. The government and private landholders contribute funds (and/or in-kind contributions) to pay for the initial works and occasionally some short-term maintenance. The current and historic expectation of the Victorian government is that landholders should pay for long-term maintenance.

Cost-sharing is defined as a publicly financed program through which society, as a beneficiary of environmental protection, shares part of the cost of pollution control with those who must actually install the controls. Put more simply, under cost-sharing landholders are paid a portion of the cost of the works that are believed to generate a public benefit.

Sharing the costs between the public and private sectors is intuitively appealing and politically favoured (Weersink et al. 2001) and has been widely used in Australia (Pannell 2009). Nonetheless it is challenging to apply in a rigorous way to achieve the most valuable environmental outcomes within the context of limited budgets.

The *Victorian Waterway Management Strategy* (DEPI, 2013) notes that one of the practical issues faced by Government, CMAs and landholders concerning riparian management works includes consideration of cost-sharing between landholders and government to pay for the initial works and the long-term management of riparian land.

The Government's position regarding apportioning costs for riparian management works is contained in the Strategy, which states "The proportion of the costs for management activities on riparian land, particularly fencing, that is paid for by the Victorian Government will depend upon its priority for riparian management activities, the level of public benefit of the work and the level of security of the agreement" (part of Policy 9.7). Given the difficulty in determining what the appropriate cost share should be, the Strategy has as an action to develop guidance on cost sharing with consideration to public benefit and a sliding scale of public investment (DEPI 2013).

In 2014 the authors were commissioned by the Department of Environment Water and Land Planning (DELWP) to investigate the current approaches CMAs use for cost-sharing and funding allocation for riparian management activities and analysing their advantages and disadvantages as well as looking at other possible models and approaches for apportioning costs between landholders and CMAs and making recommendations

about preferred approaches. It was expected that the project would provide direction for CMAs enabling them to make adjustments to their current riparian management cost-sharing approaches. It was also important to consider approaches that maximise the amount of on-ground work that can be achieved with a given amount of funding, as well as being able to demonstrate to Government and the public that the Victorian Waterway Health program is endeavouring to improve the efficiency and effectiveness of its delivery.

Finally, while assessing the efficient allocation of funds was a priority, it was also important to ensure that proposed cost-sharing approaches can lead to the best on-ground outcomes with consideration to factors such as who does the initial on-ground riparian work, landholder contributions, and whether a landholder is genuinely committed to the project and likely to undertake the long term management of the fenced-off area.

### **Approach**

The investigation into cost sharing and funding allocation for riparian management was undertaken in three major phases including:

1. **Literature review and discussion paper;** involved examining the economic theory for cost sharing, identified other approaches from Australia and the United States and described a set of conceptual approaches to cost sharing for consideration.
2. **Investigation of current approaches;** involved a review of documents and consultation with CMAs through survey and interviews in order to describe, summarise and analyse current approaches to cost sharing used by CMAs including identification of advantages and disadvantages of approaches and alignment with conceptual approaches and policy principles.
3. **Analysis and final recommendations;** involved summarising the findings from previous stages of the investigation, formulation of recommendations and development of the Riparian Benefit:Cost Scoring Tool.

### **Literature Review Findings**

In thinking about the rules for cost-share programs there are a number of approaches that could be used. The literature review identified four conceptual approaches:

- A. Costs shared according to an agreed percentage, such as 50: 50
- B. Costs shared according to the ratio of private benefits: public benefits
- C. Costs shared so as to minimise the public cost of achieving any particular outcome
- D. Costs shared so as to maximise the public benefits from the program

Approaches A and B have in common that they usually do not maximise environmental benefits because they are not based on determining the minimum effective cost share and do not prioritise the most cost-effective agreements in terms of environmental benefits per dollar. In other words they are usually not consistent with economic principles designed to maximise the environmental benefits of a program. Approaches C and D have in common that they do attempt to use the minimum effective cost share and do prioritise agreements on the basis of environmental cost effectiveness.

A summary assessment of the four approaches is provided in table 1.

**Table 1: Cost-sharing approaches - summary of characteristics**

Cost-sharing approach	Effectiveness	Program cost	Comment
A. Agreed percentage	Low-Medium	Low	Low-medium effectiveness but also the lowest in cost and well accepted politically.
B. Private/public benefits	Low-Medium	Med-High	Less flexible and more costly relative to approach A.
C. Minimised public costs	High	Med-High	Higher effectiveness than A, but also higher costs.
D. Maximised public benefits	Highest	High	Highest effectiveness, but requires economics expertise. Transaction costs may be excessive, plus the approach may not be acceptable to some stakeholders.

A previous review of CMA approaches (Loo et. al 2009) revealed that 3 main delivery mechanisms (grants, direct works, Market Based Instruments or MBIs) were the foundation of cost sharing for riparian works.

- Grants/incentives provided to landholders with costs notionally shared at an agreed percentages. (most like Approach A) . This can be described as a traditional cost share approach.
- Direct works approach. This involves cost sharing in the sense that land holders may be responsible for a proportion of the initial costs, plus ongoing maintenance;
- Use of MMBI River Tender approaches. These involve cost sharing in the sense that winning bidders may have elected to bear some of the costs.
- Trend towards considering public benefits in a sliding scale approach to sharing costs

Efforts were made to find and examine documentation on cost-sharing approaches to riparian management programs in other states, with limited success. While riparian programs exist in all Australian states, reports outlining sufficient detail of the approach taken and their evaluation are scant.

It was also apparent that there is potential to draw on learnings from aspects of cost-share programs internationally, particularly with respect to:

- Clear rules for participation
- Active contract management
- Provisions for compliance inspection/accountability
- The need for extension and technical support for land managers (Craig and Roberts 2015, Shimshack and Ward 2005).

## Review of Current Approaches

Underpinning the current approaches is the history and maturity of the Victorian Waterway Management Program. The previous Victorian River Health Strategy and current Victorian Waterway Management Strategy established an adaptive management approach for waterway management and this has led to the evolution over time of a wide range of cost sharing approaches used by CMAs for riparian programs. CMAs in Victoria have adapted, and will continue to adapt, their programs in response to factors such as participation levels, standard of works, funding requirements and a desire for continual improvement.

Eight CMAs currently use grants/incentives to deliver riparian management programs, for six of the eight this is their primary delivery mechanism, whilst two have a mixed model using direct works or contracting arrangements together with a grants program. A further two CMAs primarily use a direct works approach where they fund and coordinate the delivery of works through the use of contractors. All CMAs reported using a direct works approach for instream works and large scale willow control.

Two CMAs have moved away from direct works to a grants/incentives model, driven in part by a desire to use a model that they believe supports and encourages increased landholder participation in waterway programs and 'buy in' that leads to increased long-term commitment to manage sites. Two others have moved from grants/incentive approaches to primarily a direct works model citing reasons of higher quality of works being achieved, increased ability to secure landholder participation in priority reaches, efficiency in program administration and the ability to deliver programs within funding timelines. Tender approaches have been used in five regions but overall there has been a move away from tenders in recent times.

The conceptual approach of a 'simple' percent based cost-share for a project is not being implemented in practice. All approaches have their basis in the concept of a percent based cost share between government and the landholder but use a combination of incentive rates and funding rules for specific project activities. CMAs use widely varying approaches to prioritise and select projects. Given both the diversity of cost-sharing approaches and the differing ranking and selection methods there are opportunities to improve the metrics and associated processes around prioritisation and project selection. Robust and theoretically sound principles for ranking projects are available and guidelines could be developed to help regions improve ranking and selection processes. Improvements to approaches to select appropriate payments could also be improved such as using the following formula:  $[\text{public benefits} - \text{public costs apart from landholder payment}] / \text{landholder payment}$ . The metrics around public benefits assessment are worthy of further attention.

Four regions reported concerns about securing landholder participation in the future. This poses a major challenge – as achieving outcomes on priority reaches is unlikely to be met through voluntary participation at low public costs. Costs both to maintain the benefits and to secure new participants will markedly increase costs, and not only for new projects but for existing projects as well.

CMAs use a legally binding contract to define the conditions of cost sharing and the long term roles and responsibilities for the management of riparian land. Having such agreements is extremely important in terms of accountability for public spending. All CMAs reported a mix of informal and formal monitoring programs and nine reported they had formal standards that underpinned their riparian work programs. Work standards, follow up site inspections and longer term monitoring are all important elements of quality assurance for riparian management programs. Monitoring and compliance through site visits and engagement with landholders will become increasingly important to ensure the long term benefits of government investment in riparian programs are to be maintained.

Current riparian approaches are adhering to VWMS principles in general, particularly in the areas of priorities for riparian management and security of agreement. Improvements could be made through better assessment of public benefits including the importance of assessing value for money. Four conceptual approaches to cost sharing (described in Table 1 above) have been used as a reference point from which to assess the nature and performance of current approaches used by regions.

All CMAs reported being interested in learning from each other and trialling new approaches as a way of improving outcomes from investment in riparian programs. This report identifies a number of considerations for future refinement of cost sharing principles used by CMAs. These factors informed the development of a set of recommendations which are outlined below.

## Recommendations

In light of the review a set of seven recommendations were identified to improve approaches to funding and cost sharing in riparian programs in Victoria.

### 1. Recommended principles for improving cost sharing approaches used by CMAs for riparian programs:

Preferred cost-sharing approaches should be those that provide the best value for money. Public benefits and value for money achieved through current approaches can be enhanced through:

- Attempting to identify the lowest level of funding that will prompt sufficient participation to achieve the program's goals (see Recommendation 4)<sup>2</sup>;
- Prioritising projects that will provide the best value for money (see Recommendation 2).
  - Criteria used for assessing public benefits should not be confused with eligibility criteria.
  - Public benefits should be estimated as the *additional* public benefits generated as a result of the project (i.e. benefits 'with' minus benefits 'without' the project). Projects should be ranked on the basis of BCR = [public benefits / public cost for on ground works].
- Allowing increased levels of funding for more beneficial actions, but only providing that increase funding is necessary to generate sufficient participation; (see Recommendation 5).
- Suggested improvements to VWMS principles are to:
  - Use value for money rather than level of public benefit as a principle (this includes consideration of costs as well as benefits).
  - Use the priority status of a Waterway as an eligibility criteria for funding rather than as a consideration in determining the level of cost share/funding (see Recommendation 2).
  - Retain the principle regarding the level of security of agreement and recognise that more secure agreements (e.g. covenants) are likely to generate higher levels of public benefits, all other factors being equal.

### 2. Recommendations for ranking and project selection

Ranking and assessing projects should be conducted in two stages:

- Stage 1: Assess eligibility (does the project qualify? yes/no);
- Stage 2: Selection of projects based on value for money, preferably using a BCR calculation.

A minimum threshold should be used below which projects should not be funded. This threshold score will depend upon the amount of available money and the degree to which benefits exceed costs.

### 3. Consider adopting and providing technical support for a standardised approach to assessment and ranking of riparian projects based on an assessment of benefits and costs (value for money).

Elements of such an approach include:

- Implementation of a two stage approach to assess project eligibility and selection as outlined in Recommendation 2;
- Provision of accessible and downloadable standard templates;
- Provision of support for CMAs to include provision of training in approaches, technical support, quality assurance and systems management training and adaptive management as required.

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<sup>2</sup> The review did not explore the reasons landholders did not participate in programs. Non-participation is likely to be related to locally specific context factors, the degree to which the desired management practice is compatible with landholders' current management, values and beliefs. In areas where insufficient participation has been found, understanding the context-specific reasons for non-participation will be important to decide whether there is the possibility of getting participation with acceptable levels of public funding. If financial inducements are not possible then either abandoning further participation goals and/or moving to a mandatory approach are other options..

**4. Eliciting lowest possible level of funding / cost share for riparian works**

- Embed an approach that aims to limit the contribution of public funds (incentive rates / cost shares) to levels that are no higher than necessary to achieve the required participation;
- The additional effort to estimate a landholders' cash and in-kind costs is not required;
- If MBIs are not considered effective in particular settings, consider approaches based on individual negotiation or trial and error over time to modify standard payment rates;
- Consider the possibility of a multi-regional or state-wide MBI to help underpin and inform an approach that mainly relies on negotiation or trial and error.

**5. Increased level of funding for projects with higher public benefits (if required)**

- Develop approaches that provide for a negotiated/option rather than automatic increased level of funding based on public benefits;
- Consider accompanying higher levels of funding for higher benefits with measures to increase the security of the benefits (including exploration of covenanting) and outcome and compliance monitoring.

**6. Monitoring and compliance of riparian management agreements**

- Increase effort and focus on systematic monitoring and auditing of sites, engagement with landholders and enforcing agreement conditions by CMAs;
- Increase focus on monitoring for outcomes such as the extent to which funded projects have achieved outcomes and include monitoring of both funded and unfunded sites;
- Retain current riparian management agreement conditions whereby landholders are responsible for long term management of the fence and fenced riparian land but consider trialling stewardship payments/follow up support in the form of small maintenance grants in the context of long term resourcing needs and adaptive management.

**7. Improve understanding of the influence of delivery mechanisms on landholder stewardship**

- Investigate the role of delivery mechanism (grants versus direct works) and how different levels of landholder contributions influence the achievement of environmental outcomes with consideration to:
  - Quality of works;
  - Long term stewardship of sites by landholders /level of compliance with agreement conditions;
- Undertake an assessment to better understand the differences in public costs associated with different delivery mechanisms (including program delivery and administration costs and costs for works) in the context of aiming to achieve public net benefits at least cost.

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## **8ASM Full Paper**

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## **References**

DEPI, (2013). *Improving our Waterways. Victorian Waterway Management Strategy*. Department of Environment and Primary Industries. Victoria.

Craig, R. K. & Roberts, A.M. (2015). When Will Governments Regulate Nonpoint Source Pollution? A Comparative Perspective, *42 B.C. Env'tl. Aff. L. Rev. 1*, <http://lawdigitalcommons.bc.edu/ealr/vol42/iss1/2>

Loo, S., Hopkins, K. & Vollebergh, P. (2009). Review of the Victorian Catchment Management Authorities' processes for riparian land management and landholder funding allocation. Department of Sustainability and Environment. 2009.

Pannell, D. (2009). Cost sharing for environmental works. *Pannell Discussions. No. 149*, 30 March 2009. Pannell Discussions. Available at: <http://dpannell.fnas.uwa.edu.au/pd/pd0149.htm>.

Shimshack, J. & Ward, M. (2005). Regulator reputation, enforcement, and environmental compliance. *Journal of Environmental Economics and Management*, 50, pp.519–540.

Weersink, A., Mckitrick, R. & Nailor, M. (2001). Voluntary Cost-Share Programs: Lessons from Economic Theory and Their Application to Rural Water Quality Programs. pp.23–36.