

Broad Scale Delivery Of Rural Riparian Rehabilitation Programs: An Example From The River Torrens, South Australia

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Along the River Torrens, South Australia, a massive change is taking place in the rural catchment - landholders on 130 separate properties are now actively involved in rehabilitating watercourses across the 480km² catchment.

Three keys to the successful engagement of landholders have been:

1. The consultation processes adopted by the Department for Environment, Heritage and Aboriginal Affairs and the Torrens Catchment Water Management Board (with implementation by ID&A (South Australia) Pty Ltd).
2. The provision of funding by the Torrens Catchment Water Management Board for financial assistance for on ground works and technical advice, and
3. The enthusiasm and commitment of over 100 landholders that has been generated.

The program has developed a unique and affordable process for supplying landholders with expert advice whilst also developing stronger linkages between various government authorities. The program has also been a catalyst for other works, with many landholders now extending their works to include terrestrial areas.

A detailed description of the program is provided including examples of works undertaken and the cost sharing principles involved.

THE MAIN POINTS OF THIS PAPER

- Involvement of landholders is crucial for the long term rehabilitation of waterways.
- Landholder involvement can be secured through appropriate consultation and by making sound technical advice readily available.
- Funding assistance reflecting public good is also needed and should be made available through a flexible and simple process.

1. Introduction

The River Torrens is one of Adelaide's premier watercourses. Its lower reaches flow through the central business district forming an important community and tourist foci for the city. It originates in the Mount Lofty Ranges and is a source of water for public water supplies.

The Torrens has a catchment of around 480km² of which 80% is rural or semi rural and the remainder comprises urban suburbs of Adelaide. Rainfall varies from 500mm on the coast up to nearly 1000mm in the central portions of the catchment and down again to around 800mm near the eastern extremities of the catchment. The River Torrens is naturally an ephemeral stream but it now flows permanently because River Murray water is pumped over the Mount Lofty Ranges and discharged into the River Torrens near Mount Pleasant. (Figure 1).

Since mid 1996 the Torrens has begun to be transformed from a neglected and degraded watercourse. Work is currently under way on over 94km of watercourses in the Torrens catchment.

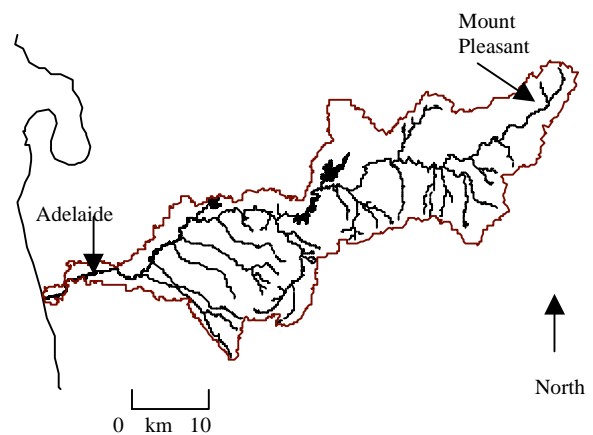


Figure 1. Locality sketch

2. Background

Adelaide is supplied with water from both its local catchments and from the River Murray, with 60% of this water being supplied from local catchments in the Mount Lofty Ranges. Approximately 30,000ML/a is extracted from the River Torrens for public water supplies. This represents around 20% of Adelaide's total public water needs.

Public water supplies in Adelaide have always been hard, turbid and coloured, much more so than is

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experienced in eastern Australia. Extensive water filtration plants and treatment systems were constructed in the 1980s to improve water quality supplied to metropolitan Adelaide. Until recently there has been little effort aimed at improving water quality through riparian works.

To some extent this has been because Adelaide's water supply catchments (such as the River Torrens) are open catchments which support an array of agricultural activities that are important to the economic health of the state. This is coupled with a number of small but significant townships which support vibrant tourism activities.

This melting pot of issues, competing land uses, and conflict between upstream catchment areas which are used to supply people downstream with public water supplies lead to the formation of the Torrens Catchment Water Management Board in May 1995. The Board's task is to improve water quality and river health throughout the whole River Torrens Catchment.

The Catchment Board is funded by a catchment environment levy that is collected from all ratepayers in the catchment. The work of the Board obviously focuses on the upstream portions of the River Torrens but is also required to address water quality issues in the urban areas as well (due to the large public concern from urban dwellers of the state of the River Torrens and its obvious links with the tourism industry).

3. SCOPE OF THE PROGRAM

The watercourse rehabilitation program currently involves works on 94 km of waterways covering 130 private properties. Works are also underway on government owned land involving the local water supply, conservation parks and forestry agencies.

Works include fencing to exclude stock, removal of woody weeds such as blackberry and broom, removal of exotic trees (mainly willow and ash), creek bed stabilisation and erosion remediation, and revegetation using indigenous species of local provenance.

The program is principally funded by the Torrens Catchment Water Management Board which has spent \$300,000 in 1996-97 and \$285,000 in 1997-98. It has attracted modest levels of NHT funding (\$55,000 over two years) through the Mount Lofty Ranges Catchment Program. SA Water and ForestrySA have also provided in-kind support.



Photo 1: Gorge Weir in early 1996 had just been cleared of exotic trees (mainly ash with some willows).



Photo 2: Gorge Weir public land works two years after the exotic trees were removed.

4. ENGAGING THE LANDHOLDER

A key to the success of the program is the involvement of landholders throughout the program design and implementation phases. This has been carried out in three main phases; the riparian survey process, scoping out the details of works for each participating property, and the follow up stages when carrying out the works including keeping those not involved in the program informed of what is happening.

4.1 Riparian surveys

Extensive surveys of the riparian zone for third order and higher watercourse were undertaken for the Mount Lofty Ranges Catchment Program with funding from the Department of Environment and Natural Resources and the National Landcare Program. The stream order classification system used was as defined by Strahler, (Strahler, 1964).

Third order watercourses were chosen as the cut off point because:

- There were limited resources to undertake the surveys.
- The management of smaller watercourses often involves reorganisation of internal property paddock boundaries which should be considered as part of property planning exercise.
- Most erosion problems were thought to be occurring on the larger watercourses
- Many landholders were yet to recognise the importance of the 1st and 2nd order watercourses. (Burston et al, 1996)

The survey team divided the Torrens catchment up into eleven sub-catchments. Breaking the catchment into smaller sub-catchments (irrespective of the technical logic of it) is considered to be a key aspect for engaging landholder involvement. It is important in such programs to ensure that issues being considered are, and can be easily recognised as being, of local relevance otherwise it is difficult to actively engage landholders.

The surveys involved walking the watercourses and noting and mapping the condition of the riparian zones. The survey team identified the condition of riparian vegetation, presence and extent of woody weed and exotic tree issues, fallen trees, erosion issues, sedimentation problems, channelization, and the status of numerous instream structures such as fords and culverts. Like most of Australia's watercourses the Torrens and its tributaries were identified as being in a poor state.

Landholder information evenings and field days were conducted which resulted in landholders setting priorities for undertaking rehabilitation works in their sub-catchment. The technical requirements for rehabilitating watercourses was clearly articulated to landholders during these sessions. In most cases landholders took a statesman like approach and

priorities were similar to those that would have been set by experts. In a small minority of cases self interest prevailed. It is important to recognise that these minority cases do not represent a major flaw in the process because the key requirement of the program is to enlist landholder's voluntary support and involvement.

4.2 Allocation of funding to implement the rehabilitation program

The Torrens Catchment Water Management Board was being established during the later phases of the riparian surveys outlined above. Even so, establishment of the Board was mainly being driven by concern over the condition of the River Torrens through its urban reaches rather than the rural and water supply sub-catchments.

These urban pressures were further complicated by the fact that the Board was being funded by a levy totalling around \$2.0m which was collected by councils in the catchment. Of this, \$1.9m is collected from urban councils wanting the money spent in their area. Nevertheless the Torrens Board has allocated over \$0.4m each year for activities in the rural portions of the catchment. It is suggested that for most rural riparian rehabilitation programs to be effective there must be a recognition of public good and benefits and a corresponding injection of funds from downstream urban areas.

The funding allocated by the Board was divided into five main components:

- Private property work on 3rd order and higher watercourses, (\$150,000)
- Private property work on 1st & 2nd order watercourses, (\$50,000)
- Public land works (\$100,000)
- Engineering works (\$50,000)
- Program management (\$50,000)



Photo 3: Typical electric fence installed on private property following willow removal and revegetation

4.3 Works on private property

Works on private property are undertaken in partnership with landholders. Landholders are required to sign an agreement to maintain the works once

completed and in general provide a one for one contribution through their in-kind efforts.

A suite of works can attract funding assistance. These include fencing (up to \$1000/km) revegetation (up to \$500/ha) woody weed removal (up to 100% of herbicide and spraying costs, provided the watercourse is fenced and revegetated), exotic tree removal (up to 100% of tree lopping costs provided landholder disposes of lopped tree(s) and the watercourse is fenced and revegetated). (ID&A South Australia Pty Ltd, 1998(a)).

The allocation of funds to individual landholders relies heavily on managed one-on-one contact between the Torrens Board and the landholder.

The Torrens Board utilises a private consultant (ID&A South Australia Pty Ltd) to carry out this one-on-one contact. The use of a consultant provides a number of advantages over using its own staff or using state government employees. These include:

- Greater accountability
- Minimises the distrust landholders have in dealing with state government (this is particularly strong in the Torrens catchment)
- The private sector has a much greater customer focus which is good for both the landholder and the Torrens Catchment Water Management Board.
- Greater control over timelines and budgets.

The process of allocating funds to landholders varies between small and large watercourses.

4.3.1 Third order and higher watercourses

Funds allocated for work on larger watercourses are firstly distributed to sub-catchments on the basis of stream length. Within each sub-catchment funding is firstly offered to landholders in the order of priorities established in the riparian surveys (refer section 4.1).

This is done firstly by writing to landholders seeking their registration of interest in undertaking works on their property. It is usual for there to be a number of follow up phone calls and visits which typically will result in a site inspection and a draft submission for funding being developed by the Board's consultant with the landholder.

The submission for funding is a simple two page *pro forma* which is filled out by the Board's consultant in the presence of the landholder. If during this process the landholder refuses to participate in the program the next highest priority landholder on the riparian survey priority list is contacted. If it is not practical to allocate all funds allotted to a sub-catchment then those un-allocated funds can be used on other sub-catchments where there may be greater landholder demand.

As can be seen from the above the program is voluntary. A very pragmatic approach is being adopted on the basis that there is much to do and effort is best

placed in developing and then dealing with cooperative landholders in the first instance and then relying on peer group pressure to swing around less enthusiastic landholders.

Through this process the Board's objective is to exclude stock, remove exotic trees and woody weeds, fix major erosion problems and revegetate 40% of 3rd order and higher watercourse in the Torrens Catchment within its first five years of operation. (Hassel Pty Ltd, 1997).

The Board is currently ahead of its target and each year it is becoming easier to engage landholders.

4.3.2 First and second order watercourses

These smaller watercourses were not surveyed as part of the original riparian survey program and still haven't been surveyed. However, a large number of landholders on these smaller watercourses also expressed an interest in participating in the rehabilitation program.

The integrity of the extensive consultation process for the larger watercourses is maintained by funding works on these smaller watercourses from a separate funding line. To be eligible for funding landholders must have completed a property plan (though the local Soil Conservation Board) which adequately deals with watercourse management. Landholders can then access the same funding assistance package as for the larger watercourses but on a first come first served basis.

4.4 Works on public land

The Board separately provides funds towards works on public land. This is done partly to prevent private landholders from having to compete against government agencies for funding and also because the process of engaging the government landholder is more one of negotiation rather than consultation.

To have credibility amongst a community which had built up a large measure of distrust of government agencies it was important that works be carried out on public land as well as private. Indeed works on public lands were initiated first in order to demonstrate a clear commitment to the River Torrens rehabilitation program. Cost sharing is done on a 50:50 basis with water supply, forestry and national parks agencies either meeting or exceeding the Board's contribution in cash or through in-kind labour support.

Partnerships are also developed where the Board funds 100% of watercourse rehabilitation with the government agency linking in with these works and rehabilitating adjoining landscape areas. Typically in these cases the Board will fund a smaller proportion than 50% of the total works.

4.5 Erosion control works

Most of the Board's works involve fencing, weed and tree removal and revegetation because there are not many major erosion issues in the catchment. However, where engineering works to deal with erosion problems are required they are funded from a separate allocation of funds. Typically expensive and if funded from within allocations for sub-catchments would result in most funds for that sub-catchment being spent on one property. Also these issues need to be addressed through a whole-of-reach approach and may require the cooperation of adjoining landholders. A special and sometimes prolonged negotiation process is needed to resolve these issues.

Works include simple timber drop structures, bank battering, or rock chutes.



Photo 4: Rock chute in action on private property

5 ONGOING MAINTENANCE

After rehabilitation works have been completed the ongoing maintenance of those works is the responsibility of the landholder. This very fact emphasised the need for landholders to be intimately involved in the decision making processes and rehabilitation works.

Whilst landholders are required to sign an agreement with the Torrens Catchment Water Management Board before works are undertaken on their property it would be difficult for the Board to enforce the agreement. Instead efforts are placed in keeping up regular contact with landholders and by providing field days and making technical advice to landholders available free of charge. The ability of the Board to initiate one on one contact in these ways is considered crucial to ensuring the Board's and landholders' investments are not wasted in the future.

Landcare groups, newsletters, and where possible, the local media are used to highlight the work being done by landholders in an effort to utilise community peer group pressure to ensure works are maintained and new landholders are encouraged to participate.

6 ACCOUNTABILITY AND INTEGRATION

All of the Catchment Board's programs are open to public scrutiny through the legal reporting and operating requirements of the Torrens Catchment Water Management Board. A feature of the Board's *modus operandi* is that decisions are made in a very transparent process with a maximum of two layers in the decision making process, (refer Ockenden, 1997 for details on Board operations). This very open process ensures accountability because decision-makers are directly accessible to the people affected by their decisions.

The Board is totally accountable for delivering targets in its catchment plan but uses an advisory committee to oversee the allocation of funds and general direction of the rural works program. The committee comprises representatives from the Torrens Catchment Water Management Board, relevant soil boards, the Mount Lofty Ranges Catchment Program the Animal & Plant Control Commission, with expert technical advice provided by ID&A South Australia Pty Ltd.

In addition to providing expertise to help guide the work of the Board, the committee develops links with organisations with the legislative capacity to instruct landholders to repair or make good works. For example, blackberry is a proclaimed plant in South Australia. This means that landholders have a legal obligation to remove it from their properties. However this is rarely enforced simply because infestations are so large that they are beyond the physical (and financial) means of landholders to deal with. If a landholder continually refuses to accept an offer of assistance from the Torrens Catchment Water Management Board to eradicate a blackberry infestation then the local Animal & Plant Control Board is in a much stronger position to issue a legal notice. Similar action can result if a landholder who has received assistance begins to let a infestation reappear.

Bringing the relevant agencies together in the joint committee has also worked to ensure that relevant property planning courses are available to landholders at a reasonable price and that efforts are complementary and coordinated.

7. LESSONS LEARNT THUS FAR

7.1 Technical aspects

Working on over 100 private and public properties has given those involved with the program the opportunity to tackle a range of diverse problems and challenges.

Various types of exotic tree removal techniques have been used. Various techniques have been developed in an effort to improve effectiveness and cost efficiencies. Similarly, various woody weed removal techniques have been developed, tested, and costed as part of the program. Each one has been developed to address

terrain issues or to deal with specific restrictions associated with a particular sub-catchment or site.

The current state of knowledge of people and organisations involved in the rehabilitation of the Torrens with regard to woody weeds and tree removal is described in ID&A South Australia Pty Ltd, 1998(b).

7.2 Landholder involvement

Priorities for the current 3rd order and higher works program were determined by landholders through a public workshop voting process. Typically this worked well with landholders taking a catchment perspective when assigning their votes. However the process was open to potential vote stacking with landholders voting for their own property ahead of more needy ones. It is possible that this did occur in one or two sub-catchments.

A potentially better approach to determine funding priorities is through a landholder steering committee for each sub-catchment. This would involve the same initial consultation process in defining riparian issues but rather than landholders setting their own priorities through voting, the decision on who receives funding first would be determined by a committee comprising landholders, supported by technical experts.

This would also obviate the need for an agency advisory committee as described in section 6. It would simply be replaced by (in this case) up to eleven sub-catchment committees. The two layer decision making process would be retained but at a higher cost to the Torrens Catchment Water Management Board. The higher cost would, however, be negligible given the total amount of funds being spent by both the Board and landholder in delivering on-ground works.

This alternative approach is currently being trialed in the Mount Pleasant sub-catchment in the Torrens and also in the neighbouring catchment by the Patawalonga Catchment Water Management Board. A benefit of this alternative approach is that it provides greater flexibility and delivers the final decision making process closer to landholders.

8. CONCLUSIONS

The broad scale delivery of riparian restoration works has only been made possible by the successful engagement of landholders in the catchment. This has occurred because:

- Initial riparian surveys and priority setting processes closely involve landholders.

- Funding and technical support is made available to support landholder efforts in a non-threatening and simple manner.
- The allocation of funding is done in an open and accountable manner which helps to develop landholder confidence in the program as well as develop inter agency links.

9. ACKNOWLEDGMENTS

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10. DISCLAIMER

Views expressed in this paper do not necessarily form part of any government or catchment board policy.

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