

ALRS – Key observations and lessons associated with the role out of a state-wide flood recovery program

Jesse Webster¹, Julian Martin²

1 NRM North, 63-65 Cameron Street Launceston, Tas, 7250, Australia. Email: Jesse.webster@nrmnorth.org.au

2. Water Technology, 40 Rowan Street Wangaratta, Vic, 3677, Australia. Email: Julian.martin@watertech.com.au

Key Points

- In June 2016, Tasmania was subject to a widespread flood event.
- In response to the flooding, the Tasmanian State Government developed the Agricultural Landscape Rehabilitation Scheme (ALRS).
- A total of 156 individuals/groups were subsequently successful in receiving funding to assist in the implementation of relevant projects.
- This paper discusses the adopted method and key lessons learnt from the implementation of a state-wide flood recovery program.

Abstract

In June 2016, Tasmania was subject to a widespread flood event that resulted in loss of land, property, stock infrastructure and most unfortunately life. In response to the flooding, the Tasmanian State Government developed the Agricultural Landscape Rehabilitation Scheme (ALRS) to assist flood-affected landowners and communities through funding projects aimed at rehabilitation of land and stream systems damaged as a result of the June 2016 floods. The focus of the program was to restore the capacity of the primary production sector and reduce impacts of future floods on productive land.

The program was state funded, led by NRM North, a Tasmanian regional NRM body based in Launceston and run in partnership with both NRM South and Cradle Coast NRM. The \$4 million ALRS funding was open to landholders and communities across 20 local government areas and received a total of 172 nominations from affected individuals or groups. A total of 156 individuals/groups were subsequently successful in receiving funding to assist in the implementation of relevant projects.

There is a high degree of variability across the river systems in Tasmania. Resultantly, the nature and scale of flood related damage was also highly variable. It was also evident that the flood impacts were influenced by historic and on-going land management practices as much as the June 2016 flood event itself.

This paper discusses the adopted method and key lessons learnt from the implementation of a state-wide flood recovery program.

Keywords

Agricultural Landscape Rehabilitation Scheme (ALRS), flood recovery, bank erosion, revegetation.

Introduction

The Tasmanian Government, in partnership with Tasmanian NRM regional bodies, announced the Agricultural Landscape Rehabilitation Scheme on 19th December 2016 to support recovery efforts following the June 2016 floods.

The scheme assisted flood-affected landowners and communities through funding projects aimed at rehabilitation of land and stream systems damaged as a result of the June 2016 floods. The focus of the program was to restore the capacity of the primary production sector and reduce impacts of future floods on agricultural land.

The scheme targets private property and adjacent areas that have suffered direct physical damage as a result the June 2016 floods or areas where future flooding may present a risk to primary production or public infrastructure.

Landowners or community groups could nominate for two types of works:

- River and stream resilience (larger-scale work), such as riparian revegetation, bank protection, stream alignment, and erosion management; and
- Debris clean-up (smaller-scale works) for landowners on productive land, such as timber and river cobble removal.

Rollout of ALRS

Following the June 2016 flood event which devastated the Northern region of Tasmania in particular the Northwest the Tasmania Government entered into a grant deed with NRM North (on behalf of the three Tasmanian regional NRM bodies) for the delivery of the Agricultural Landscape Rehabilitation Scheme (ALRS). NRM North provided the administrative framework and project management functions on behalf of the three NRM bodies.

From an early onset the scheme was separated into five phases which underpinned the successful rollout of the program, these included:

1. Establishment
2. Nomination
3. Prioritisation
4. Implementation
5. Project Acquittal

An ALRS Project Management Team was set up early to identify key roles and responsibilities of each partner as well as a centralised project management system, identified risk management, work flows, communication strategy, financial management system and reporting process to provide transparent communication with all partners.

NRM North hosted the central contact point with an ALRS 1300 number and email address set up for all flood effected landholders to register their details. Four ALRS workshops were setup to provide information for all flood effected landholder's regarding the scheme guidelines, completing a nomination form, access to technical advice and what the funding could be used for. These were well attended and provided an opportunity for landholders to ask direct questions regarding their situation.

An ALRS Expression of Interest (EOI) form for Technical Advice was created which was divided into two parts. A small team of casual and NRM North staff provided a call back to all the registered landholders and completed Part A of the EOI over the phone which contained general information about the landholder but

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also information regarding: stream condition, history of the site/river, flood impacts, landholders objective, in-kind contribution and any issues or constraints. Landholders were asked to send in photos of the flood impacts and a LIST Map bookmark was setup and attached to the EOI.

This was then passed onto consultants who would undertake a site visit and complete the Part B. The Part B included: site issues and trajectory, mitigation options and recommendations, estimated costings, estimated costing for design report or further technical advice as well as an opportunity to address the five prioritising criteria as identified by the State Government.

Three consulting firms were selected to provide effected landholders a site visit and complete the Part B of their EOI. In total 235 site visits and EOI reports were completed in a 6-week period which was an enormous logistical nightmare however, proved invaluable for landholders to understand the best practice riverine rehabilitation as this kind of technical advice is very hard to come by in Tasmania.

170 nominations were received with 154 offered funding by the State Government. The government went with a distributed funding model with all successful landholders receiving a percentage of what they requested, no landholder received full funding. The successful nominations were divided into three groups with the State Government managing 20 landholders directly, 30 landholders had a Management Agreement (MA) with NRM North and the rest only needed to accept the funding amount in writing.

Water Technology were the successful consultancy to provide a design report and on-going support for the 30 landholders with a Management Agreement. These landholders received another site visit and further technical advice to make sure their projects were completed successfully. They also received on-going support from the ALRS Project Officer to navigate public liability insurance as well as permit and approvals through state and local government.

Riverbank Erosion Management Workshops were held in five locations across northern Tasmania to provide all successful ALRS landholders access to information around: river analysis, importance of riparian vegetation, effects of stock, erosion prevention and mitigation, construction of hard and soft engineering solutions and how to navigate the ALRS claims system. 30-minute appointments were available at the end of each workshop for effected landholders to discuss their project directly with a river engineer/geomorphologist. This proved to be very successful with almost all sessions booking out.

Riparian Rehabilitation Workshops were provided for all successful ALRS nominees to reinforce the importance of riparian vegetation during flood events. The workshops were held stream side where project works had already started and focused on hard and soft engineering solutions, the importance of riparian vegetation to provide resilience along a river and how to construct riparian fencing on a flood plain. These workshops were very targeted towards the outcomes of the program and reinforced the notion that vegetation is by far the most cost-effective solution to create long term resilience in a river system.

Key Numbers and Facts

Key facts and numbers associated with the role out of the ALRS program included:

- 295 interested parties/individuals registered.
- 235 received a site visit and technical advice.
- 172 nomination forms were received (including 2 groups of 13).
- 156 were offered funding from the State Government.
- \$4m dollars of funding available for the scheme.
- No one received full funding.
- A taxation model was used across the board for eligible works with a percentage of funding offered in incremental dollar brackets.

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- Non-eligible works were removed from the offer.

Case Study

ALRS site visits took place across the majority of the state, however sites more concentrated within the north and eastern portion of the state (Figure 1). There is a high degree of variability across the river systems in Tasmania. Resultantly, the nature and scale of flood related damage was also highly variable. It was also evident that the flood impacts were influenced by historic and on-going land management practices as much as the June 2016 flood event itself.

The Inglis River and Flowerdale River are two river systems in North Central Tasmania that join before flowing out into Bass Strait near Wynyard. These rivers provide a good example of how historic land and waterway management practices influenced the effects of floods. These rivers were impacted by the June 2016 flood event and were subject to a concentrated assessment through the ALRS program. Flood damage to occur within these catchments included loss of land (primarily through bank erosion associated with outside bends of the river channel), loss of property, stock and infrastructure and accumulations of debris (both sediment and timber) across the floodplain surface.

A major willow eradication project was commenced in the Inglis-Flowerdale catchment in the late 1990s as a result of ongoing landholder concerns relating to flooding, bank erosion, siltation, water quality, poor in-stream habitat and loss of recreational fishing opportunities within the catchment. A survey of 26 landholders in the catchment covering approximately 48 km of river frontage indicated that 92% of this river frontage was infested with willows, equivalent to at least 44 km of waterway (Water Technology, 2010). The works were largely successful in reducing the number and extent of willow infestations across the catchment and regular follow up willow control has been thorough and successful in controlling emerging juveniles. The widespread site assessment found that both rivers contain a poor loading of in-stream native timber in the lower sections of the river systems, likely due to historic and on-going de-snagging activities and the dominance of willows in the riparian zone.

It is understood that revegetation and stock exclusion (fencing) works were undertaken following the willow eradication project. However, the post flood assessments generally found that these works were only limited in extent and where present, the fencing had generally not been maintained and the revegetation had either failed or had struggled to establish due to damage by grazing stock. Additionally, where present, fencing offsets were typically narrow, forcing revegetation efforts to focus on the zone extending over the bank face.

Through the ALRS site assessment process, it was found that bank erosion is a common feature of the lower Flowerdale River and Lower Inglis River. The observed bank erosion is likely to have been influenced by the widespread willow removal program and general lack of suitable replacement riparian vegetation. The erosion generally featured at sites in the planform that are consistent with the meandering, laterally migrating nature of these rivers (i.e. outside bends). Bank erosion was also to be found where large trees had collapsed into the river and riparian vegetation is poor. In some locations, the recent flood event had also contributed to the erosion of inside bends and straight sections.

Whilst many landholders view the collapse of large trees as a problem, these trees provide some of the only sites of complex large instream timber along the river. The ALRS site assessment process provided an

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opportunity to communicate to the Flowerdale – Inglis River community the important function that large woody debris provides in a river system, namely, creating hydraulic and geomorphic variability, which subsequently provides habitat niches for aquatic flora and fauna. It was also strongly emphasised that large woody debris absorbs hydraulic energy that would otherwise be used to erode the river bed and banks.

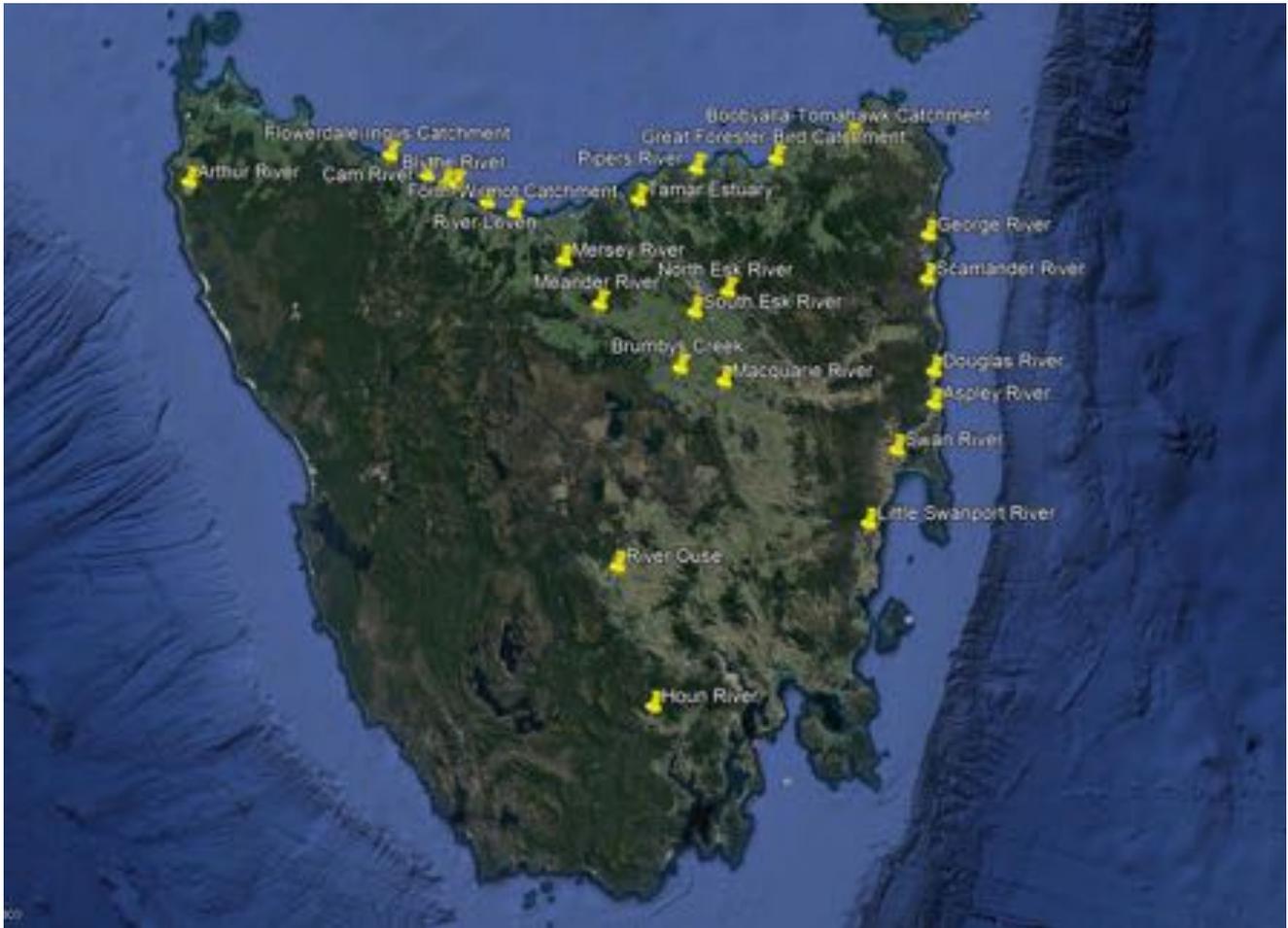
Prior to the floods, Water Technology (2010) noted that in reaches of the lower Flowerdale River, particularly the downstream reach on the riverine plain, where stock have been excluded and vegetation established on the face of the bank there is a near total absence of erosion of the banks. During more recent inspections, it was noted that the scale of bank erosion was far less extensive and severe where established riparian vegetation was present. This typically included areas where vegetation was restricted to the bank face. This is likely to be a good indication that the sediments of the Flowerdale and the Inglis Rivers can be stabilised and that management actions including revegetation and stock management have the potential to be very effective at preventing future bank erosion along these rivers during future flood events.

The ALRS provided a unique opportunity to undertake a co-ordinated works program and across multiple (14) properties in the Flowerdale and Inglis River systems in response to the June 2016 flooding. Importantly, the ALRS also presented an opportunity to educate landholders on best practice waterway management principals. The general recommended strategy for stabilising priority erosion sites across the project area and to provide improved resilience during future floods included:

- Using native vegetation to achieve long term stability across the project area. Once native vegetation is established, it will allow for adjustments in the river planform, whilst increasing channel stability during future flood events. As such revegetation was recommended at all sites. The recommended revegetation arrangement aimed to extend to at least 10m from the top of the bank and be protected with stock proof fencing. This recommended buffer was not always met with favour by the landholders.
- At sites where the rate of erosion is accelerated or there is a risk of a meander cut-off/avulsion developing, it is generally necessary to provide an additional form of bank stability while the revegetation becomes established. For this project, it is generally recommended to use rock beaching to the stabilise the banks for the following reasons:
 - Multiple erosion sites are to be addressed as part of this project. Large quantities of suitable timber for bank stabilisation works are unlikely to be available.
 - Timber brushing can be more susceptible to failure if not properly installed/constructed.

The implementation phase of the ALRS is currently being managed by the Waratah-Wynyard Council on behalf of the landholders. Hopefully, the ALRS presents an opportunity for best practice management waterway management principles to be adopted beyond the life of this flood recovery program.

Figure 1. Catchments assessed through the ALRS (Source: Google Earth).



Learnings

After the ALRS was launched by the Minister for Agriculture the program ran at a very fast pace however, having a program management team who were very dynamic and adaptable to changes made for some great outcomes like providing 235 flood effected landholders a site visit with a riverine expert and technical report all before they needed to nominate for funding and free of charge. This was well received by the community who had not been provided access to anything like this in the past. Not all landholders who received technical advice went onto nominate for funding through the scheme, so these landholders potentially had enough information to solve their issues without financial assistance from the State Government, making it a good investment up front.

Setting up a call centre in the NRM North office to speak with flood effected landholders and actually spend time listening to their stories about what they had had been through during the June 2016 flood event also proved to be very successful. Many of these landholders had been through quite traumatic experiences and had suffered significant losses due to the flood event. To have someone asking about their issues and impacts from the flood event and complete an EOI on their behalf brought along many more people who would have otherwise fallen out of the system due to the inherent paperwork required for a Government funded recovery program.

Setting up broad scale information workshops in designated hotspots helped to communicate to the many flood affected landholders the nature and extent of the flood event and what flood assistance was available,

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including identification of the eligibility criteria. The workshops also provided an opportunity for the community to ask direct questions in relation to their individual circumstances.

The Riverbank Erosion and Riparian Rehabilitation workshops which followed, provided those landholders who did not have on-going riverine support, direct access to an expert in the field who could guide them through completing their project successfully as many of these landholders had never been through something like this before. It enabled each landholder to successfully project manage works on their property and gain positive riverine outcomes who otherwise wouldn't have been able to do so.

With the ALRS being a state-wide scheme across 20 Local Government Areas (LGA) and working with multiple consultants at once in very tight time frames and with a limited budget proved difficult when trying to provide consistency of the technical advice being delivered across the state. Even though a standard proforma had been developed for consultants, recommendations and estimated costings varied immensely.

A significant amount of time was invested in the preparation and negotiation of Management Agreements with individual landholders. Similarly, the negotiation of design reports with landholders and LGA planning scheme approval process proved to be time-consuming and complex at times. Notably, there are 20 LGA's involved across the state, some of which have different planning schemes as well as different resource capacities to process works of this nature. Some councils had not encountered approval of instream works before and were unsure as how to navigate this through the planning scheme, so it became a resource sharing experience.

The adopted ALRS funding approach involved providing all eligible projects a percentage in the dollar based on their requested contribution outlined in their Part B nomination. This approach has both advantages and disadvantages. Generally, this approach encouraged landholders to provide in-kind contributions to the project (primarily through project management and labour) and discouraged large scale hard engineering-based projects (sometimes extending over several kilometres) which would unlikely to have been successfully implemented within the scheme framework and timeframes.

Conclusions

Overall many learnings have come from the roll out of the ALRS with some negative but the majority positive. Better communication and stronger partnerships between the three NRM regions across Tasmania was one very positive outcome along with an improved relationship with the Tasmanian Government and the three regional NRM bodies to deliver on-ground funding efficiently and effectively. A solid connection between Water Technology and NRM North has developed over the years to ensure that best practice stream management has been achieved across Tasmania. This relationship allowed NRM North to be able to consistently provide on-going support to flood effected landholders throughout the flood recovery process.

Acknowledgments

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