



Demonstration Site: Watercourse Rehabilitation

Rehabilitating a watercourse is a brilliant way to improve water quality, reduce erosion, provide habitat for birds and to improve on-farm production however there are many important steps and information required to ensure success.

The Process

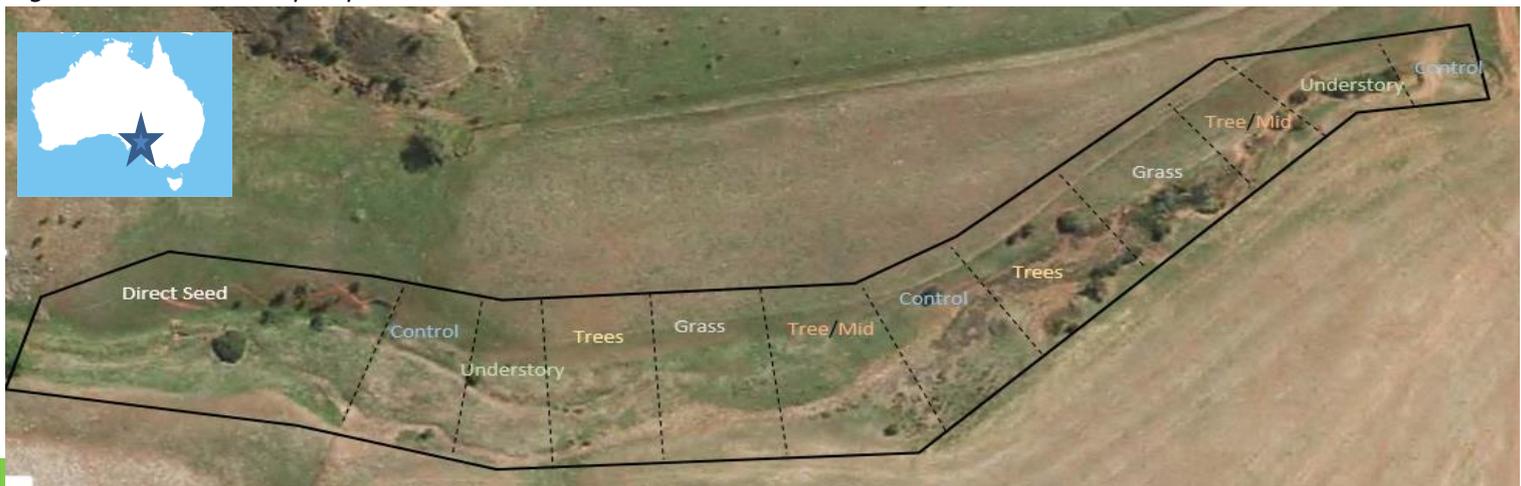
In June 2015, fencing occurred along a 250m length of watercourse which runs during the winter months and was significantly pugged throughout the year.

The site was divided into 20 metre plots of the following local plant communities, which were replicated and compared against three control areas:

- native grasses including wallaby, kangaroo and spear grass
- understory plants (approx. 60cm tall), including juncus sp., lomandra and hardenbergia
- tree's including sheoak, peppermint box and red gum
- trees and mid story plants including acacia sp., busaria and dodonae.

Woody weed removal of over 20 briar rose plants using the cut and swab method, artichoke, horehound and thistles were achieved prior to planting. Summer control of caltrop, which was already present in small numbers, was required as it flourished in the areas which were sprayed out for planting.

Figure 1: Rehabilitation plot plan



Property Details:

Murray and Ben Klemm
Moculta- Rainfall 450mm
Dairy/ Cropping for own fodder use
200 Milking Cow Herd

Tube stock were planted and guarded in early July 2015. Due to the extremely dry spring, they were watered in October, December, January and early March.

In 2016, a further 70 metres was fenced off to allow a machine direct seeding site. This was planted in August with weed and insect control at planting.



Results

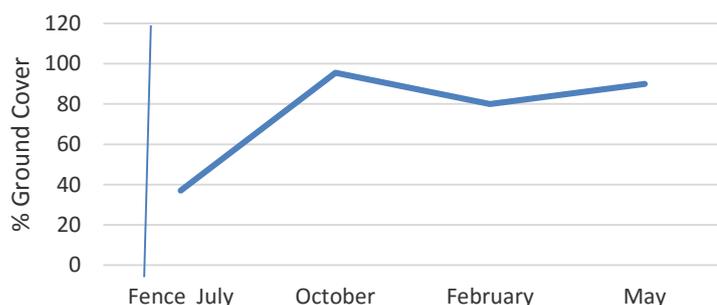
Ground Cover

To reduce the risk of erosion it is important to maintain ground cover levels about 80%. In 2015, prior to fencing the site and planting, groundcover levels through the centre of the watercourse measured 10-20% with areas along the bank being completely bare (Figure 2).

The most noticeable results after fencing was the reduction in pugging and the increased groundcover which only three months after the fencing were above 80% and has maintained this for the following year across the entire site. These levels significantly reduce the risk of erosion and run off, improving water quality and demonstrate the effectiveness of simply removing stock from the watercourse area.

Future ground cover measurements will be important to determine which plant community provides the most effective ground cover levels as the plants mature.

Figure 2: Ground Cover After Fence Erection 2015/16



Flora and Fauna

Prior to planting in 2015, a flora and fauna survey found many birds flew over the site, however few stopped as a result of the reduced habitat opportunities.

Kangaroos proved to be an issue with many of the tubestock plants being eaten off once they grew above the tree guard in March 2015.

The flora study indicated a variety of species, including some native rushes and sedges

These surveys will be completed in the future to determine how effective watercourse rehabilitation is at improving the biodiversity the watercourse.



Figure 3: June 2015- Prior to Rehabilitation

Plant survival

Considering the dry conditions in summer 2015/16, the tubestock plants survived extremely well with 70% survival rate across the whole site. The majority of losses occurred within the understory plant plots this was largely a result of the reedy Juncus species which failed to survive. However, plants which were originally in the site have thrived and flourished after the removal of stock demonstrating a much cheaper option to tubestock planting (Table 1).

Overall the tree plot was the most cost effective plot as a result of the lower numbers required and above average survival rate, followed by the trees/ mid story plot. In addition direct seeding was \$2.80 cheaper per metre square compared to tubestock. Future monitoring will determine how these plots establish.

Table 1: Cost and Survival of the Different Plant Communities

Plot	Total # tubestock planted	Total cost per plot inc. watering (\$)	Survival%
Grasses	260	\$772.20	68
Understorey	100	\$297.00	60
Trees/ Mid Storey	130	\$386.10	78
Trees	44	\$130.68	72
TOTAL:	640	\$1,585.98	70



Figure 4: June 2016- 1 year after rehabilitation began

The Barossa Improved Grazing Group (BIGG) received funding from The 25th Anniversary Landcare Grant Scheme and Natural Resources Adelaide and Mount Lofty Ranges (AMLR), to develop this demonstration site. The site will continue to be monitored by Natural Resources AMLR.

Further Information

www.biggroup.org.au

This information sheet is intended to provide information and provoke thought. No legal liability is accepted for the information, errors or omissions contained within it.