

Notes for HCLG Erosion control field day 29.5.21

Introduction

Hovells Creek Landcare Group has been concerned about soil erosion in the area for a long time. The biggest environmental issue is that the sand and sediment leaving properties from erosion gullies goes into rivers via their tributaries and starts to choke them. The Lachlan River has a sand slug that is over 140km long and runs from Hovells Creek near Wyangala dam to Cottons Weir at Forbes. All the Murray Cod breeding holes and the refuge ponds for other species in this stretch have been filled in and there are lots of other impacts to plant and animal species in and along the river and the wetlands as well as to water quality and amenity for people.

And of course there are big impacts to farms, losing soil and water to the rivers as well as the impacts of erosion gullies on cropping and grazing land.

HCLG and its members have been working for many years to try and mitigate these impacts at their source, by doing erosion control on farms.

The works you are looking at today at the McDonalds and Holloways farms were generously funded by a 2019 -20 grant from the Central Tablelands Local Land Services and expertly done by the Cowra Soil Conservation Service. Our current project is for almost \$100,000 worth of works on a further seven farms over the next year or so and is proudly funded by the NSW Environmental Trust, with an additional \$30,000 generously made available by the South East Local Land Services to fence, seed and plant the works areas. Soil Conservation Service is again doing the erosion control works and we have also been working collaboratively with Hilltops Council who have been doing roadside flood mitigation works along Frogmore Rd. We hope to continue the project into the longer term and have applied for another \$230k in two separate grants.

Our first talk is by Peter Kirwan of the Soil Conservation Service who has been managing our project works to date. Peter will talk about different kinds of erosion, what to do about it and how much it's likely to cost. He brings a wealth of knowledge and experience to the work he has been doing for us, with over 35 years' experience in the design and management of erosion control works with SCS. (see Powerpoint presentation)

Our second talk is a slide show that looks at the differences local people have been able to make to erosion issues on their farms over time. These are the notes for the Powerpoint presentation.

Stan Baker, Bilby Downs, Wyangala

"As far back as 2000, the small creek towards the eastern boundary of Bilby Downs showed a tendency to erode during moderate rain events. This happened where the water descends about 6 metres over a distance of only 12 metres before emptying into the Lachlan". This is what Stan did to mitigate erosion in this part of the creek.

1. September 2010. View looking up the creek.

This shows an early attempt to avoid erosion using a series of rubber mats. Sadly they didn't last long and were completely washed away in a major rain event a couple of months later.

2. January 2011. View looking down the creek towards the Lachlan.

The rains of December 2010 caused a massive loss of earth and opened a 4 metre deep chasm that was ugly and dangerous and likely to further erode with more rain.

3. *October 2014. Looking towards the Lachlan.* With funding approved, work commenced to reshape the banks and fill in the chasm. The earth works were carried out by Geoff Watson and his equipment.
4. *October 2014 The banks take shape*
5. *November 2014.* 75 tonnes of rocks of various sizes were delivered and distributed around the area being repaired. Two “zuni” bowls were created to catch water and dissipate energy. A zuni bowl is a structure made of rock-lined step falls and plunge pools at an actively eroding head of a gully that dissipates the energy of the falling water at the head and on the bed of the channel. In Stan’s erosion gully, smaller rocks were placed underneath, held down by the larger rocks. This is Stan moving some smaller rocks.
6. *Early December 2014 looking up creek with the rocks in place*
7. *Late December 2014.* With the rocks in place, the next step was to encourage grasses to grow as quickly as possible. This is Stan and his wife planting grass seed.
8. *Mid February 2015.* The project is completed.
9. 2021

Muriel Abraham, Gidgall, Wyangala

Muriel Abraham has taken a different approach to Stan. When Muriel and her husband Geoff bought their property, Gidgall in Wyangala in 1981, a lot of it was bare and there were a lot of deep erosion gullies. Over time, the Abrahams found that doing works that disturbed the soil, such as making banks to disperse water over a bigger area, tended to make things worse because the soils were so erosive. Instead, Muriel focussed on planting trees, not just for erosion but for all the other benefits that trees bring.

Since 1981, with help from family and scouting groups, Muriel has transformed the landscape of the farm by planting tens of thousands of trees, and also direct seeding, fencing and improving pasture. She has been supported in these ventures by Greening Australia and the HCLG nursery started by Judy Refshauge. This has vastly improved the catchments so that the amount and speed of water running into the gullies is much less. The gullies are still there, but the bottoms and the sides have been gradually revegetated and the active erosion slowed or stopped altogether. She also kept good notes and a photographic record of what has been done. Here’s some examples in her western and wash paddocks.

Keith and Jan Hyde, Kooringle, Hovells Creek

The Hydes have regularly worked on problem erosion areas over the last 20 years, mostly self-funded but with some help from the Catchment Management Authority. Their work includes significant plantings along Hovells Creek, the bed of which which has dropped some 1.5m over the last 30 years.

1. This is what it looked like before
2. And after
3. And here is the magnificent stand of trees from a distance

Keith’s main aim is to keep as much soil, water and associated nutrients on the farm as he can.

Keith and Jan’s place is also part of our current project and was finished last week.

4. This is the culvert under Frogmore Rd that channelled caused an erosion gully on their farm
5. And the Hilltops Council flood mitigation works done recently
6. This is before and after works looking from the road.

Steve and Meaghan Laver, Tatong, Reids Flat

Steve has been doing erosion control works on his property at Tatong in Reids Flat for over 40 years. He works on the basis that every erosion site is different due to different soils, different slope, size of catchment, aspect, groundcover and so on. And you need to understand what's happening there in order to choose the most appropriate method of control. Steve has used a variety of erosion control methods on his place, all aimed at reducing the speed of the water so it doesn't scour out an erosion gully or make an existing one worse. These include:

1. bunding to spread out a concentrated flow across a slope, excavation of soaks at the bottom of steep slopes,
2. excavation of more permanent dams to hold water up and release it gradually,
3. soaks with a wide catchment that drop quickly to the creek and needs a trickle pipe to slow the flow
4. and the biggest and most exciting project, creating a chain of ponds along Graham Creek which runs through the property. This project was funded by Rivercare in 1997 for \$50k and took a couple of years to complete. It involved building a series of ten large, boomerang-shaped walls across the creek in places where the creek dropped a metre or more, to form a chain of ponds. In contrast to some other projects we've looked at, it involved stabilising from the bottom of the creek to the top of the bank rather than the other way around, and no tree planting.
5. Before the project, the volume of water moving through the creek at high speed was enormous in times of flood, and it scoured the base and sides of the creek badly. This is the 1997 flood.
6. The locations of the ponds were determined by a topographical survey beforehand. The boomerang walls were made out of large pieces of local rock, moved by heavy earth-moving equipment driven by local operators Chris Piol, Ross Williams and Bill Hurley. They also used logs on bends, angled upstream.
7. The walls hold up the flow of water for long enough for the silt to drop out into the bottom of the pond, and most of the walls have now disappeared under silt and vegetation.
8. This is one wall that you can still see because it's at a road crossing. The rocks and logs were put in with a 27 tonne excavator and pinned with droppers, though the rocks and logs hold each other in place. Kikuyu and water couch have been used to stabilise the bare earth after works. Steve strongly recommends using what you have to hand, including rocks and dead trees, instead of importing materials onto a site. In this photo the bridge is made from a container lid Steve had that he filled with concrete.
9. Over time, the creek has changed from a v-bottomed scour to a wide, slow-moving and flat-bottomed creek, full of reed beds and supporting a healthy population of waterbirds including black ducks and cormorants which were never there before. In this picture, the previously scoured-out bend has now been built up by a metre of siltation and is covered in stabilising growth.

Tony and Pattianne Gay Ledglea.

1. This is what the HCLG website says about Tony and Pattianne Gay's former property, Ledglea in Wyangala, now run by the Chalker family. "Tony and Pattianne addressed a longstanding scar on the Wyangala landscape when they did an extensive restoration project on their Ledglea property in 2008. The finger like network of erosion gullies on the grazing and cropping land above the Lachlan River had been discharging sand, silt and nutrients into the river system for well over a century.

Allan McDonald and his team from McDonalds Farm Trees Nursery at Darby's Falls were contracted to plant some 12,000 trees and shrubs in July 2008. The tree lines alongside and

above the gullies had been sprayed, ripped to 30 – 40 cm depth and fenced in the previous autumn. The work was supported through funding from the Lachlan Catchment Management Authority and the National Heritage Trust.

2. The changes in the Ledglea landscape have been remarkable, as you can see from the photographs taken in 2008 and again in 2014.

The locals, and visitors to Wyangala Dam, now talk about the growth of the trees and grass in the gullies rather than soil loss into the Lachlan River system.

And that's a neat summary of what we hope to achieve with our ongoing erosion control work.