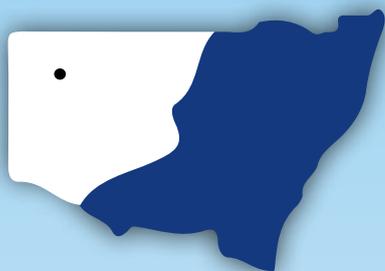


Ecosystem Management Understanding

Kayrunnera Station

CASE STUDY



Location

Mutawintji, 200km North of Broken Hill between Packsaddle and White Cliffs

Property name

Kayrunnera

Owners

Tas and Penne Clarke

Enterprise mix

Merino sheep and rangeland goats

Property size

48,000 ha

Average annual rainfall

200 mm



Figure 1

Kayrunnera has been in the family since 1926 and was purchased by Tas and Penne in 2001. At Kayrunnera they produce merino sheep and rangeland goats.

Why Ecosystem Management Understanding (EMU™)?

Tas and Penne were aware of the erosion issues across their landscape. Being involved with the local landcare group, combined with Kayrunnera's location at the top of the catchment provided Tas and Penne with an opportunity to make a large scale difference across their region.

The problem

At Kayrunnera there were large scalded areas and active gully development in highly productive flood outs. The aim was to slow water movement across these areas to reduce erosion and the loss of valuable topsoil into lower areas of the catchment.

The degradation was believed to be caused by historical overgrazing and exacerbated by the combined total grazing effect of goats, sheep, kangaroos, rabbits and feral donkeys. A series of dry years had led to decreased vegetation which increased the likelihood of water erosion in any large rainfall events.



The solution

There have been a number of strategies used at Kayrunnera over the years. Initially, waterponding was used to reinstate a floodplain. Waterponds were designed and constructed to pond water to a depth of 10 cm and the excess water would spill on a 150 m long level sill, see figure 1. This would mean that the water would spread over the floodplain, rather than flow down the rills and gullies in the centre.

More recently due to a concern about performing earth works on delicate country, mesh filters (see figure 4) have been implemented to address gully head erosion in the catchment area. The aim of these filters is to slow the movement of water by blocking debris but allowing water to flow through. Over time these filters will form banks of soil to prevent the loss of top soil from the property, as seen in figures 2 and 3. This will prevent the battered down gully heads further receding and taking valuable soil water out of the system.

Benefits

At Kayrunnera there has been a noticeable increase in vegetation after the completion of the work. This can be attributed to increased water infiltration over a long term period of time.

There has also been a noticeable change in soil structure in areas which were previously dominated by erosion.

EMU™ has had a benefit on whole property management through providing a new approach to managing issues and giving Tas and Penne a different perspective to view their property.

Across the neighbouring properties, EMU™ also enabled each property to be viewed differently according to each land manager's goals and landscape issues. As a result there are a range of different strategies being used across the catchment.



Figure 2

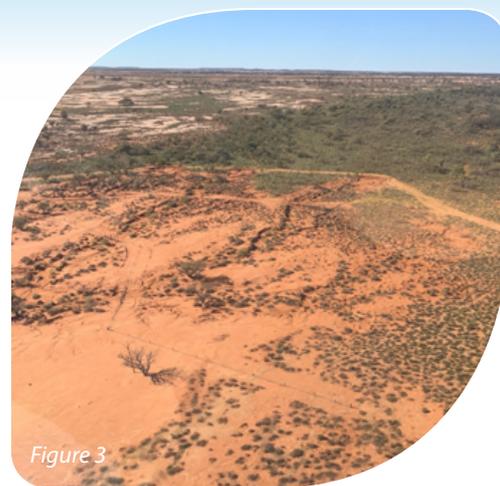


Figure 3

Barriers

A major barrier to implementing some projects is access to machinery to complete the works. As many landholders in the region do not own large machinery such as graders, bulldozers and rippers it can make it very costly to complete the earthwork required by some EMU™ projects. Due to the scale of the properties and the distances in the Western region, hire of machinery by an individual property would not be financially viable.

Time is another constraint as Tas and Penne find there is just not enough time to complete all the works they wish to.

The lack of rainfall has been a major barrier in the past couple of years. Until recently, much of the work had been completed and no rain had fallen for Tas and Penne to be able to view whether their project was a success or not.

Overcoming barriers

Working across six neighbouring properties to achieve a larger scale impact on the landscape was a method of overcoming cost barriers. This allowed sharing of costs as well as achieving a wider impact across the catchment.

To avoid disturbance of soil in delicate areas, Tas and Penne sought alternative methods of EMU™, by using mesh filters as opposed to earthworks in some areas of the property.



Figure 4

Next steps

A major issue in the catchment is public roads, and the influence these can have on the flow of water in the landscape. Tas is currently working with grader drivers to help them better understand the EMU™ principles in the landscape and apply this in their work.

At Kayrunnera, there will be ongoing EMU™ work as this is viewed as a long term project. Tas and Penne will continue to seek new ideas and methods and build upon the work they have already completed.

Figures:

Figure 1: Waterponding techniques were initially used to reinstate a degraded floodplain.

Figure 2: Mesh filters are being used to stop the further degradation of the floodplain. These filters block the movement of soil, reducing the formation of rills and gullies.

Figure 3: A series of mesh filters blocking the movement of soil through the catchment.

Figure 4: Mesh filters after construction.

For more information contact:

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