

# Bushfire recovery, erosion and water supply

Fact sheet | December 2019



Bushfires burn the plants and organic material that naturally stabilise the soil, making it more prone to erosion due to water runoff and wind.

On agricultural land, treatments for wind erosion involve stabilising the soil until protective cover can be re-established. Depending on the soil type, this can involve roughening the soil surface to deflect the wind or avoiding vehicle and animal activity in the area. Although a visual reminder of the fire, burnt vegetation also plays a part in holding together the soil.

## Select treatment based on soil type

Where soils have more than 20% clay, using tillage equipment to bring up clods of soil can slow and break up the wind flow. Cultivating the soil either in strips or whole paddocks can be quickly implemented. Use a single tine ripper to create a deep furrow with high cloddy ridges, spaced 10 to 20 metres apart. On sloping land, ripping lines on contours will also reduce the risk of water erosion. Digging below the usual tillage depth and travelling very slowly will bring more lumps to the surface.

In sandy top soils, adding clay by spreading, delving or spading can help and is often beneficial in the long term, improving water holding capacity and soil fertility. However, it is important to ensure the clay is not sodic or high in carbonate. Clay spreading and delving also requires careful planning and special equipment, which is not always readily available.

On sandy soils that will slump immediately after tillage and are not suited to adding clay, the best option can be to do nothing.

In fact, care must be taken not to disturb the surface layer by vehicles or animals. Keeping the surface seal intact can provide some protection against wind and is the best way to maintain soil stability.

The loss of plants and organic material also means that water runoff after rainfall moves faster across the landscape, potentially causing erosion and the loss of valuable top soil.

Water runoff after a fire can carry ash, silt, manure and other fine material and deposit them in dams and creeks. This can significantly impact water quality, cause bacteria and algae to grow, and make the water unpalatable for stock.

The best time to act to reduce the risk of erosion on your property is prior to any rainfall.

There are simple ways, listed here, to reduce this risk and promote the recovery of your property. Each is based on maintaining a stable soil structure and encouraging plant growth.

## Remove grazing pressure and minimise soil disturbance

Any ground cover is better than no cover. After the fire, leave burnt and unburnt vegetation in place including trees, woody debris and leaf litter as it will help to slow the flow of water and its erosive force on the burnt ground.

Encourage the regeneration of native and perennial pasture by minimising disturbance to burnt ground. Agisting out or containing stock, controlling feral animals and abundant native species may be necessary.



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Containment areas for livestock are recommended if you choose to keep, or return your stock to the land soon after fire.

Containment areas provide time for pasture to grow and the rest of your property to recover.

Controlling feral animals such as rabbits, goats and deer will help to reduce grazing pressure and allow plants to germinate and establish. Kangaroos can also severely hamper regeneration, particularly without natural predators to keep their numbers in check.

Contact your local natural resources centre for more information on the construction of containment areas, feral animal control, or to discuss kangaroo control and obtain a destruction permit if necessary.

### **Slow the flow of water**

Whatever you can do to slow surface water flow on the fire ground will help. A quick and simple way is to build strategically placed sediment fences in drainage lines and on hillsides.

The purpose of a sediment fence is to slow the flow of water and trap debris and soil before it reaches a watercourse or dam. You may need to construct several small fences.

To help decide how many sediment fences you need and where to put them, consider the following:

- large catchments and areas of high rainfall need more fences because larger volumes of water will be captured
- steep catchments need sediment fences closer together to slow the water down
- to protect water quality in dams and creeks, construct sediment traps at the inflow points.

A practical video demonstrating how to construct a sediment fence is available on YouTube. Search for *Practical steps for landowners: Building sediment fences*.

Shown here are photos of various sediment fences. The materials used to construct a fence generally include star droppers, chicken mesh, fence wire, and shade or hessian cloth. The materials you use will depend of what you have available.

The exact design of your structure will depend on your needs. When designing your fence, remember that it should allow for:

- effective filtering of fine sediment (i.e. through shade cloth or straw)
- natural overflow of some runoff water (aiming to fully dam the water will likely cause the structure to collapse)
- the prevention of erosion around the sides or underneath the structure.

### **Reseed pasture**

There is much to consider prior to undertaking the expensive task of reseeding pasture. A short-term cover crop may be appropriate in some situations.

For more information on these matters, contact your local natural resources centre.

### **Dam siltation and water quality**

Protecting your water supply from contamination is a high priority after a fire. Rainfall after a fire can carry ash, silt and increased nutrient loads into dams. This deposited organic material provides ideal food for bacteria and algae. These





organisms grow rapidly using up dissolved oxygen, causing putrid, anaerobic conditions.

Symptoms of putrid conditions are dark water, a bad smell and black scum around the edge which stock may find unpalatable. Water may be harmful to young or weak stock. Bright green scum around the edge of a dam is a sign of algae or cyanobacteria (blue-green algae) which can be toxic to stock.

Once material is in the dam, aeration of the water is necessary to improve its condition and make it more palatable to stock. This is best done by pumping to a tank and reticulating to a trough.

After rain, monitor watercourses for erosion or siltation and look out for algal blooms in dams. Protect surface runoff areas by fencing off waterways from stock movement and ensuring trough watering points are functional.

Strategically placed sediment fences may help in trapping soil and debris before it reaches watercourses and dams, preventing water quality problems.

### Water supply – do you have enough water after the fire?


Carefully evaluate current reserves. Sheep require up to 40 litres of water per animal per week. A cow requires about 500 litres per week. You may need to consider whether you have enough water to maintain livestock over coming weeks by calculating how the status of these reserves may change over time.



Options for managing a water shortage:

- reduce stock numbers
- combine stocks of water
- reticulate from dams into troughs rather than allowing direct stock access
- purchase additional water (be sure to use a licenced carrier).





**Natural resources centres**

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[www.naturalresources.sa.gov.au/northernandyorke](http://www.naturalresources.sa.gov.au/northernandyorke)

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