

H Managing stock

Objective

To manage access and grazing of domestic stock in riparian land so that production is maintained without damage to the waterway.

Recommended management approach

Domestic stock, particularly cattle, favour riparian lands and if not managed carefully, will spend much of their time along streambanks and in the water. This results in the following problems:

- manure and urine going directly into the waterway. This contributes large quantities of phosphorus and nitrogen to streams. Under conditions of sufficient light, and increased temperatures (i.e. where riparian vegetation has been substantially cleared), this can lead to excessive growth of nuisance water plants and algae, including toxic blue-green algae;
- animal wastes are an important source of disease-causing bacteria and viruses. These may have significant effects on other animals that drink downstream. There is growing evidence from overseas studies that livestock drinking contaminated water show significantly decreased growth rates and lower productivity than those that have access to clean, uncontaminated drinking water. In addition, animal wastes fouling waterways above the catchments for dams and reservoirs, can significantly increase treatment costs for downstream users;
- over-grazing removes vegetation cover from the banks of waterways. This contributes large amounts of soil and nutrients to the stream during heavy rainfall as well as increasing streambank erosion and the consequent loss of productive land. Section B in this guide discusses the issue of bank erosion in more detail;



Stock reserve on Namoi River, riparian areas degraded and active erosion occurring as a result of continuous stock access. Photo Guy Roth.

- stock selectively graze the seedlings of some native species, preventing the establishment of new plants and resulting in the eventual loss of the species. This also increases the potential for weed invasion and accelerates the loss of habitat for wildlife. Ground covers, such as herbs, tufted grasses and tussock species, which help to slow overland flow and to trap sediments, can all be damaged or removed through trampling and excessive grazing; and,
- the disturbance created by livestock through grazing of plants and opening up of bare ground, together with increased nutrient levels from animal dung and urine, creates an ideal situation for the establishment of weeds. Weeds may also be spread directly by the animals, either through attachment to hair or skin, or through their manure. Troublesome weeds can also spread in the other direction, from riparian lands onto adjacent farmland.

These problems can be tackled without permanently excluding animals from riparian lands. Controlled access of stock in riparian lands takes a bit of planning and effort, but many landholders are discovering that significant payoffs can be gained by the increased production, improved water quality, stable streambanks and healthy riparian vegetation that results. There are three key approaches for dealing with stock, and these are grouped under fencing, watering points and managing grazing pressure.

Fencing

Fencing can be used to regulate animal access and grazing pressure on riparian land. It enables stock access to be managed according to need and available feed, and opens up opportunities for additional or alternative productive use of riparian lands, for example for forage production or agroforestry. The use of fenced riparian land as a living haystack is gaining acceptance as more and more landholders report that carefully-planned, strategic use of the feed available on riparian lands can have a significant benefit to profitability.

The type and location of fencing that best suits your needs will depend on your type of stock, when and how much you want to use the riparian land, the size and shape of the stream channel, flood frequency, and size of the flood peak. Riparian fencing needs careful planning, as flooding is a continual threat to conventional fence lines. Landholders and researchers have come up with several alternative methods to cope with these problems. Some of these are discussed below, and more-detailed information is available from government agencies, catchment management authorities, farm advisers and retailers.

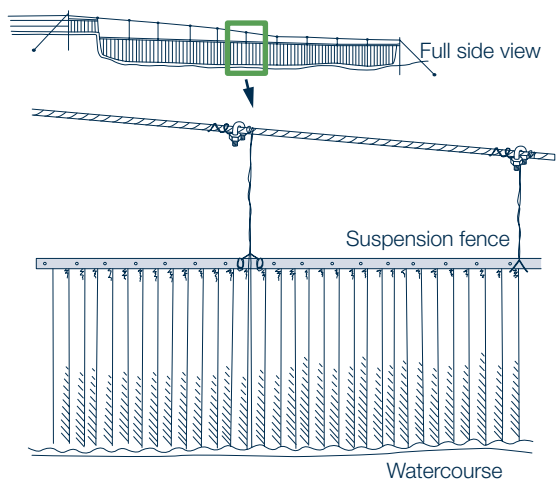
1. When positioning the fence it is important not to place it too close to the stream. This makes the fence vulnerable to frequent flood damage, and the fence line may be lost if the waterway channel changes. It is better to place the fence line some distance from the current bank, generally at least 10–20 metres, as this means the riparian land can be used as a ‘paddock’ for stock. It also means the bends and curves of the stream can be cut out and this reduces the number of end-assemblies that may be required if you are going for a conventional fencing option.

There are many local government and community riparian fencing schemes that help to defray the capital cost faced by landholders.

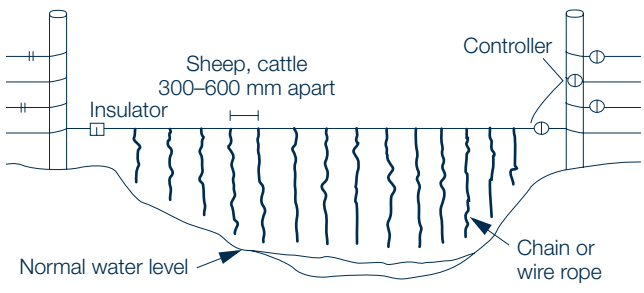
2. Consider using different fence types depending on the section of riparian land being fenced.

- Hanging fences can be built across narrow streams so that animals cannot walk along the stream to bypass fence lines. Hanging fences are usually suspended from steel cable or multi-stranded, high-tensile fencing wire strung across the waterway. In order to prevent them being damaged or destroyed during floods, they have hanging panels which are designed to ride up with heavy flows and return to their normal position once the peak flow has passed. The hanging panels are usually galvanised iron or ringlock hinged across the cable. They may be damaged by debris coming down in a big flood, but the damage is usually not severe and the panels can cheaply and easily be repaired or replaced.
- Electric fences can be used along and across waterways. An electric fence is not only much cheaper to construct, but it is much cheaper to repair following an unexpectedly large flood. Steel droppers will usually survive a flood unless hit by large debris, so it is often only the cost of a length of electric fencing wire that has to be covered. When placed across the stream a steel cable is used as a horizontal support, from which steel chains or hinged panels are hung. The chains and/or panels are separated electrically from the grounded cable, and all are electrified and able to move independently, allowing floodwater and debris to pass underneath. Portable electric fences are another option that allow landholders to control stock movement along streamsides, and have the added advantage that they can be quickly moved if there is advance notice of a likely flood peak.

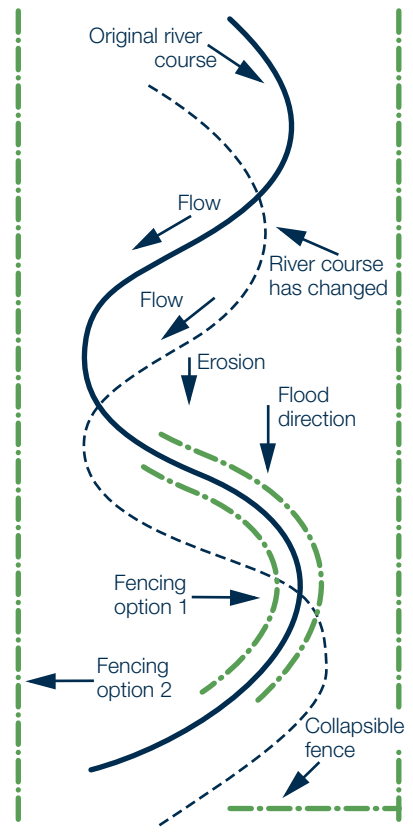
Design for hanging fence

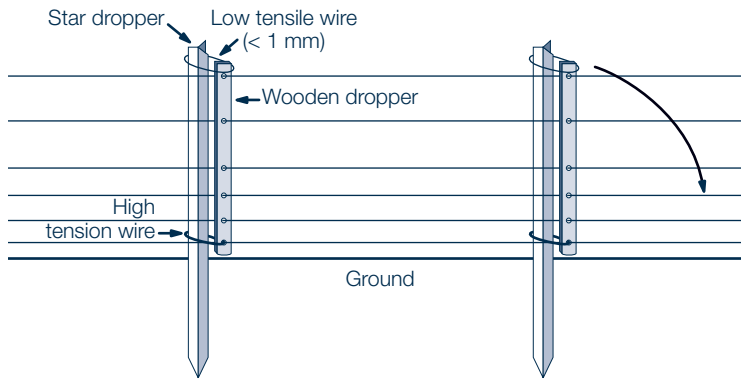


Electrified flood gate



What to consider when positioning a riparian fence line





Drop/lay down fence. Upper diagram showing drop-down wooden posts at star droppers and lower diagram showing drop-down end strainer post.

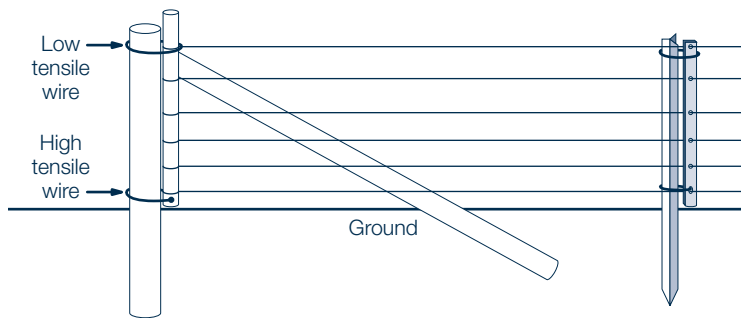
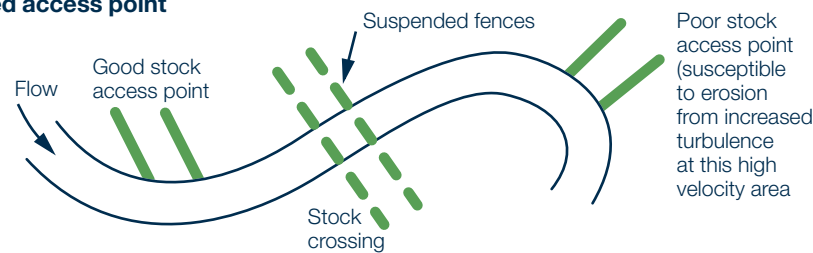


Photo Penny Van Dongen.

- Drop fences are designed to be either manually operated (dropped) before a flood, or to drop from their anchor points under the pressure of floodwater and debris. Once the floodwaters have receded, these fences are quick and simple to pull back up and reattach to their anchor points. They can also be dropped to allow stock or vehicle movement from one paddock to another without the need for expensive gateways.
- Electronic fencing has been developed overseas as an alternative to fixed fencing, particularly for cattle. The stock wear a receiver initially developed in the form of an ear-tag, and transmitter boxes are located to form a boundary between the riparian area and the rest of the paddock. The transmitters emit a continuous signal which defines the boundary. The ear-tags respond by producing firstly an audio signal, followed by an electric stimulus to the animal's ear if it attempts to enter the exclusion land. Tests have shown that cattle quickly get used to this form of fencing, which is cheaper than conventional fixed fences and can be moved quickly in the event of a flood peak. This type of fencing is under active development in Australia, with the aim of bringing the price down to a level at which it can be adopted widely.
- To minimise cost, and for ease of replacement following a flood, most growers in cotton districts have opted for either a three-strand electric or barbed wire fence. When using barbed wire, it is preferable to make the top strand a plain wire as it is used for perching by birds and bats and this will prevent unnecessary damage to wildlife whilst still controlling stock.

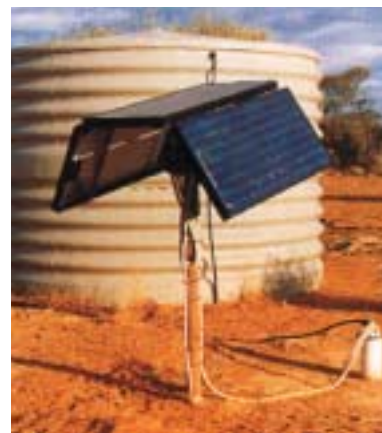
Where to site a formed access point



Watering points

Once a streambank has been fenced, you may need to consider providing alternative watering points. The siting of watering points and supplementary feeding stations can be used as an alternative to fencing to help manage stock access to streams. Much depends on the individual situation, but some landholders have demonstrated that by providing a shaded access point to clean water, or by providing a watering point closer to preferred pastures, they have been able to significantly reduce the amount of time stock spend in riparian areas without the need for fences. Some watering systems to consider are listed below.

1. Stock can be watered from a stream or river without undue damage to the bank if a formed access point is built at a carefully selected section of the channel. It is important to avoid boggy areas and the outsides of bends where flow speed is high and streambanks tend to erode. Cross-stream fencing may be required to prevent animals wandering along the streambank. A formed access point requires a graded slope into the stream. The surface of the waterway access point is then protected by using concrete, compacted gravel, logs or similar materials to form a walkway. It is important to consider likely changes in the depth of flow in order to make sure that access to water is available for as much of the year as possible.
2. Provide a water trough connected to a permanent water supply from a dam upslope, or through a reticulated water scheme. In the more-intensive industries, such as dairying, the number and layout of watering points is an important consideration in enabling and encouraging stock to maximise the use of available feed. In these situations, the time taken to walk down to the stream for a drink and back is considered by some landholders to be 'unproductive' time, with the cost of a reticulated water supply and better-sited watering points more than paying for itself through increased production.
3. Use an electric pump or windmill to access groundwater aquifers and water stock away from riparian lands. Such aquifers are often not far beneath the land surface, so that even a small-sized pump can provide sufficient water for a large number of animals. A range of pumps has been developed to use the flow of the stream itself to pump a small volume to a header tank and stock trough, with the tank providing a storage buffer. Solar pumps (as shown at right), which are becoming more cost-effective, are ideally suited to watering stock in remote areas.



3. continued.

Another pump type, that is used more commonly overseas than in Australia, is a nose pump (at right) operated by cattle. As the animals drink from the pump bowl, they push against a lever, which in turn operates a piston and diaphragm and pumps more water from the stream. Their low cost and small number of moving parts has made this type of pump an attractive option.



Managing grazing pressure

When managing stock grazing on riparian lands, the aim is to maintain continuous ground cover, with enough vegetation to protect the soil surface from heavy rain and provide filtering and trapping of sediment. Vegetation also assists in keeping banks stable, as well as providing wildlife habitat. Your particular management objectives have an important bearing on how you manage grazing pressure on the riparian land. In general, timing, intensity and duration of grazing all need to be considered.

1. Grazing should be restricted, or prevented altogether, when plants are starting their annual growth cycle. Heavy grazing during this time can substantially weaken pastures and natural vegetation. Grazing should occur when plants are either dormant, such as in winter, or when there will be less impact upon plant growth, seed and root production. Vegetation should be spelled around the time of flowering and seed production in order to allow for continual replacement and maintenance of good vegetation cover. This is especially important for native species.
2. Grazing on riparian lands should be restricted or removed altogether during that period of the year when maximum rainfall is expected. This will help to ensure maintenance of a complete ground cover when the potential for erosion and soil loss is at its greatest. This is especially important for native species. Some growers have used cell-grazing methods, in which pastures are grazed hard for a short period and then rested for a longer period, to good effect in riparian paddocks. This approach may help to maximise use of the feed on offer, while allowing stock to be removed prior to flowering and seed set, or during the summer storm season when maximum ground cover is required.
3. Monitor the impact of grazing during the period when the animals have access to the riparian area. This will enable you to assess whether grazing intensity is too high or too low, and to move the stock before vegetation degradation becomes a problem. Grazing intensity can also be managed as a tool to reduce weed populations, or to reduce total plant material if fire management is an issue. The key to successful management of intensity is careful inspection and the ability to move stock elsewhere before damage occurs.
4. Do not continuously graze riparian lands as native grasses, herbs and shrubs will eventually die out, and be replaced by unpalatable, weedy species. Ideally, riparian lands need to be maintained so that a mix of species and quality feed is provided.

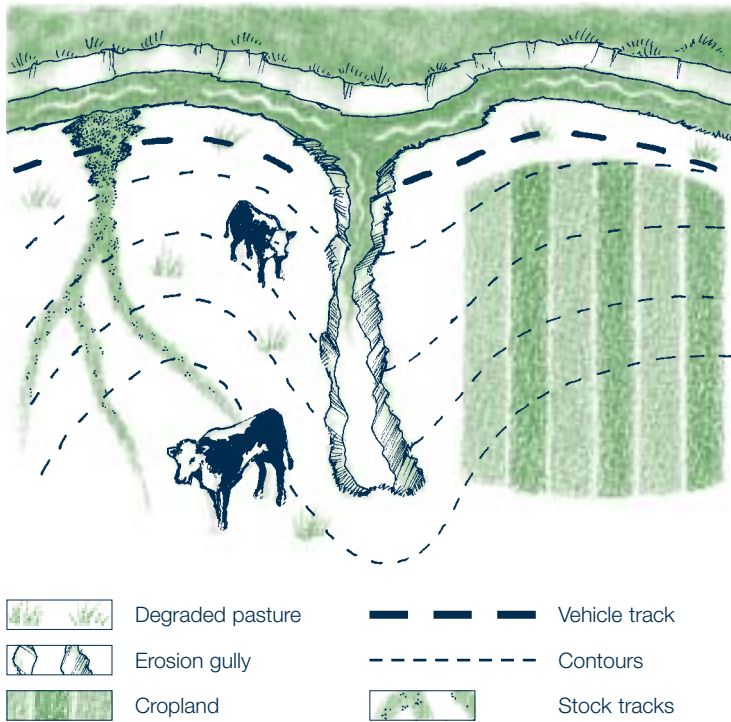
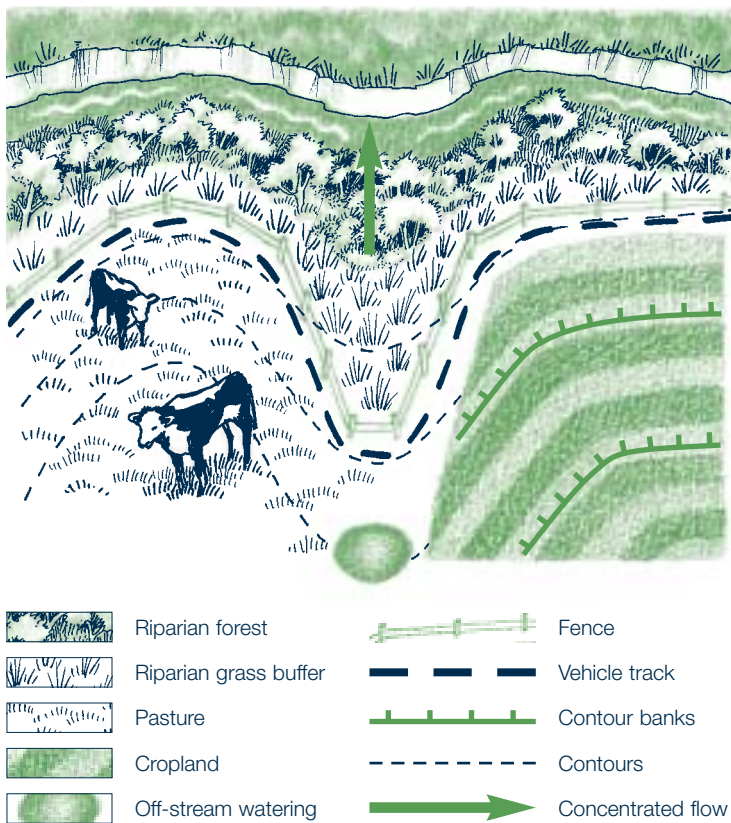


Figure 14: Comparison of poorly managed and well managed stock access to riparian areas.

Poorly managed

A degraded catchment and riparian land. Significant sediment and nutrient is derived from degraded pasture, poor crop management, unlimited stock access and gully erosion. Illustrations Carolyn Brooks.



Well managed

A combination of good on-farm management and good riparian land. Riparian forest provides ecological benefits and absorbs nutrients, variable width grass buffers trap sediment and stock access is controlled.

Self-assessment

Cotton growers can monitor the health of their riparian lands by ensuring that their farm plan includes measures to control stock access. Regular assessment of the riparian lands on-farm will enable cotton growers to time stock grazing so that the minimum damage is done yet productivity outcomes are still gained.

Collaborating to reduce stock access and protect riparian areas

'The Island', Wee Waa

By Annie Spora and Elizabeth Apuli

Forty kilometres west of Wee Waa on the Namoi River, is an area known as 'The Island'. The Duncan Creek branches off the Namoi and rejoins several kilometres later, forming a land structure of around 1200 acres. Until seven years ago, stock grazed this block, however, local landowners realising the damage that this practice was having on the area decided to make some changes.

Five landholders — Allan Radford, Jeff Carolon, Tim Grellman, Warren Hamilton and Gavin Opperman, whose properties border or include the area, collaborated with Landcare Australia to fence off the riparian zone in an attempt to prevent further damage and regenerate vegetation. A four-strand barbed wire fence was erected along both sides of the river and the creek to prevent stock from accessing the area. Landcare Australia sponsored the project by providing the funding and all the fencing materials. The initial labour was provided by a group of volunteers, with the landholders agreeing to maintain parts of the fence for the long-term. The project took three years to complete and resulted in 20 kilometres of fencing. Native tree species were planted in degraded areas and included Melaleucas, Eucalypts, Acacias and Casuarinas.

A final word...

"The fencing has been very effective at keeping the stock off the area and despite unfavourable weather conditions, vegetative regrowth can already be seen along the banks where it was thought to be permanently lost." John and Jenny Grellman



Photos Annie Spora.



Managing cattle, cotton and protecting waterways

Darryl Brooks — ‘Elengerah’, Warren

By Penny Van Dongen

Darryl Brooks is assistant manager of Elengerah, a property that is part of the Twynam Pastoral Company. He runs cattle in conjunction with his cotton enterprise, with stock grazing the blocks fronting the river. However, the damage being done by the stock led Darryl to start fencing off his riparian areas in an effort to protect the riverbank. So far, five kilometres of river frontage have been fenced, and Darryl plans to do two more paddocks in the future that will see 13 kilometres of the river protected. Landcare has provided the fencing materials through a native vegetation fencing project.

Darryl has used a permanent electric fence with two single wires, as he believes this will withstand flooding and minimise damage; it was also cheap to install and will be easy to replace if there is any flood damage. The electric fence is powered by a solar unit. It keeps the cattle out of the riparian areas, and prevents them crossing the river at low flow to the neighbouring property. Darryl uses a submersible pump with mains power to provide water from the river to troughs. All the riparian paddocks where there is significant risk of high flood flows will be taken out of the cropping program and sown to pasture and lucerne.



Stock fenced out of riparian areas and Darryl showing the solar unit and submersible pump used to water cattle. Photos Penny Van Dongen.

Preventing stock losses and soil erosion

Vic Melbourne — ‘Yarrall’, Phil Norrie — ‘Mollee’

By Guy Roth

Cotton growers and graziers Vic Melbourne and Phil Norrie manage their enterprises between Narrabri and Wee Waa. Between them they have fenced off 18 kilometres of the Namoi River from stock. They originally set out to prevent stock crossing the river at low flow and wandering on to neighbouring properties, but it didn't take them long to work out that the riparian vegetation improved significantly following the fencing. The country is flood prone, which is why good riparian vegetation coverage is essential to prevent soil erosion.

Vic and Phil generally use a two- or three-barb wire fence which is cheap to install and can be repaired easily if there is any flood damage. Stock get their water from watering points which in some cases are part of the irrigation system. Some supplementary grazing is possible in the riparian area so long as ground cover is maintained and the young trees are big enough.



Vic Melbourne looking at the fences he has built to prevent stock losses in the river. Photos Guy Roth.

