

# Turf farms on floodplains

What you can do to minimise flood damage





Most turf farms in NSW are found on floodplains, where flooding is an ever-present hazard. Flooding can have major impacts on turf farmers, potentially damaging or destroying equipment and crops.

A recent study by UNSW for Turf NSW (*WRL TR2023/30 - Flood resilience for Turf Farms*), explored the many ways floods can impact farmers and what they can do to minimise the impacts. This included interviews with farmers, a state-wide survey and detailed case studies.

This study showed there are two primary ways in which turf farmers can reduce the impact of flooding:

1.

### Understand your drainage

Ensure that your drains are in good condition and are able to drain flood waters once the flood recedes. Slow drainage of floodwaters can damage crops, worsen sedimentation, and keep you off your fields for longer.

2.

### Be prepared

Make a plan for how your farm will respond to a flood, and make sure everyone knows their role in the response.



## Understand your drainage

Plants, including turf, generally begin to decay when they are underwater or waterlogged. The water temperature, sedimentation, turf species and length of flooding all impacting how well turf survives a flood. Prolonged flooding also prevents you from getting back out on your fields for longer, meaning more lost productivity. While you can't control the length of a flood, maintaining your drains will help get you back on your property as soon as possible.

Flooding is typically caused by river or creek levels rising up and overtopping their banks following rainfall in the catchment. While the river levels remain high, the river acts like a 'road block' on your drainage. There is little that you can do to assist drainage until the river levels start to fall.

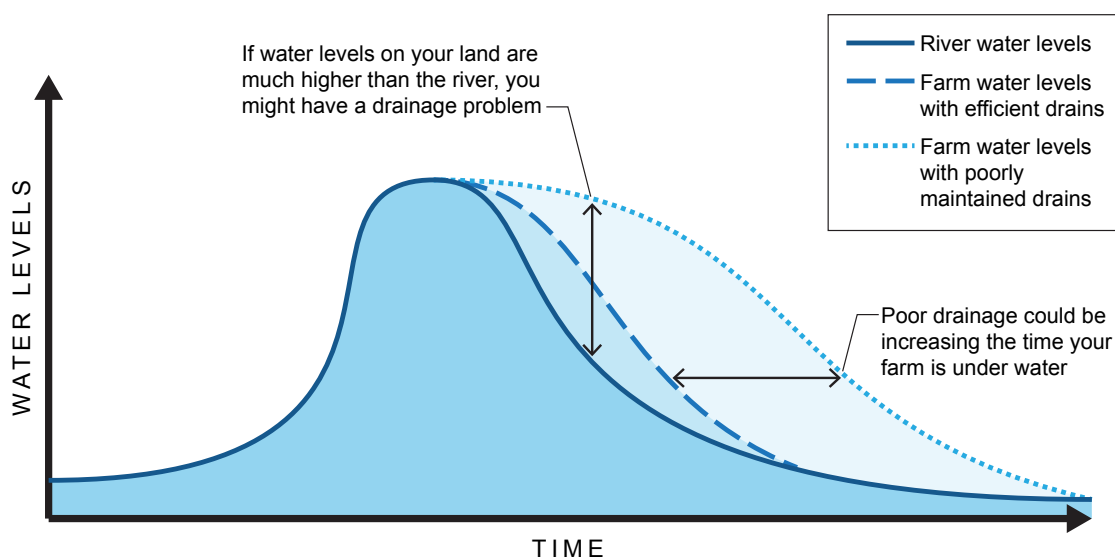


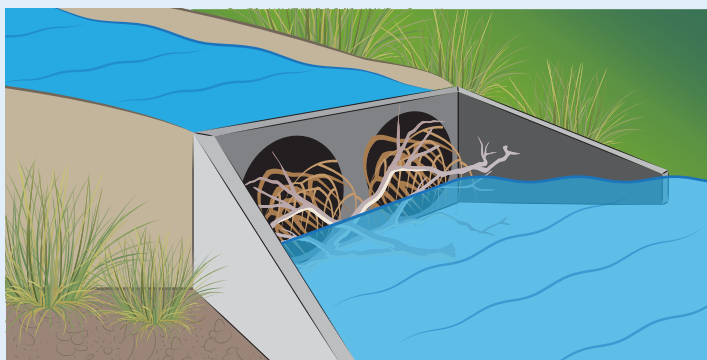
Figure 1: Conceptual water levels on farms and in the river during a flood

Once the river level starts to fall, your fields will also start to drain. However, the drainage system can still act as a “speed limit” on drainage. In reality, water levels on your land will go down a little slower than the river. Blockages, low capacity, and poor condition drains can make your land drain much slower, causing longer localised flooding. If the water levels remain high on your land for long after the river falls, you might have a drainage problem.

The whole drainage path from your farm to the river can affect your drainage times, not just the drains on your property. If there is a blockage or low capacity section further downstream, then all the water draining off your fields will still have to pass through that section, causing longer flooding. This means that you need to look at the whole path from your farm to the river, and may need to work with the local council or your neighbours to improve your drainage.

## Blockages

Blockages are the easiest problem to spot and fix. Water levels will be higher upstream of the blockage and lower downstream of it. If you see a step change in water levels like this, your drains may have a blockage. Examples include blocked pipes or culverts, piles of debris in drains, and damaged floodgates that don't open properly.



## Low capacity

Drainage capacity is how much water can be transported through a drainage system. If a drain has a lower capacity than needed, receding floodwaters will be slowed down and remain on your land for longer. Low capacity drains can be harder to spot and also harder to fix. Drain capacity depends on the size of the drain, the slope of the drain, and the friction or roughness of the drain's surface. Wider and steeper drains will have a higher capacity, and rougher drains will have a lower capacity. Pipes or culverts can also cause capacity issues, acting as chokepoints in your drains. Their capacity also depends on size, slope and roughness.

Improving pipe or culvert capacity is often cheaper and easier than improving drain capacity. Swapping out an undersized pipe is a lot quicker than changing the size and shape of an entire drain, which can be expensive and impractical. Changing drain slope can also be impractical, depending on the relative levels of the land and the river. There's also limited benefit from going deeper than the tide or normal river levels. Consider talking to a drainage expert if water is staying on your land for days after the river has gone down.

## Vegetation in drains

The vegetation growing in drains can slow down the flow of water, meaning that water stays on your fields for longer. This is because vegetation can add more friction to slow down water. However, keeping some vegetation (e.g. short grass cover) can also help protect the banks of your drain from erosion or slumping. Maintaining your drains in good condition by keeping vegetation short can improve your drainage time and also protect your drains from erosion. Examples of different drains and their drainage times are given in Table 1, however drainage time also depends on size and slope. A large drain with lots of vegetation might still drain faster than a small drain with little vegetation.

**Table 1: Drain condition examples**

**Bare earth drain**



**Drainage time:**  
Very fast



**Erosion vulnerability:**  
High

**Eroded bare earth drain**



**Drainage time:**  
Fast



**Erosion vulnerability:**  
Very high

**Short grass with a few weeds**



**Drainage time:**  
Moderately fast



**Erosion vulnerability:**  
Low

**Winding natural river drain with some weeds and brush**



**Drainage time:**  
Moderate



**Erosion vulnerability:**  
Low

**Dense reeds, as tall as the drain**



**Drainage time:**  
Slow



**Erosion vulnerability:**  
Low

**Dense brush, woody trees** (This drain is in poor condition and might be blocked by trees and woody debris)



**Drainage time:**  
Very slow



**Erosion vulnerability:**  
Very low



# Be prepared

Floods are emergency situations. During floods, your priority should be the safety of yourself and the people around you. Your life is more important than a piece of farm equipment. Never enter floodwaters. Never drive through floodwaters.

During a flood is not the time to start thinking about how to manage your farm. Being prepared before a flood occur will help reduce the damage to your farm without adding risk during an emergency event. Contact your local council to get information on flooding in your area, and check out [TurfNSW's video resources](#).



For more information on preparing for floods, read the [NSW Local Land Service Farm Flood Readiness Kit](#).

