

# KEEP OUR WATERWAYS CLEAN (on the land)

## LOVE IT OR LOSE IT

**Rural runoff is essentially stormwater that moves across our landscape through productive fields and natural areas. It is any runoff that doesn't occur in an urban landscape.**

Rainfall in rural areas provides the baseflow for our creeks and rivers. It moves more slowly in rural areas, watering plants and providing soil moisture as it does so. It infiltrates the soil profile, refreshing groundwater sources, and finally runs off directly into rivers and creeks.

However, where runoff occurs in areas which are not vegetated or where there are poor land management practices, this can lead to significant river health issues. Soil, litter, nutrients (such as poo and fertiliser) and other pollutants can be washed into our waterways. A further issue is the loss of productive land both from erosion of topsoil, and from riverbanks collapsing into the river itself and contributing to the sediment load.

Rivers are also effective transport mechanisms for weed seeds, pesticides and other pollution. Related issues include those known as 'blackwater' events, potential for water pollution as a result of poorly managed floodplain drainage, and the historic widespread removal of riverbank vegetation.

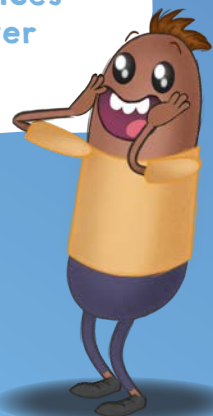
These issues are briefly explained in this factsheet. It is important to appreciate that river health is a complicated relationship between healthy land management practices and healthy river management.

## Rivers, waterways, creeks, drainage lines - which is it?

The Love it or Lose it project talks about protecting the health of our waterways. 'Waterways' describes creeks, rivers, drainage line, floodplain, wetland, man-made drain, or urban infrastructure (like gutters and stormwater drains).

This factsheet uses creeks, rivers and waterways interchangeably in discussing catchment management issues.

**"...river health is a complicated relationship between good land management practices supporting a healthy river environment."**





## (A) Native riverbank vegetation

Native riverbank vegetation (also known as riparian vegetation) has many benefits to the river, and to the animals and insects that live within it. It shades the waterways providing a moderating influence on temperature. It provides rest areas for fish, and places for macroinvertebrates (aquatic insects) to live. Macroinvertebrates are at the bottom of the food chain within rivers and creeks, and a healthy population is the basis for a healthy fish population.

Native vegetation on riverbanks also helps to hold those riverbanks together and slow water moving into waterways. Sediment moving into the water column is also filtered by the vegetation and soil profile, reducing turbidity in the river (which is also good for fish).

Weeds can also be more easily controlled where there is native vegetation (although riparian vegetation will always need to be monitored for weeds as the river is such an effective transporter of seed).

## (B) Fencing of riverbanks

Fencing off of riverbanks from stock is important to retain the structural integrity of the riverbank. Whilst off-stream water sources are then needed, removing stock allows the natural soil profile to recover and hopefully regrow some native riverbank vegetation. This has all the benefits discussed above, as well as retaining more productive land for use in the future.

It also means that cows and other stock cannot poo directly into the river, removing one source of nutrients.

The benefits of fencing off riverbanks accrue to both landholders and the river. Land is a finite resource, so its worth retaining in good condition.



**“The benefits of fencing off riverbanks accrue to both landholders and the river.”**





## What's in that rural runoff?

Rainfall is very effective at picking up soil particles and anything that may be attached to them, such as fertilisers and pesticide residues. Best practice guidelines should ALWAYS be followed when using pesticides and/or herbicides or any other chemicals. Failure to do this can cause fishkills, poor water quality and if you are caught, possibly a hefty fine or prosecution.

Fertilisers should also be applied using best practice guidelines. They are designed to provide nutrients to grow plants and are best utilised for that purpose. Using too much fertiliser wastes money, and the extra nutrients are then exported to local creeks and rivers. This helps to grow algae in water and weeds on the riverbank, neither of which are helpful for river health and significantly compromise fish habitat. Soil sampling prior to applying fertiliser will help you to understand the optimal application rates, and probably also save you some money.

Finally, the movement of soil through erosion into the river system causes its own problems. Sediment in the water column reduces fish and macroinvertebrate habitat. Sediment will eventually drop out when water slows down enough, but other changes within the catchment mean that water moves more quickly than in the past, and so retains the sediment within the water column for longer. Sediment has eroded from productive lands reduces the future productivity of that land.

**“Best practice guidelines should always be followed when using pesticides and/or herbicides or any other chemicals.”**

## Floodplain Drains

Drains on floodplains can be well managed to provide some good fish habitat outcomes as well as allowing flood waters to move off production areas more quickly. Optimal drainage management usually means that drains are dry when there is no rainfall and are shallow enough that they do not intersect the groundwater table. Native vegetation within the drains is also desirable as this is more tolerant of damp or wet conditions than exotic (non-native) grasses. Where exotic grasses are inundated, over time they will die and remove oxygen from the water as they do so (see Blackwater over page).

## Clearing

Clearing native vegetation usually requires approval through a NSW Government process. However, even if you have approval, you need to manage the effects of clearing so that sediment does not enter waterways. In 2016, a landholder caused sediment to enter waterways by not managing the impacts of clearing and as a result has had to undertake remediation works. To date, these have cost in excess of \$120 000.



## Intensive Agricultural Industries

### Dairies, Meatworks, Nurseries, Piggeries, etc

Intensive agricultural industries must be licensed by the Environment Protection Authority as a polluter, and should have a range of strategies in place to be progressively reducing any discharge they are making to waterways.

This is not to say that these industries do not have an impact on the environment, especially receiving waters. However, this impact is usually known and managed to be as minimal as possible.

## On-site Sewage Management

Where homes are not able to connect to the reticulated sewage, usually in more rural areas, they must utilise an on-site sewage management system. Poorly managed or failing systems can have significant local impacts, particularly where they are close to waterways.

On-site sewage management systems need to be appropriately sized and designed to manage the number of people and the manner in which the property is used.

## Blackwater

Blackwater is a significant source of pollution in the Richmond River, especially during warm weather flood events. **It is caused by water flooding low lying areas which are planted out to grass and other species which are not tolerant of being inundated.** Over a number of days, the inundation causes grasses to die off, removing oxygen from the floodwaters as it does so. This process is accelerated in warmer weather.

As floodwaters recede, this water which is low in dissolved oxygen drains also and causes what is known as a 'blackwater' event, usually 5-7 days after the flood has peaked. Blackwater causes widespread fishkills.

It is important to note that floodwaters usually lie in areas that are former wetlands, which would naturally have been regularly inundated. There are ways to manage the pasture to significantly reduce the potential for blackwater to develop, and these include wet pasture grazing and encouraging native grasses for stock.



## More information

For more information please contact your local council.

The Love it or Lose it campaign is a collaboration between Ballina Shire Council, Lismore City Council, Kyogle Council, Rous County Council, Richmond Valley Council and North Coast Local Land Services.



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