

# Critical source areas



A critical source area is a landscape feature like a gully, swale or a depression that accumulates runoff from adjacent flats and slopes, and delivers it to surface waterways such as rivers and lakes, artificial waterways and field tiles.



► A typical low gradient critical source area under good management.

Almost all farms have critical source areas, particularly those lying in hill, rolling and undulating country. While there may be a dozen or more critical source areas on a farm, managing the most significant ones can reduce the greatest losses for farmers.

## Definitions

**Swale:** a low-lying part of a paddock that can be moist or marshy.

**Gully:** a small but deep trench, typically on a hillside. It can be a sign of serious erosion of soil by running water.

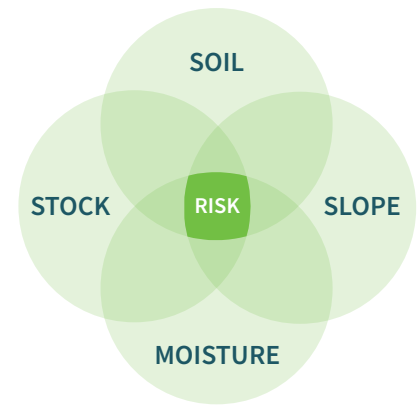
## Why are these areas a potential problem?

The problem with critical source areas is the concentrated runoff transports sediment, nutrients and bacteria.

This can have negative impacts on waterways and farm productivity.

A critical source area can be a problem when:

- cultivation, intensive winter crop grazing or heavy grazing is carried out within or close to a critical source area;
- the critical source area is significantly de-vegetated by stock, cultivation or roading;
- seasonal wet periods like spring and winter, or heavy rain occurs.



## Good Management Practices

Critical source area management is all about planning and preparation to ensure these areas are protected at the time of highest risk. Tips for good management:

- Graze the areas lightly during the summer to ensure they have adequate grass thickness in winter (a sward of 10–15cm), and can capture overland flow from adjacent areas.
- Do not cultivate the lowest parts.
- Construct silt traps or ponds to capture sediment, nutrients and bacteria.
- Fence out stock and plant trees, or allow natural native bush regeneration if an area is steep and eroded.
- Strategically graze the area during intensive winter grazing, by starting at the top of slopes, back fencing and leaving all critical source areas to last if in crop. If in grass, leave until growth resumes.
- Keep plough lines back a minimum of three metres and up to 15 metres on slopes greater than seven degrees when cultivating.
- Adopt minimum tillage practices and plough across slopes.

Consider your farm and manage critical source areas effectively:

1. If the critical source area is steep, extensive or eroded, manage the whole area.
2. If the critical source area is moderately steep or has a low gradient, manage the bottom half.
3. If the critical source area is wide and has a low gradient, manage the final part before overland flow can enter a waterway.

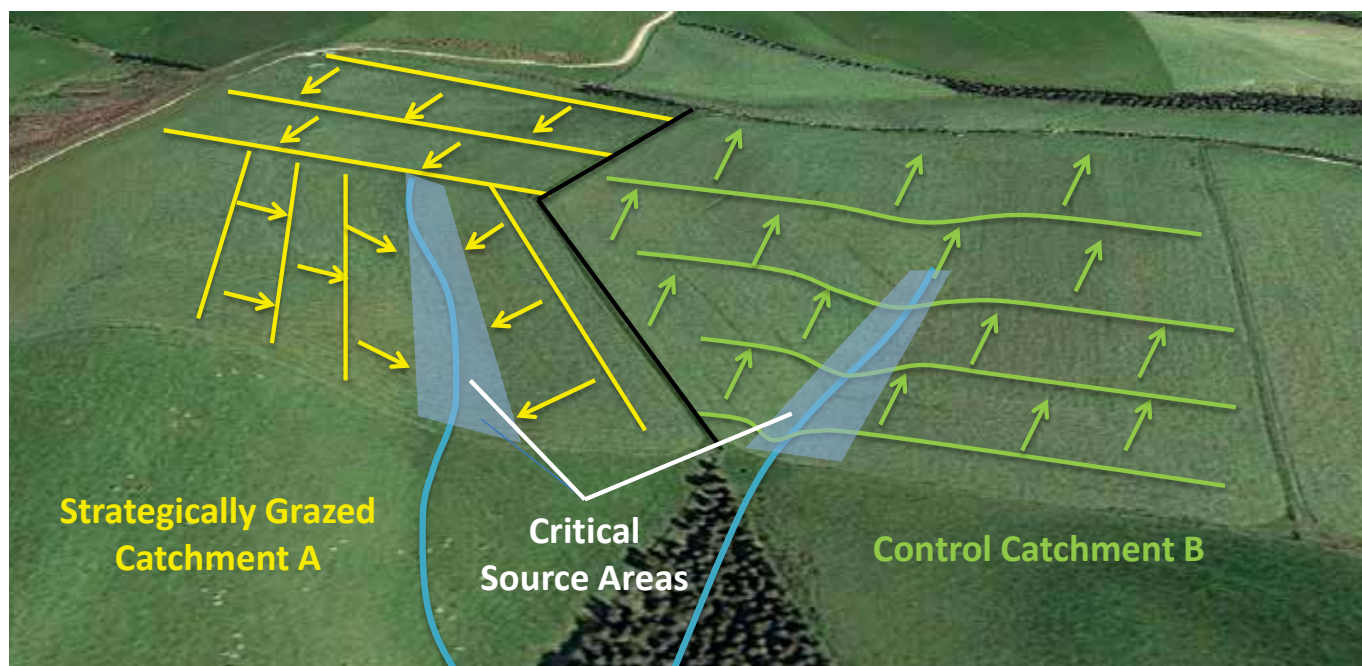
## Strategic grazing benefits

In 2012, AgResearch scientists studied the difference that management practices can have on sediment and nutrient losses through surface water runoff. The trial found that strategic grazing and careful

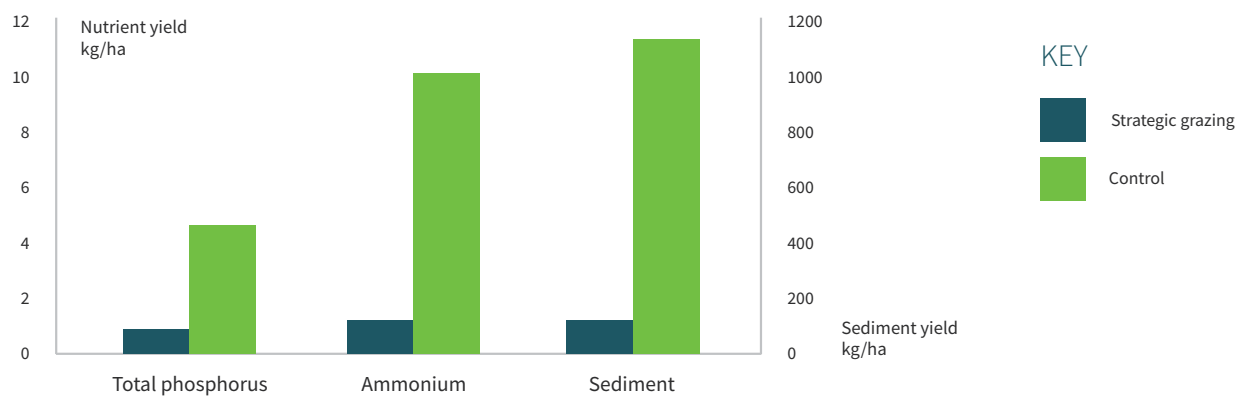
management of critical source areas greatly reduced water, sediment and nutrient losses. Conventional strip grazing (Control Catchment B) lost 1140 kg/ha of sediment. Grazing the least risky areas

first (Catchment A) and moving downhill leaving the critical source area to last resulted in the loss of only 130kg/ha.

## Grazing Management Strategy



## Nutrient and sediment yields 2012



## Further assistance

Every farm is different, so having the expert advice of a land sustainability officer is recommended.

To arrange a free visit please contact Environment Southland's land sustainability team on (03) 211 5115 or 0800 76 88 45.