

Gippsland Dairy Riparian Project

Environmental Monitoring

Principal Aims:

- To identify and measure the impacts of farm activities on riparian zone and in-stream condition
- To assess the impacts of improved riparian zone management on riparian zone and in-stream condition

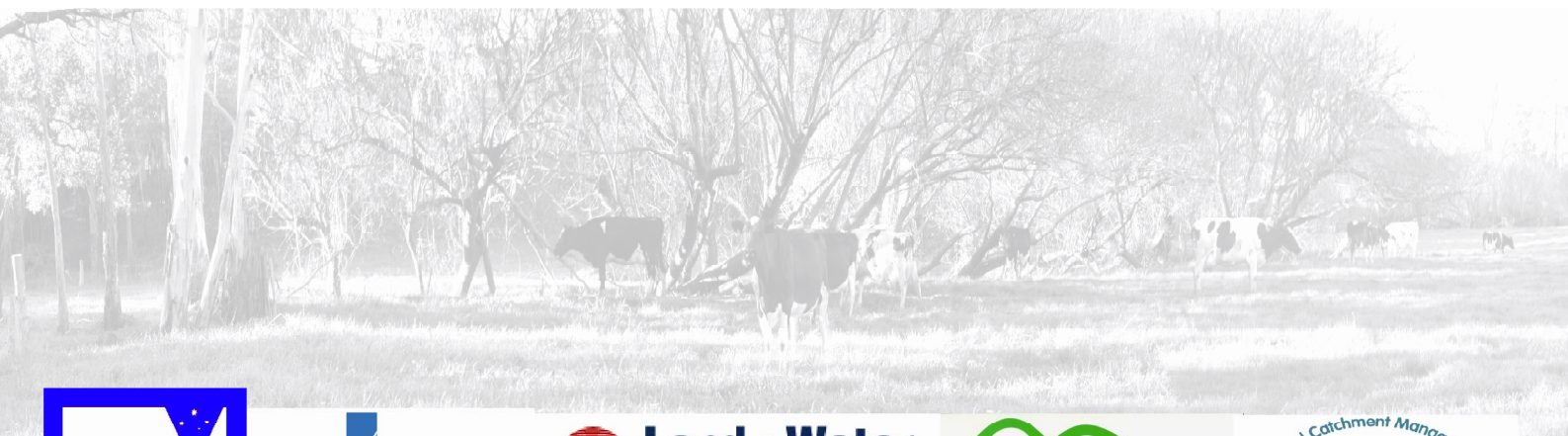
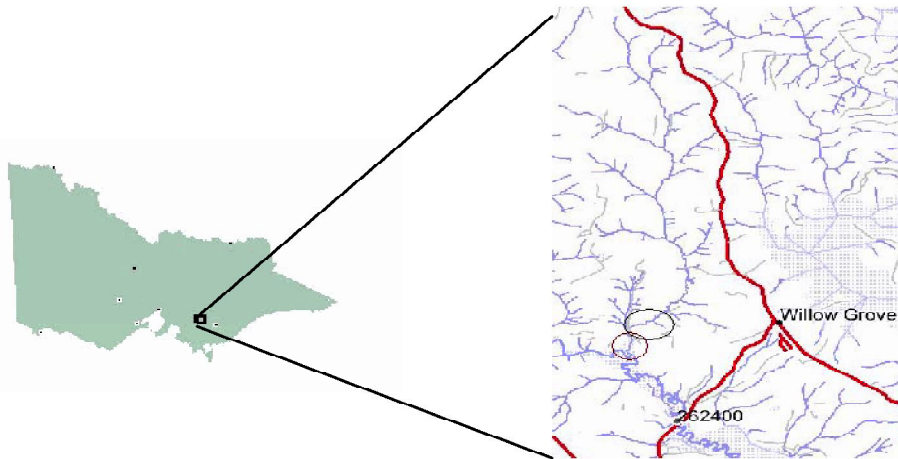
The basis of this project will be the implementation of improved riverine and riparian management on 2 west Gippsland dairy farms with associated scientific monitoring of environmental parameters. Initial baseline scientific monitoring data will be collected at the project site, after which improved riparian management will be implemented. Monitoring will then be continued for the duration of the project.

Objectives:

- To monitor soil and water quality and ecological condition along the riparian zone and within the creek traversing 2 dairy farms in west Gippsland, Victoria
- To use these results to describe potential contributions to riparian and in-stream degradation at this property.
- To identify and recommend the implementation of appropriate management action that can be demonstrated at this site.
- To continue monitoring to assess the effectiveness of the improved riparian management practice(s) on environmental quality.

Project Location:

The project dairy farms occur in the high rainfall (>750mm pa) Gippsland Plains bioregion of Victoria. Research activities occur along a 1.7km reach of a 3rd order creek as it traverses the 2 dairy farms in west Gippsland. The headwater of the creek is approximately 5.5km away with the catchment dominated by grazing enterprises, largely dairy but also some beef.



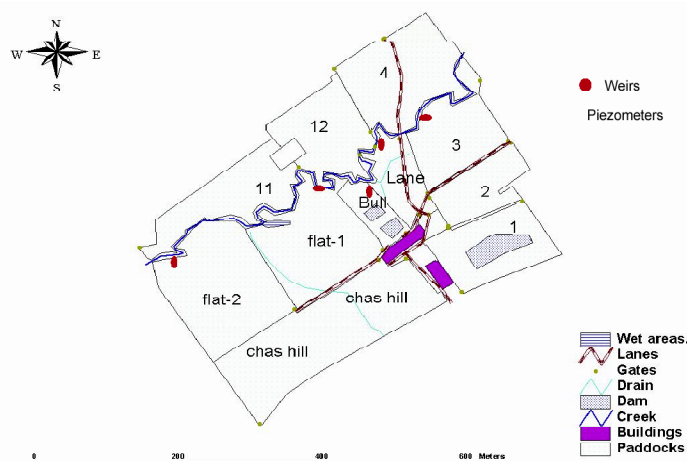
Project Site:

The project site farms are typical commercial dryland dairy farms in the region, with milk production based on rotational grazing of ryegrass/white clover pastures. Farm management activities on these farms that are likely to impact on the riparian zone and water quality are

- the location of laneways and tracks across the creek,
- possible losses from the dairy sheds and stand-off areas into the creek,
- potential losses from the effluent ponds
- the impacts (if any), of effluent irrigation of paddocks located in the riparian zone

In addition stock have unrestricted access to the creek, and the vegetation along the creek consists largely of exotic species (willows and hawthorns).

Research in the first year will attempt to identify if any of the farm management impacts occur and to monitor their occurrence. Willows (*Salix* sp.) and hawthorns (*Crataegus Monogyna*) will be removed at the site and the creek fenced and replanted with indigenous species in autumn 2004. Monitoring activities will continue at the research site and assessments made of the impact of these changes on riparian zone and in-stream condition.



Research Activities:

1. A suite of riparian and in-stream water, soil and habitat/ecological measurements are being made initially to identify possible farm management impacts on the riparian zone and in-stream condition.
2. Based on the data and information generated in the initial monitoring phase, a range of recommendations for improved riparian zone management will be developed at a Scientist/Technical Specialist workshop. These will then be discussed with the project site farmers.
3. Riparian and in-stream water, soil and habitat/ecological measurements will be made after the willows and hawthorns at the site are removed, the creek fenced and replanted with indigenous species.

Initial activities:

Activity	
- Site mapped	- along creek and surrounding paddocks on both farms
- Weirs installed	- locations in creek linked to possible nutrient and sediment inputs described above
- Weirs instrumented	- capacitance probes, temperature probes
- Rising stage samplers	- installed at weir locations
- Piezometers installed	- riparian zone and surrounding paddocks

Sample activities:

Samples	Measurements
- In-stream water	Nutrients (TP, TN, pH, EC), sediment (TS), microbes (<i>E.coli</i> , faecal coliforms), temperature, Waterwatch, water height (flow)
- In-stream biodiversity	In-stream macroinvertebrates
- In-stream habitat	In-stream metabolism
- Riparian water	Nutrients (TP, TN, NO ₃ , pH, EC, minerals), groundwater height
- Riparian soil	Nutrients (Olsen P, Colwell K, pH, EC)
- Riparian biodiversity	Small mammals, birds, frogs, vegetation,
- Climate	Rainfall intensity

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