

Dairy Effluent Recycling at Clover Hill Dairies



Location: Jamberoo, NSW

NRM Region: Southern Rivers Catchment Management Authority

Industry: Dairy farm – 200 milking cows

Issues:

- Water and nutrient run off into Fountaindale Creek
- Milking three times a day
- Limited vegetation buffers on tributaries

Landholder Vision:

“Balancing productivity and treading lightly at the interface of a rainforest and a rural residential subdivision”.

Funding:

- Australian Government Community Water Grants is part of the \$2 billion Australian Government Water Fund..



Australian Government Water Fund
Community Water Grants

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Small Farms and Rural Living Network

Southern Councils Group

Background

Clover Hill Dairies is situated on the northeast face of Saddleback Mountain at Jamberoo NSW, and is located at the headwater of three major tributaries (Carwa, Fountaindale & McFaul's Creek) of the Minnamurra River, a sensitive wetland and mangrove environment. Rainfall in this vicinity is up to 2,000mm per annum and it is not unusual for up to 10% of this rain to fall within a 24-hour period.

Clover Hill Dairies is 300 acres in total, of which 100 acres of this area is effective farming land. The remaining 200 acres contains large areas of important remnant rainforest communities.

Existing problem

Clover Hill Dairies currently runs 200 cows and milks three times a day, using up to 27,000 litres of water daily for operational needs. Dairy runoff was previously washed into a solids trap before filtering across a calf paddock, which created weed management, nutrient leaching and animal health issues. The leaching of nutrients may have contributed to an increase nutrient loading of the Minnamurra estuary / mangrove systems and water quality issues for landholders downstream who use this water for livestock and domestic use.

Project solution

With design assistance from the Southern Rivers Catchment Management Authority (CMA) Dairy Effluent Consultant, an upgrade of the existing system was completed which complies with NSW Guidelines for Effluent Management (DPI). These guidelines included:

- Building an adequate collection area.
- Dispersal system to spread nutrients over a sufficiently large area within minimum buffers.
- Wet weather storage.

Actions undertaken

- A 91,000 litre concrete tank was installed to collect effluent and wash down water from the dairy.
- Mono pump and nelson gun irrigator was installed to spread effluent over pastures reducing irrigation water requirements and provide nutrients for pasture growth.
- Riparian vegetation was fenced and enhanced through revegetation, acting as a nutrient buffer before entering local waterways.

Effluent management plan

Clover Hill Dairies has a Dairy Effluent Plan which outlines a number of key management actions to ensure on going system maintenance occurs, animal health issues are addressed and soil nutrient levels are monitored. Clover Hill Dairies will be expected to:

- *Maintain* - A “best practice” dairy effluent system. Reduce nutrient loading, improved water quality of local waterways and monitored this by water testing local tributaries.
- *Monitor* - Over a number of years soil nutrients. Initial soil nutrient sampling and mapping has



View from Clover Hill Dairies looking over the old solids trap



Effluent tank installed below the dairy



Irrigating effluent water over pastures



been completed through the South Coast and Highlands Dairy Industry Group project. The Phosphorus (P) levels in the soil profile (in the reuse area) will become elevated and reduced fertiliser application of (P) will be required. This will be monitored by soil testing every two years.

- *Enhance* - Local rainforest riparian buffer zones, linking Saddleback Mountain to Minnamurra River swamplands.
- *Showcase* - Provide a working example to regional dairy farmers of what can be achieved sustainably on farm using a “best practice” recycled effluent system.

Clover Hill Dairies use an average of 0.5 mega litres per year (50% is now recycled) to produce over 2,500,000 litres of milk, from 200 cows compared with the industry average of 4 mega litres per hectare.

Other Projects at Clover Hill Dairies

The farm team who manage Clover Hill Dairies have a very strong commitment to sustainable and profitable dairy farming and have undertaken a number of on ground projects to ensure the environmental impact is minimal to the wider community and catchment.

Southern Rivers CMA and South Coast and Highlands DIG Project

In 2006, Southern Rivers CMA and South Coast and Highlands DIG provided funding for Clover Hill Dairies to create a 150m shelterbelt on the western side of the dairy. The shelterbelt will provide shade for the dairy herd, reduce heat stress and create a barrier from severe westerly winds for a calving paddock. Furthermore the shelterbelt was positioned to provide a link between remnant vegetation and the farms steep riparian zone.



Shelterbelt on western side of calving paddock and dairy.

In 2007, the same program provided further funding to extend the original shelterbelt by 300m, constructed one concrete causeway crossing and installed 2 off stream watering troughs to further enhance the original project.

Envirofund 2007 – Installing creek crossings and off-stream watering

The aim of the project was to provide alternate water sources and access routes for dairy cattle, farm machinery and fertiliser trucks on farm to protect creeks and riparian vegetation. The project completed a six-year farm plan that aimed to eliminate casual stock access from all farm watercourses, minimise essential stream crossings for stock, machinery and vehicles & provide off stream stock watering points and shade. This helped reduce nutrients, sediment and faecal coliforms entering Fountaindale Creek and improve downstream water quality.



One of five causeways installed.

To achieve this, Clover Hill Dairies installed 5 concrete causeways over 3 major tributaries and installed 14 off stream watering troughs. Waterways were fenced (1.6km of 2-strand electric fencing) to prevent cattle gaining access to the creek, with planting occurring at some sites (200 tubestock), and natural regeneration of Illawarra riparian rainforest to occur in other areas.

Fountaindale Creek Catchment Focus

Fountaindale Creek has been a major focus for the Small Farms Network over the past four years. The project aims to engage landholders in a variety of projects to improve water quality, remove riparian weeds such as Coral Tree and Privet, and create a corridor of native vegetation from Saddleback Mountain to the Minnamurra River. In 2005, the Small Farms Network received NSW Environmental Trust funding to remove Coral Trees, undertake revegetation and complete structural works on Fountaindale Creek. The project is on going and secondary weed maintenance is a major issue facing the revegetation of some areas. The project will continue to work with landholders and establish a diversity of riparian vegetation over the next 5 years, with the regrowth of Coral Trees to be monitored and livestock access to the creek to be further reduced.



3-yr-old revegetation above 1 of 4 rock structures installed on Fountaindale Creek

More Details

For more details about any of the highlighted projects, contact Andrew Britton, Small Farms Coordinator on (02) 4232 3200 or email abritton@southerncouncils.nsw.gov.au