

**“Adequate clean water will  
be the biggest issue facing  
the planet this century”**

Dr Clive Howard-Williams  
Chief Scientist – Freshwater

## NIWA's National Centre for Water Resources – desired outcome

*New Zealand's freshwater resources are wisely allocated and have measurably improved water quality and ecosystem health, with sustainable management decisions made on the basis of sound knowledge of the resource and robust predictive capability*

# Collaborative approach pays dividends on dairy farms

A collaborative approach to introducing practical measures on dairy farms to protect waterways is showing dramatic improvements in water quality.

The Best Practice Dairying Catchments for Sustainable Growth project has brought together farmers, the dairy industry, and regional and central government in five key regions to determine how dairy farming affects waterways and to identify solutions.

NIWA has a pivotal role in the project, monitoring the effect of changes in farming methods on water quality and quantity at the Toenepi Stream (Waikato), Waikakahi Stream (Canterbury), Waiokura Stream (Taranaki), Bog Burn (Southland), and Pigeon Creek (Inchbonnie, Westland).

Dr Bob Wilcock, Principal Scientist and Group Manager for Aquatic Chemistry, says on-farm best management practices, including better riparian management and fewer dairy shed effluent discharges, are contributing to marked improvements in water clarity, reduced sediment, and lower concentrations of nitrogen, phosphorus, and faecal bacteria.

Phosphorus in the Waiokura Stream has declined by 25–40% and sediment levels have dropped, partly as a result of increased riparian protection for up to 52% of the stream's total length.

A reduction in the discharge of dairy shed effluent into ponds and conversion to land irrigation has led to a 25% decline in the application of phosphorus fertiliser in the catchment area, while concentrations of the faecal bacterium, *E. coli*, have also reduced significantly.

Similarly, the Toenepi Stream is showing improvements. Water quality is better than it was 10–12 years ago, with improved clarity, lower concentrations of nitrogen and phosphorus, and higher oxygen levels. About half the farms in the catchment have changed in the last decade to land irrigation of dairy shed effluent.

Dr Wilcock says the collaborative approach to tackling stream degradation is working well and he has seen a greater willingness among farmers to adopt best management practices and the 'Dairying and Clean Streams Accord' where they see positive results.

(The Accord was agreed between the Fonterra Co-operative Group, the Minister for the Environment, the Minister of Agriculture, and regional councils in May 2003. It aims to promote sustainable dairy farming in New Zealand.)

"We come from different backgrounds but we're signing up to a common goal – finding ways to farm which are both environmentally sustainable and profitable," Dr Wilcock says.

DairyNZ Strategy and Investment Manager Bruce Thorrold agrees: "This study is providing our industry and farmers with long-term, quality data about our lowland streams, identifying issues in each catchment, and linking these back to on-farm management practices. We're encouraged to see the improvement in water quality being measured following changes in farm management."

### FUNDERS:

- Foundation for Research, Science and Technology
- MAF Sustainable Farming Fund

### COLLABORATORS:

- Fonterra
- Westland Milk Products
- DairyNZ (formerly Dexcel and Dairy Insight)
- AgResearch Ltd
- Environment Waikato
- Taranaki Regional Council
- West Coast Regional Council
- Environment Canterbury
- Environment Southland
- MAF Sustainable Farming Fund



*The benefits of improved farm practices take time but are clearly evident in these photographs of the same stretch of the Waikakahi Stream (Canterbury) taken eight years apart. Meanwhile, freshwater crayfish (koura) have returned to the Waiokura Stream (Taranaki) and the Toenepi Stream (Waikato).*