WORKSHOP REPORT: INTEGRATED RIPARIAN ENGINEERING

Chairperson: **Dr Kit Rutherford,** k.rutherford@niwa.cri.nz
Facilitator: **Don Ross,** don@landcare.org.nz

INTRODUCTION

An email workshop prior to the conference elicited three contributions, that were carried forward to the main conference. 16-20 people attended the three workshop sessions during the main conference: predominantly New Zealanders.

The objective of riparian engineering was agreed to be:

'…restoring or maintaining riparian areas to achieve multiple objectives notably: drainage & bank stability; buffering streams from diffuse-source pollution; maintaining & enhancing terrestrial & aquatic ecosystems; and maintaining & enhancing landscape and amenity values…'.

KEY ISSUES DISCUSSED

Riparian buffer zones (RBZ) were seen as having the potential to play a key role in sustainable development. Specifically, if RBZ on rural streams are effective, they may enable an otherwise unsustainable landuse to be carried out in a sustainable manner (e.g., intensive livestock grazing that does not adversely affect stream water quality, aquatic & terrestrial diversity).

However, riparian zones are complex and not completely understood. Currently the local landowners, often with very little technical or financial help, do most of the riparian restoration.

At present unrealistic goals are often set by planners and the local landowner. This is not surprising because RBZ are complex and are often managed for multiple (sometimes conflicting) goals. The ecological engineer has a key role to play in *setting realistic expectations* for riparian restoration. This includes quantifying: the likely effectiveness of RBZ, any 'down-side', on-going maintenance, cost/benefits, risks of failure etc. Thus the ecological engineer has a key role in providing *information* about how the RBZ operate and ensuring that this helps: (1) formulate policy (regional and national); (2) set realistic expectations within the community; and (3) design and maintain effective RBZ.

One question is whether riparian buffer zones need to be 'designed' or whether it is sufficient to implement whatever protection the local landowners can afford and feel comfortable about. The 'feel good' approach has several potential weaknesses. First, the community may have unrealistic expectations about what is achievable. Second, the

need for ongoing maintenance and monitoring may not be appreciated and costed. Third, there are examples of inappropriate plantings.

Landowners are divided about the need and effectiveness of RBZ. One impediment to 'education' is that benefits from RBZ accrue at the regional and national scales, while costs accrue to the individual landowner. Surprise was expressed by overseas delegates that over the last 10 years very little financial support has been made available by regional and central government for riparian restoration: most restoration has been done voluntarily with only small amounts of 'seed funding' (e.g., through the New Zealand Land Care Trust). It was noted that some Regional Councils are now budgeting for riparian restoration.

There is also a problem demonstrating to an individual landowner the benefits that will accrue as a result of restoring RBZ. The converse problem also arises: demonstrating to a regional planner the benefits of local restoration. Thus there is a need for methods to integrate the effects of small-scale riparian management up to the regional and national scale, and *vice versa*. Computer models have potential here but for use with landowners methods need to be simple and portable.

It was stressed that RBZ generally require ongoing maintenance in order to be effective (e.g., weed control and biomass harvesting to combat nutrient build up and leakage). It is not simply a matter of 'set and forget' but this is often not appreciated by land owners or planners.

Landowners often hold a store of useful information that could help design and operate RBZ but this is often poorly utilised. RBZ are rarely monitored to learn how effective they are and use this information to refine design and maintenance methods.

CONCLUSIONS

It was felt that the available 'tool kit' is incomplete and there is a need for improved:

1. Methods for cost-benefit analysis.
2. Methods for demonstrating to land owners the benefits that accrue from riparian zone management.
3. Methods that allow regional and national planners to assess the benefits of riparian zone management.
4. Utilisation of existing information .
5. Monitoring performance .
6. 'Indicators' for State of the Environment reporting.

The ecological engineer is seen as having a key role in;

7. Setting realistic expectations for riparian zone management.
8. Setting effective policy for riparian zone management.
9. Design and implementation of riparian buffer zones.