Flow

rivers GROUP

A joint technical interest group of IPENZ & Water NZ

Rivers Group Newsletter

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THE RIVERS GROUP SYMPOSIUM

Novotel Tainui, Hamilton, 27 September 2010

The Rivers Group hosted its first symposium at the Novotel Tainui in Hamilton on 27 September this year. The event was attended by almost 100 delegates from a wide range of walks of life. There were iwi and industry representatives, district and regional council and central government staff, consultants, university representatives and other interested people making up the mix.

In the following pages, a brief description is given of several sessions at the symposium. The Rivers Group extends a very big thank-you to all sponsors who made the event possible, to the presenters, and to all delegates for their attendance. ≈

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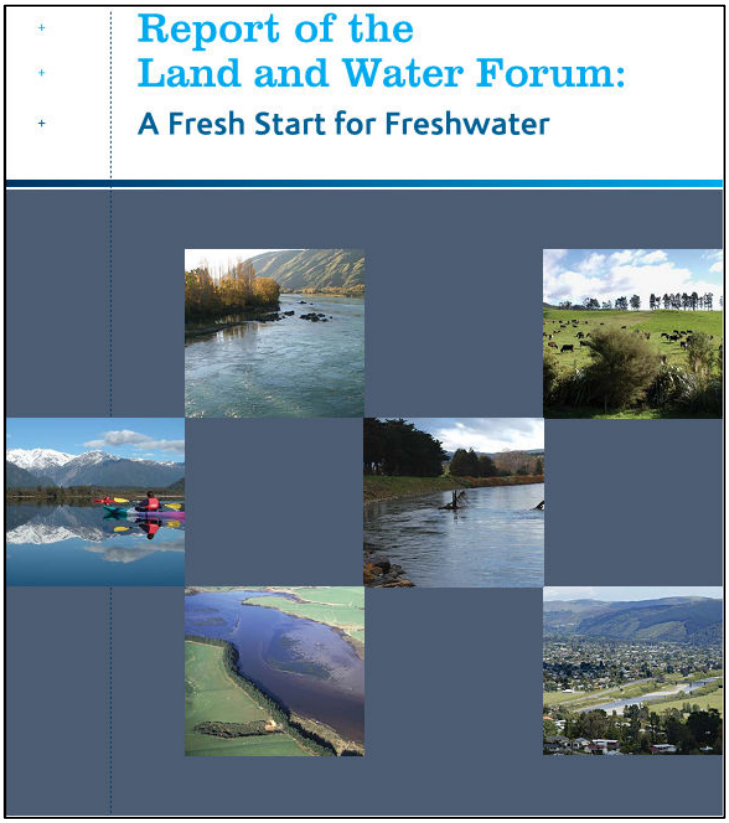
THE LAND AND WATER FORUM

Presentation by Alastair Bisley, Chair of the Land and Water Forum

The Land and Water Forum comprises a range of primary industry groups, environmental and recreational NGOs, iwi, and other organisations with an interest in freshwater and land management.

The Minister for the Environment and the Minister of Agriculture and Forestry asked the Land and Water Forum to advise on how water should be managed in New Zealand. The Forum was joined for that task by active observers from central and local government.



The Forum's tasks were to:

- conduct a stakeholder-led collaborative governance process to recommend reform of New Zealand's freshwater management;
- through a consensus process, identify shared outcomes and goals for freshwater and related land management;
- identify options to achieve these outcomes and goals; and
- produce a written report that recommends shared outcomes, goals and long-term strategies for freshwater in New Zealand.

The Forum's report "A Fresh Start for Freshwater" and a related media release are now available. A summary report consisting of the foreword, executive summary and the recommendations is also available (http://www.landandwater.org.nz/).

At the symposium we were privileged to have Alastair Bisley, Chair of the Land and Water Forum, attend and present some of the findings arising from the process. Alastair was also available to answer questions during the event. ≈

NATIONAL DIRECTIONS ON WATER REFORM

Presentation by Suzanne Doig, Ministry for the Environment

Suzanne Doig, from the Ministry for the Environment, gave Symposium delegates some insight into the directions currently being pursued in the water sector by Central Government. She elaborated on a "New Start for Freshwater", which involved Cabinet agreeing to several tasks including:

- A role for the Land and Water Forum;
- Ongoing discussions between iwi leaders and ministers; and
- Officials scoping policy options in the areas expected to be the main elements of the new direction.

This lead to a number of elements being established in 2009, which Suzanne summarised as an "Indicative Direction" . The principal actions included:

- More central government leadership and direction;
- Contribution of water infrastructure / storage;
- Filling technical / information / capability gaps;
- Limits shaping action on quality and quantity;
- Allocating water to ecological and public uses, then maximising the dollar value from remaining waters; and
- Supplementary measures for water quality and demand.

Of particular interest was that officials were being guided into scoping of issues and options at this stage, rather than developing Government positions. The initial focus was on setting and managing to limits while maximising the value of fresh water. There was an explicit brief to look beyond the RMA.

Suzanne made a final comment on the issue of Flood Risk Management. A Section 32 cost-benefit analysis found that development of a National Policy Statement (NPS) on Flood Risk Management was not the best tool to manage risk. Several reasons for this were given, including that this would have the greatest impact on new development and limited impact on risk to existing development; a small number of Councils would struggle to meet responsibilities; it would be costly for local councils to give effect to such a tool; and and there was an indication given that most councils are already achieving flood risk reduction for new development.

As a result, a NPS on Flood Risk Management is currently on hold, with the Minister currently awaiting advice from the Floods subcommittee of the Regional Affairs Committee of LGNZ. ≈

LAKE AND RIVER ENVIRONMENTAL INITIATIVES

Presentation by David Hamilton, University of Waikato

David Hamilton, Lakes Chair of the University of Waikato, entertained delegates with a very informative and graphic talk on environmental initiatives. He described current research at the University of Waikato to support restoration initiatives, gave an overview of water quality in the region (with a focus on the Waikato's peat lakes), described restoration of the Rotorua Lakes and ended by summarising current and future initiatives with respect to lake and river restoration from an ecological perspective.

Of concern is a likely "regime shift" currently being observed in water quality within the Waikato lakes, involving a marked change in several key water quality indicators that began several years ago, with likely causes being linked to catchment land use and the introduction of several pest species of fauna and flora. David also demonstrated an increase in nitrogen levels in lakes that mimiced trends in sales of urea fertiliser in New Zealand, with a "regime shift" appearing around the early 1990's.

Lake edge before riparian planting

Lake edge after riparian planting

Another item that was discussed at length after David's presentation was fish passage and perched culverts, where David discussed development of an affordable solution for improving fish passage past perched culverts.

Perched culverts present a barrier to fish passage

Delegates were shown videos of native fish being able to climb ropes hanging from perched culverts, including one case study where such ropes gave a four- to six-fold increase in the number of fish upstream of the culvert one year after installation. It's obvious that they really do work.

Laboratory trial of fish passage ropes

Field installation of fish passage ropes ≈

FLOOD RISK

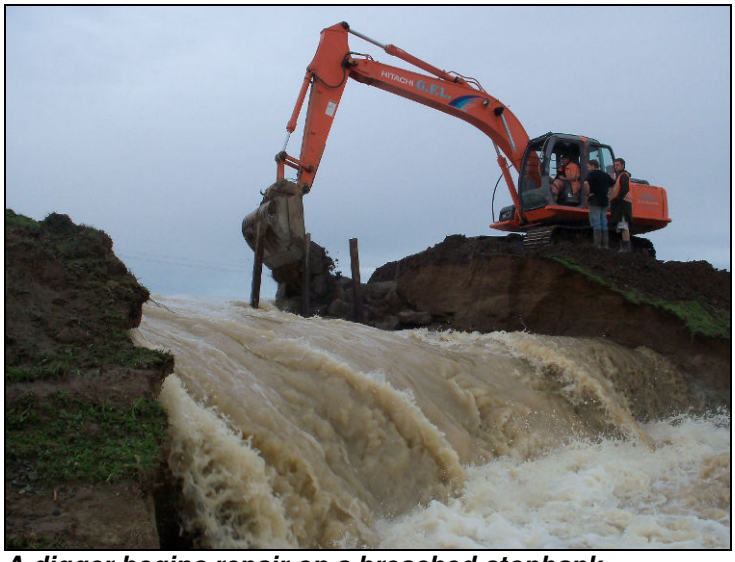
Presentations by
Bruce Crabbe and Ken Tarboton, Environment Bay of Plenty
Gavin Palmer, Otago Regional Council
Alan Cook, Horizons Regional Council

This session was extremely graphic and informative, with all presenters having invested significant time into preparation of their talks that showcased recent flooding in their respective areas. Also included were valuable experiences of flood situations, what did and did not work, and how these regions have taken emergency management forward in response to recent flood events.

Bruce Crabbe described the floods in the Bay of Plenty that occurred in July 2004, where it is estimated that river flows reached 100-year event magnitudes, and there was extensive flooding of homes and farmland. In Edgecumbe, 129 homes were flooded and 303 residents were evacuated, while some 17,000 hectares of farmland were flooded. As stopbanks were breached, floodwater was trapped on the wrong side of the banks, and several controlled cuts were required to drain the flooded areas behind stopbanks. A great photographic record accompanied this presentation.

Flooded road and rail bridges in the Bay of Plenty

Ken Tarboton described a relatively recent stopbank failure in the August 2010 floods in the Bay of Plenty. Ken provided some video footage of the breach formation and its subsequent repair. Of interest was how limiting the use of cell phones was during emergency conditions, as these allow only one-to-one communication. In the days when all Council vehicles were fitted with radios, everybody knew what was going on all the time because they could all "listen in" to emergency co-ordination efforts.



A digger begins repair on a breached stopbank

Gavin Palmer talked about managing flood risk on the Taieri floodplain in Otago. He reported that the region has experienced floods in 2006, 2007 and 2010 with a trend that seems to indicate that more of the region's "big" floods have occurred in more recent years. One point of interest was how large floods over farmland gathered up floatable materials such as firewood and hay bales, and washed these downstream to where they clogged outlet structures, and caused even greater flooding than may otherwise have occurred. Furthermore, floodplain impedance has been exacerbated recently by sub-division for "lifestyle" blocks, as these all contain internal fences, plantings, outbuildings and the like to a greater density on the land surface than would be expected with larger farm blocks.

Floatable farm debris block a culvert

Alan Cook shared experiences in Operations' response to flood events. He described limitations on resources within Regional Councils for disaster management, especially when a disaster is of several days duration as on-the-ground staff start to need sleep. He also echoed the limitations of being reliant on cell phone coverage during disasters, and informed delegates of the public's almost insatiable demands for information. He also described the flood "cleanup" process, and stressed the importance of insurance.

A failed stopbank in Manawatu

All-in-all these presentations were a treat for those interested in flood management. The videos and photographs presented brought these talks to life, and there were many valuable lessons that were passed on by those who had been through the learning. ≈

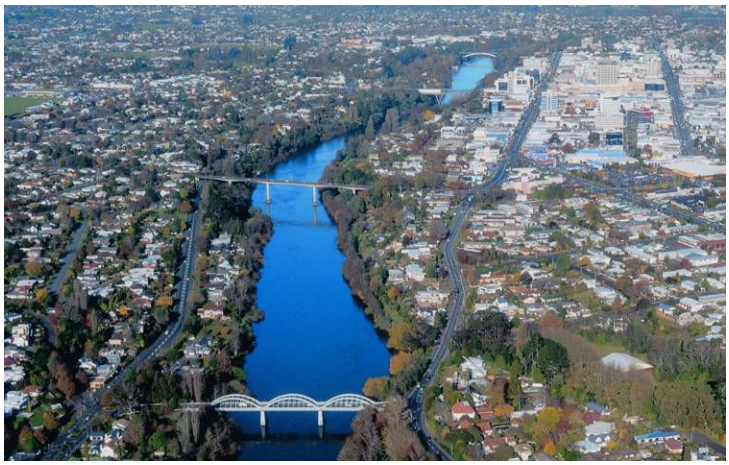
CO-MANAGEMENT

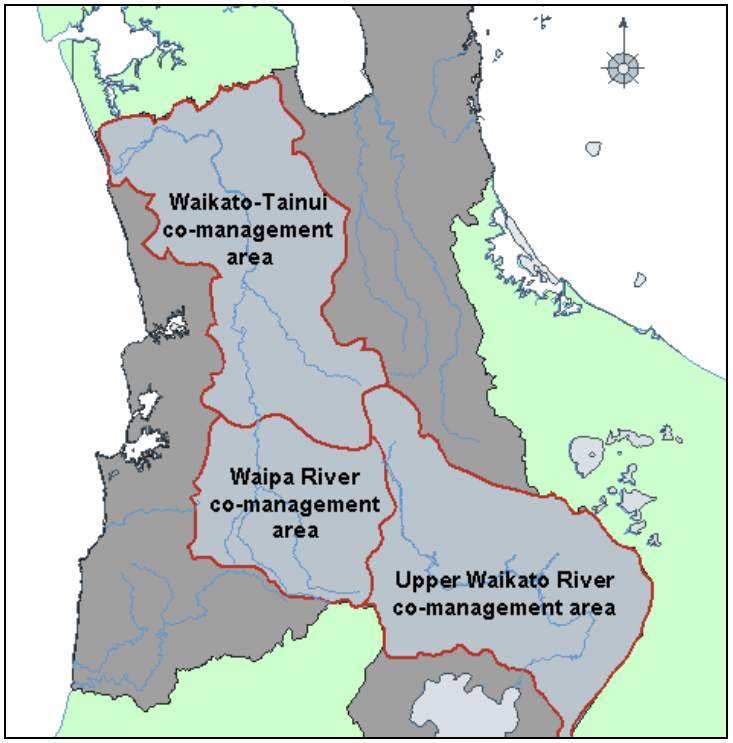
Representatives of Waikato Tainui presented an iwi perspective on co-management of the Waikato River. The iwi represents 33 Hapuu and 68 Marae, with a tribal database of some 57,000. Key tenets of the co-management approach were summarised as:

- ≈ The Waikato River is the beneficiary of the settlement
- ≈ Recognition of Waikato-Tainui relationship with Te Awa Tupuna
- ≈ Recognition of Te mana o te Awa (tupuna)
- ≈ To restore the health and wellbeing of the Waikato River for future generations.

Co-management thereby involves several key components, summarised as:

- ≈ Elevating the status of iwi in decision-making roles (exercise of power and responsibility – regulation and operation);
- ≈ Protection of iwi principles and values, e.g. the river is not a commodity;
- ≈ The importance of a holistic approach to management practices, including cultural, economic, social, environmental, and kaitiakimana whakahaere facets;
- ≈ Multiple layers of key relationships within central and local government processes (integration); and
- ≈ Tangible outcomes (with long term involvement).





Legislation is consequently proposed for the following:

- ≈ Establishing the Waikato River Authority
- ≈ The Waikato River Clean Up Trust
- ≈ Providing for the Vision and Strategy
- ≈ Monitoring and reporting
- ≈ The appointment of commissioners to Hearings panels
- ≈ Joint management agreements between local authorities and individual iwi.
- ≈ Co-management agreement with Waikato-Tainui for specific areas.
- ≈ Development of integrated river management plans with iwi and Crown agencies.
- ≈ Iwi environmental plans.

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CONFERENCE UPDATE

A reminder to all members that the Rivers Group is co-hosting the 2011 South Pacific Stormwater Conference.

AUCKLAND 3-6 MAY
STORMWATER:2011
7TH SOUTH PACIFIC STORMWATER CONFERENCE

See http://www.waternz.org.nz/stormwaterconference.html for more details. ≈

THE TAURANGA-TAUPO – A CHALLENGING RIVER

John Duder, Tonkin & Taylor

Travelling on SH1 some 10 km north of Turangi you cross an apparently tranquil river between the settlements of Oruatua and Te Rangiita. The name of the river suggests a haven, perhaps the main resting place for waka on the east shores of Lake Taupo, as can be seen between the bridge and the lake. But that river can be anything but tranquil. It drains some 230km^2 of the Kaimanawa Ranges, has an annual flood of 150 m^3/s, and meanders across a gravel flood plain.

Renowned for its trout fishing, the Tauranga-Taupo flood plain has also provided much gravel for engineering works in the area. However, it was that extensive quarrying progressively closer to the head of the triangular flood plain that contributed to a complete right bank breakout in December 2002.

In diverting itself through the quarry, the river increased the flooding threat to Te Rangiita and more immediately dewatered over 2 km of prime fishing reach. Most importantly, it bypassed the natural spillway overflow channel near Kiko Road, which is the safety valve to avoid overloading the highway bridge at Oruatua.

The breakout was both good and bad news. It highlighted a weakness in the flood distribution system with its various natural overflows and ponding areas, but it also increased the cost of works proposed by Environment Waikato to control highway and settlement flooding. Tonkin & Taylor (T&T) had started to plan erosion and flood control works, and it was timely to include the closure of the breakout in the assessment of environmental effects prepared for consultation and obtaining of resource consents.

The complexity of the river's flood distribution system can best be seen by reference to Figure 1, based on the results of modelling by T&T and EW. The highway bridge capacity was established at around 230m^3/s. The theoretical contributions of spillage and ponding were set to provide a 1 in 100 year design standard for protection of the highway bridge and settlements either side of it.

Natural spillage from both banks through the flood plain occurs progressively in floods greater than around the annual return period, firstly on the right side to pond in the old quarry, and then to the left down the Kiko spillway and also to pond in the Oruatua Reserve.

The main engineering works to promote and preserve these processes comprised (working from upstream):

- Quarry closure works with a spillway for flood peak overflows;
- Erosion control at Maniapoto's Bend, with rockfill riprap, a training bank, and a balancing spillway;
- Kiko rockfill overflow spillway and stabilised discharge channel;
- Upgrading of Kiko culverts under the highway by Transit NZ;
- West and east stopbanks to protect the settlements of Oruatua and Te Rangiita; and
- Side spillways upstream of the bridge and control of highway flooding.

EW has furthermore allowed for ongoing maintenance and river training upstream of the critical Maniapoto/ Kiko balancing spillway as part of the river management plan.

Significant floods experienced during construction of the works provided some hard data for more detailed modelling. To date the works have performed satisfactorily but the challenge remains to be met in the event of a supra-design flood. In that event, EW's underlying philosophy is to accept failures that result in limited change and can be repaired, while avoiding catastrophic failures which could cause major damage and disruption and risk to life.

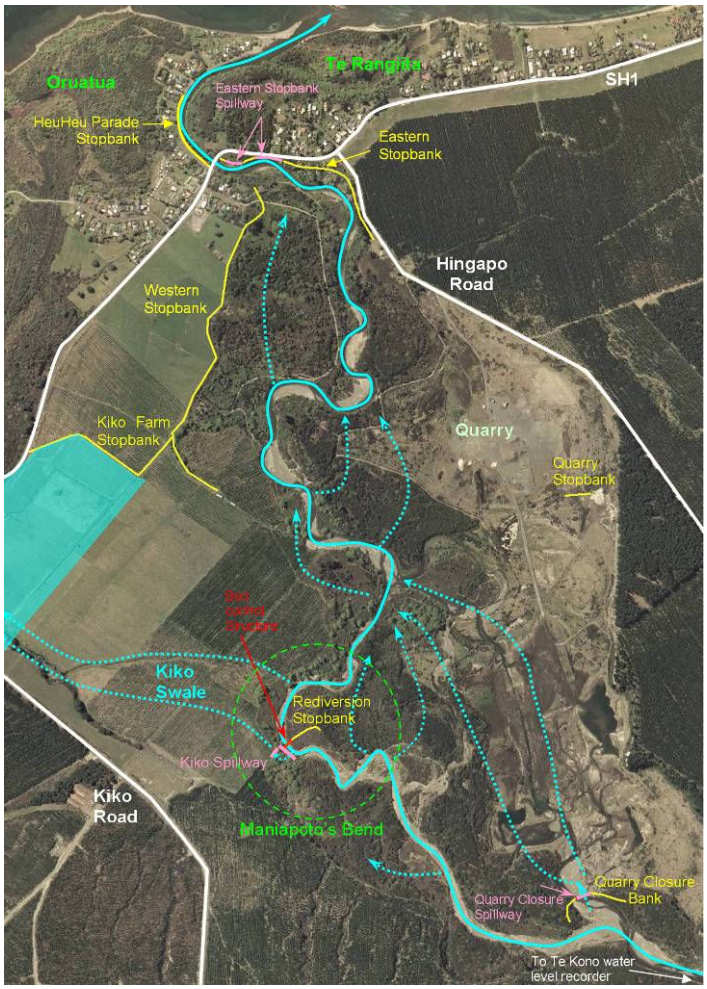

Figure 1:Tauranga-Taupo River flood protection scheme layout

Further details on the project can be found in a paper presented at the Water NZ 2010 Stormwater Conference: Pragmatic practice for river management – the Tongariro and Tauranga-Taupo rivers by G & S Basheer, D A Bouma and J N Duder on the Tongariro and Tauranga Taupo Rivers, and a paper by Sarah Basheer, Mike Flood on the design of the Tauranga-Taupo River Control Scheme presented at the NZWWA modelling conference in 2009. ≈

INTERNATION RIVERS SYMPOSIUM, 11-14 OCTOBER, PERTH

Ken Tarboton, Environment Bay of Plenty

The 13th International Rivers symposium was held from 11-14 October 2011 on the banks of the beautiful Swan River in Perth, Western Australia. Seven New Zealanders were among the nearly 500 delegates from 20 countries that attended. Six parallel sessions ran through the symposium, focusing on Water Sources; Rivers and Catchments; Water for Mining Industry; Community; Policy and Regulations; and Climate Change. Plenary sessions at the start and end of each day focused on key issues such as global consequences of biodiversity policies, international river restoration and water management for future sustainability.

A key message throughout the symposium was the importance of rivers to biodiversity. Loss of river habitat and biodiversity were indicators of loss of river health. It was pointed out that preservation of biodiversity in rivers is much cheaper than restoration, reinforcing the key take home messages for me: "What are we doing in New Zealand to ensure that the biodiversity of our rivers is maintained before it is lost?" and "What monitoring are we putting in place now to ensure the future sustainability of our rivers?"

Presentations from New Zealand were by Andrew Fenemor of Manaaki Whenua Landcare Research, Nelson, on integrated catchment management and Donna Flavell and Linda Te Aho both from Waikato Tainui on co-management and integrating science with traditional knowledge for the Waikato River.

International river issues presented included the Danube River Basin Management Plan, which deals with management of a river flowing through 15 Countries. The Great Rivers Partnership which included the Mississippi, Paraguay-Parana, Magdelena, Yangtzee and Zambezi Rivers showed the benefits of scientists and managers sharing their information and experiences in river research and management. Murray Darling basin river issues were highlighted, particularly with the release of the Murray Darling Basin Concept Plan, with planned reductions to water allocations, just days before the start of the symposium.

A highlight of the symposium was the award of River Prizes. The National River prize went to Derwent Estuary, Tasmania for their programme to address issues of heavy metal contamination, nutrient enrichment and habitat loss in the estuary, The International Theiss River Prize went to the UK Environmental Agency for work on the River Thames which was declared biologically dead in the 1950's and has been transformed into a thriving ecosystem that now teems with fish and has returning otter and salmon populations.

The conference ended with a lively debate on: "The Oceans are our Solution for future Water" In other words; Is desalination a good thing or not? Excellent points were presented on both sides of the debate. The pro-desalination team presented the ocean as always having been the solution to water needs and that desalination is merely a technical accelerator of the hydrological cycle. "We have desalination technology – why not use it?" Against desalination, the point was made that it should not be seen as the only solution but only as part of the solution. Other conservation measures are still needed for water resource sustainability and the energy costs of desalination need to be carefully considered. "Desalination should be taken with a grain of salt". By a slim margin, measured by applause, the team against desalination won the debate.

All in all, an excellent conference. ≈

RIVERS GROUP ANNUAL REPORT

Stephen Coleman, Chairman of the Rivers Group

The Rivers Group aims to bring policy-makers, practitioners, and community interests together to promote a multi-disciplinary approach for river management that reflects cultural and societal diversity in an integrated and holistic manner. Notable highlights for the 2009-10 year are given below.

- ≈ The Group's first annual Symposium on "Directions in River Management" was successfully held in Hamilton in September 2010, with 95 registered attendees.
- ≈ The Group helped to stage the Water New Zealand conference "Stormwater 2010" in Rotorua in May. The Group ran a full-day of talks, hosted a "River Modelling Technical User Group Session", and arranged the Keynote Address of Gary Williams entitled "Healthy Waterways For All – The Challenges".
- ≈ Successful publication of several issues of the Group newsletter "Flow", including a variety of articles of interest to our diverse membership.
- ≈ The Group facilitated membership participation in (a) the Land and Water Forum process, (b) online modelling discussion groups, and (c) meetings hosting presentations by visiting speakers.
- ≈ The Group met with MfE representatives to discuss policy regarding flood risk management.
- ≈ The Group web presence was established (http://www.ipenz.org.nz/riversgroup/), including links to contemporary news items, with plans in hand to enhance the website in the coming year.
- ≈ IPENZ recognition of river engineers at the IPENZ Fellows and Achievers Awards in March, with Gary Clode (Hawkes Bay Regional Council) and Brin Williman (Marlborough District Council) being elected to fellowship of IPENZ due to their respective work in the rivers field.
- ≈ The Group remains at around 250 members after the first year, with the committee having introduced additional membership classes to meet the needs of retired and community groups. The group is proving to be financially sustainable, with cost-effective systems and administrative support in place.

Notable goals for the coming year include: (a) co-hosting the international conference Stormwater 2011 (http://www.waternz.org.nz/stormwaterconference.html) in Auckland in May, (b) our annual symposium (potentially aligning with the NZHS 2011 conference), (c) strengthening student involvement, (d) revamping of the group website, (e) consideration of CPD programmes, and (f) consideration of awards. ≈

flow is the official newsletter of the Rivers Group, is published quarterly, and is distributed to all Rivers Group members.

Limited advertising in subsequent issues may be considered.

We welcome contributions for future newsletters, and particularly appreciate any photographs of rivers that readers are willing to share. Please contact the editor, Mark Pennington, for further information: mark.pennington@pdp.co.nz.