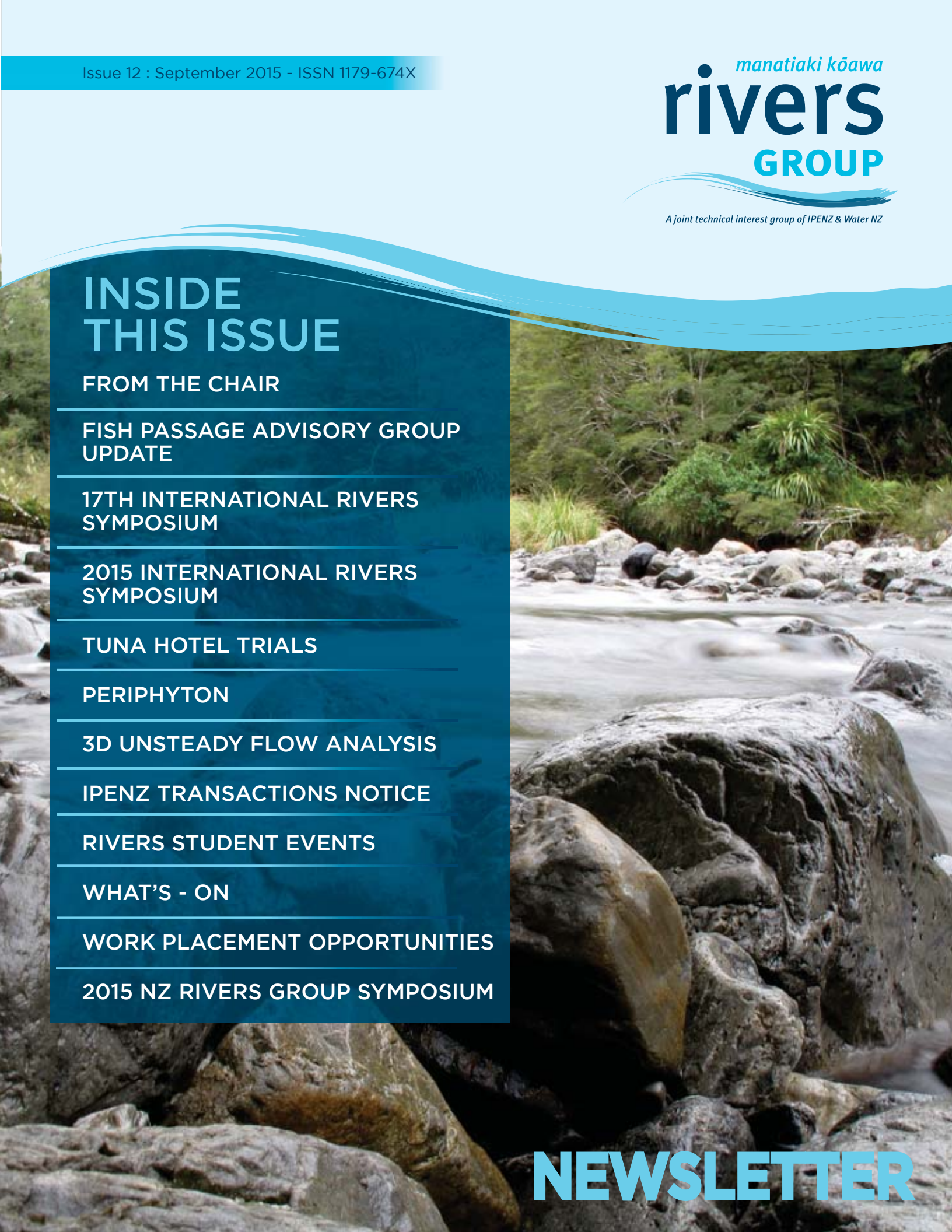
Issue 12 : September 2015 - ISSN 1179-674X

manatiaki kōawa
rivers GROUP

A joint technical interest group of IPENZ & Water NZ



INSIDE THIS ISSUE

NEWSLETTER

FROM THE CHAIR

Kyle Christensen

WELCOME to Issue 12 of the Rivers Groups Newsletter "Flow". It has been close to 12 months since our last newsletter so there are lots of interesting things to talk about. Firstly there have been a number of changes in the committee; I (Kyle Christensen) have taken on the Chairperson's role from Mark Pennington who admirably completed his three years as Chairperson. Mark remains on the committee and is taking an active role in organising events in the Bay of Plenty. Sjaan Bowie has taken on the role as Deputy Chairperson and Laddie Kuta has accepted the Treasurers role. Jo Hoyle continues in her role as Secretary and we are pleased to have four new committee members in Sarah Basheer, Alistair Allan, Mark Hooker and Gary Dent. We also welcome back Jan van der Vliet returning after a short sabbatical along with standing committee members Graeme Campbell, Jon Tunnicliffe and Brian Kouvelis. Please go to the Rivers Group website for further details of the committee members and feel free to contact any of the committee with your ideas and feedback on the group.

Even though things have been relatively quiet on the newsletter front we have had a very successful past 6 months in terms of well supported regional events. Our Geomorphology and Geophysics for River Management sessions with visiting bank erosion guru Dr Andrew Simon was very well supported with over 120 attendees across three venues (Wellington, Christchurch & Nelson). We have also facilitated a very successful student event at Massey with over 40 attendees which included technical presentations from Ian Fuller and Gary Williams as well as awarding a number of student prizes.

I'm also very pleased to announce that our annual symposium will be held in the Wellington Region on the 5th & 6th of November and will be following a different format from past years. This year's theme is "Integrated River Management - from the Mountains to the Sea" and to make the most of this wide ranging theme we've decided to go with a road trip format where presenters talk about their projects using the natural environment as their "powerpoint presentation". We have a fantastic cross section of speakers lined up covering the full spectrum of issues that we are all grappling with across the country, from land/pest management in headwater catchments, to water storage/irrigation through the mid-catchment and flood/erosion hazards, climate change, water quality, ecology and cultural values throughout the system. We'll be starting at the base of the Tararua Ranges and working our way down to Lake Wairarapa and Palliser Bay over two days taking in a night at the world famous Martinborough Wine Region. As well as our invited speakers throughout the day there will also be the opportunity for people to present mini – 2 minute presentations on any river management topic they are currently facing. There will also be field demonstrations on Wolman pebble counts, electric fishing along with the opportunity to network with the leaders of the river management community. Further details on registering for the event, submitting abstracts for the mini-presentations and sponsorship opportunities will be coming out in the coming weeks.

Another exciting first for the Rivers Group is our support by way of contestable funds for research into contemporary river management issues. We have had a number of high calibre applicants for the funds and our research sub-committee is scheduled to meet later this month to make a decision on which projects to support.

I hope you find the following pages informative and interesting and if you have a great story you wish to share please get in touch with one of your friendly committee members.

New Zealand **Fish Passage** Advisory Group
advisorygroup@fishpassagenz.org • doc.govt.nz/fishpassage

THE NATIONAL FISH PASSAGE ADVISORY GROUP

The national fish passage advisory group is a core group of ecologists, engineers and environmental advisors that represent the key parties involved in fish passage management in New Zealand. The group aims to provide expert technical support, develop tools and national guidance to help enhance, maintain and improve the key constraints to fish passage[1] and connectivity[2] of waterways.

The key roles of the advisory group will include, but are not limited to:

1. Lead development of national tools and systems;
2. Provide better national coordination;
3. Promote awareness and implementation of best-practice;
4. Increase accessibility to guidance and tools;
5. A central point of reference for fish passage management;
6. Coordinate an interdisciplinary approach to the management of fish passage;
7. Actively identify and seek opportunities to advance research and management;
8. Liaise with, and foster support from industry bodies, professional organisations and special interest groups;
9. Promote the development and influence legislation and policy.
10. The group's key focusin the next 12 months will include"Establish new national guidelines for fish passage management"

The current group consists of the following members: Sjaan Bowie (DOC) {Coordinator}, Paul Franklin (NIWA) {Coordinator}, Bryn Quilter (Tonkin & Taylor) {Chair}, Kati Doehring (Cawthron) {Communications Lead}, Richard Coles (Auckland Council), Bruno David (Waikato Regional Council), David Boothway (Christchurch City Council), Trevor James (Tasman District Council), Carol Bannock (NZTA), Daniel Headifen (Kiwi Rail), Mark Webb (Fish & Game), Patrick Lees (PDP), Kelly Hughes (ATS Environmental), Rikihana Hancock (Ngati Rangiwewehi Charitable Trust), Cindy Baker (NIWA), Matt Highway (Dairy NZ), Michael Greer (Environment Canterbury, Ryan Piddington (Trustpower) and Matt Highway (Ngai Tahu).

The group's key focus in the next 12 months will include:

- Improve communication and access to key fish passage resources;
- Development of a research strategy to identify key gaps in knowledge;
- Scope a national assessment protocol and database; and
- Create a factsheet on key design criteria for culverts.

2/7For further information see www.doc.govt.nz/fishpassage.

Department of Conservation
Te Papa Atawbai

[1] Providing connectivity between all habitats necessary to complete freshwater fish and other instream organisms' lifecyles (e.g. aquatic invertebrates, shrimp).
Scope covers all management of passage e.g. structures of all sizes, physio-chemical and hydrological.

[2] Connectivity, covers all freshwater fish and other organisms e.g. shrimps, aquatic inverts that need migration, connectivity and passage

17th INTERNATIONAL RIVERS SYMPOSIUM REVIEW CANBERRA, SEPTEMBER 2014

David Young

The following article was prepared for "Carbon News" by David Young. Carbon News has kindly allowed the review to be published in the IPENZ Rivers Group Newsletter. For further information re "Carbon News" refer URL link below.

Carbon News link to the site www.carbonnews.-co.nz

David Young's latest book Rivers: New Zealand's Shared Legacy" (RandomHouse) was published this time last year with assistance of sponsorship from a number of organisations including the IPENZ Rivers Group , the IPENZ Foundation and the NZ Hydrological Society.
Copies are still available @ $55 from the author (plus postage) davidyoungwriter@gmail.com
Also refer to David's site: www.davidyoungwriter.com

If, as delegates to the seventeenth International Rivers Symposium agreed, that river restoration is "the hottest topic on the planet" then the insistence by governments world-wide to ignore it is the issue.

The Brisbane-based International River Foundation runs the symposium, which also has informal links to the Gareth Morgan New Zealand Rivers Trust, founded last year as well as an American equivalent. Its annual symposium was held this year in Canberra in late September attended by some 400 delegates from many parts of the world.

The time for "business as usual is no longer an option", suggested leading American scientist, Dr Bob Costanza, Professor of Public Policy at the Crawford School of Public Policy at The Australian National University in a plenary address. "All the prices we are paying for biological services in the market are telling lies," the author of dozens of books and hundreds of scientific papers told the conference. "Bringing natural capital into the equation changes the value of everything." He argued that we need societies built on trust in partnerships with our ecosystems, and to develop ways of valuing these services. Already in Costa Rica, the government pays farmers for the restoration of ecosystems services.

A major element of the River Trust's work is its national and international awards. The 2014 Australian national rivers award-winning project Lake Eyre Basin, and the big international award winner of the international award, in the Rhine Valley, offer ways in which natural capital can be brought into everyday transactions, Costanza said. One of the methods he cited is through Common Asset Trusts – similar in intent to the recent Crown-iwi agreement on to create a legal personality for the Whanganui River -- whose foremost duty is to protect the common natural assets for present and future generations.

Costanza argued that the focus on GDP and growth coupled with the emphasis on the market needs to be replaced by the approach that measures the impacts of doing business on land, air and water. The Genuine Prosperity Indicator, now being applied in the State of Maryland, is inclusive of all costs. Interestingly, he singled out New Zealand as a country where, whilst GDP has increased, in recent years we have declined on the GPI measures. The other "economic miracle" of the past decade or so, China, has in GPI terms levelled off as both inequality and pollution – the two negatives that continue to afflict New Zealand -- have increased. By this measure, in the US, he said, there has been no real growth since 1980. "We need to form a GDP deniers club," he said, "and break our addition to growth at any cost." (He has recently initiated an on-line magazine, Solutions, which includes an extensive article on the Rotorua lakes clean-up.)

The Lake Eyre Basin, covering 1.2 million square kilometres from the red heart of Australia – is one sixth of its total land mass. The Lake Eyre Basin Partnership of community groups, catchment groups and scientists won the National River Prize at the River Symposium in Canberra. Professor Richard Kingsford, Director of the Centre for Ecosystem Science, School of Biological, Earth and Environmental Science, University of New South Wales was one of the drivers behind this project. Over nearly 30 years, Kingsford has been involved in the Eyre Basin, a massive heart-shaped river basin in the centre of the continent. One of the world's largest internal drainage systems, the Basin supports a third of Australian agricultural production as well as a many outstanding river systems, including the Coongie Lakes RAMSAR (internationally recognised) wetland site.

The Lake Eyre Basin's inland flowing rivers occasionally flood and fill the often low if not empty, Lake Eyre -- on average only four times a century.

This so-called “boom and bust” system then becomes a place replete with wildlife to where hundreds of thousands of birds fly up to thousands of miles to feed, breed, and nest. It is also a recent colonization site for the invasive cane toad.

“The river prize has not been won by killing things, but raising awareness of the need to protect these systems and the idea that prevention is better than cure – water must flow where it is meant to flow,” Kingsford said in his acceptance speech. The trick is to make connections, “from top to bottom, from aboriginal communities to farmers, bringing in the science of fish and of invertebrate communities, of flow and water quality, using the best of desert ecology from around the world.” It was this approach that resulted in the 2001 Lake Eyre Agreement, arising from the need to protect natural flows, particularly from agriculture, which occupies 82 percent of the Basin’s landmass.

So, apart from science, the Lake Eyre Basin partnership was a popular choice as a prize-winner, bringing skills in engagement and collaboration to the process. One approach was to give identity to the region and, while focusing on Cooper Creek (which has been eyed for irrigated cotton farms) to show how integrated the Basin’s natural systems are.

In the era of human-induced climate change, community partnership approaches have become even more important for the “boom and bust” cycles of the river systems of Australia. The need to protect huge systems has never been more important both intrinsically and for the human communities that depend upon them
As in New Zealand, all over Australia, community-based efforts large and small are underway to restore waterways, wetlands and lakes as part of the ecosystems revival movement. Among many of interest to the Friends of the Mapua Wetland members is one in south west Brisbane, Queensland. Here school children, in this case from a low-decile school in Ipswich, have become engaged in a river restoration project. The impact on both river and classroom behaviour is measurable. Suddenly, children headed only for trouble have a new focus for their lives. Matthew Fullerton, who heads up the project backed by a trust, said that watching these youngsters develop through their connections with natural water was a deeply satisfying aspect of his work.

One of the aboriginal groups attending the conference, the Barkinji Maraura Elders Environment
Team, has been successful in similar ways.
Senior range Dameion Kennedy, project supervisor said that working on ancestral river systems, part of the Murray River, near the Victoria- South Australia border had given great hope to younger, at-risk males of his tribe.

In a relatively short time they had been so successful in turning them from the often inevitable pathways of drugs, alcohol and gaol, government officials were now rolling up to find out what the secret was.

But funding remained an issue and despite the success of the programme, not all recruits are able to find work afterwards.

From the vast Kimberley region, stretching southwards into the interior below Darwin, Dr Anne Poelina, manager of Madjulla Incorporated is an advocate of “rivers talking to each other” -- internationally. In her vast tribal region the Fitzroy River has a large barrage across it erected for irrigation to enable the growing of crops. It never worked for this or any other purpose – but apart from the barrage, the rivers of this country are otherwise largely pristine. But State and Federal governments see the Kimberley as the next big thing for development. Strong in pastoralism, the still otherwise relatively untouched region is rich in water, diamonds, minerals and hydro carbons. “The north is a finger bowl, not a food bowl,” she said, “We are protectors, not protestors.” Rather than relying on the government to act correctly, her group was following the advice of the old people -- calling in those who care about nature from around the world to help protect their ancient lands.

Certainly for a number of years now the River Foundation has encouraged partnerships between third and first world river communities. Fern Hames, speaking about the river stories of North East Victoria, provided a useful coda to the discussion when she said, in a paper on “Talking Rivers”: “Our stories nearly always begin around fish”.

Dr Dipak Gyawali, director of the Nepal Academy of Science and Technology, a former Minister of Water Resources of Nepal, spoke of “the wickedness of complexity” in modern water issues, which he argued needed to be approached “with awe and humility”. The integrated approach to management had so often been opposed by lesser constituencies and bureaucracies in the Ganges Basin, be it from Nepal, India or Bangladesh.
The market model, he said, has three legs to it: individualism, bureaucratic hierarchies and activist egalitarian, “all competing and creating more complexity”.

State power is about rule, the market is about choice and the short-term whilst ethical power relies on the power of critique. “Each defines the problem very differently,” he said. The first seeks more control, the second the empowering of more people and freedom of choice whilst the third, the pursuit of egalitarian power, leads to profligacy in use of resources.

“So the solution is not able to be integrated, not in this way. So what we need is a voice for all -- pluralistic and constructive engagement, which produces integration.” But that needs 10 percent solutions -- not attempts at 100 percent --with not all eggs in the socially optimized basket.” In other words, “wicked problems need clumsy solutions.”

HEALTHY RIVERS – HEALTHY ECONOMIES

Brisbane, Australia | 21-24 September 2015

The theme for the 2015 International Riversymposium“Healthy Rivers – Healthy Economies” is a wonderful opportunity to engage with the multitude of businesses and organisationswho contribute to and benefit from the wise management of rivers and their catchments. Water has risen high on the business agenda and a decline in freshwater quality and quantity was judged the greatest risk facing the globe at the 2015 World Economic Forum. The contribution that healthy rivers make to our economies and wellbeing is extraordinary, but often taken for granted.

The 2015 Riversymposium will connect businesses who rely on rivers and vcatchments with community representatives, scientists, policy makers and river professionals to jointly explore the links between river health and economic performance in different contexts globally. The program will include over 20 keynotes and 10 special sessions covering topical issues.

The themes and topics of the 2015 International Riversymposiumwill encourage knowledge sharing and debate, and seek to find solutions for a better future. It is only by bringing together all sectors of society that we can answer the big questions and all play our part in collaborative solutions.

TUNA HOTEL TRIALS AT KENEPURU – FIVE STAR ACCOMMODATION IN AN OPEN STORMWATER CHANNEL

Katrina Smith

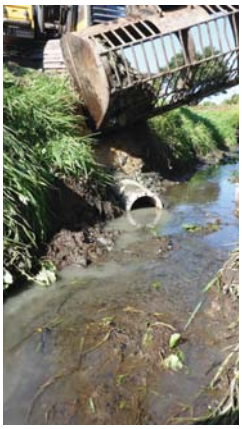
Infrastructure management is increasingly becoming a parallel process with environmental management and enhancement projects. Cleaning out drainage channels to prevent flooding of urban areas can require resource consents, and consents require mitigation measures to be implemented. Cardno Ecologist Katrina Smith was involved with one such project assisting colleague, Senior Project Planner Jenny Grimmett. Cardno was asked by Wellington Water (on behalf of Porirua City Council) to assist with obtaining consents for clearing out a constructed stormwater channel from built up debris and weeds. There were localised flooding issues and it was hoped the maintenance would relieve this. But it wasn't a straightforward contracting job. Despite 250 metres of stormwater piping up and downstream of the 90 metre constructed open channel, it was considered to be a stream (not just stormwater infrastructure). It was also a recorded habitat for native eels and possibly other native fish species.

Cardno obtained the resource consents from Greater Wellington Regional Council on the basis of an approved clearance method to be undertaken by the contractor, using a fish friendly digger bucket and having an ecologist on site to identify and safely relocate any fish that were deposited with the excavated material on the bank. Several eels (long-finned and short-finned) were observed on the day, confirming prior evidence of their presence.

In mitigation for the temporary loss of weed habitat in the "stream", trial refuges for eels were offered as a condition of consent. The proposal was based on anecdotal evidence from the Waikato Region that these could be used for a range of native fish species. Katrina discussed the concept with Bruno David of Waikato Regional Council and developed a design for the "tuna hotels" (tuna is the Maori word for eel).
The day after completion of the drain clearance in October 2014, four tuna hotels were installed into the channel banks, comprising 220mm diameter concrete pipes (approximately 800mm long, wrapped in geotextile fabric). They were set down at the water level (invert below bed level) at an angle of approximately 30 degrees, with the inlet facing downstream to protect them from sediment inundation in high stormwater flows. The bank material above the pipes was compacted, contoured and re-grassed.
The images below show the tuna hotels being installed with the fish-friendly digger bucket, and completed hotels in place ready for their first guests.

Katrina is looking forward to documenting the occupancy and reporting back on it.

For more information contact Katrina at Cardno 04-478-0342 or Katrina.smith@cardno.co.nz



INTEGRATING UNDERSTANDING OF HYDROLOGY, GEOMORPHOLOGY AND ECOLOGY TO BETTER PREDICTPERIPHYTON ABUNDANCE IN NEW ZEALAND RIVERS

Jo Hoyle, Cathy Kilroy,

Periphyton (the algae dominated community that grows on the bed of rivers) provide a rich food source for the upper trophic levels of stream ecosystems and can also provide an important ecological service by removing dissolved nutrients and contaminants from the flow. However, in excess, periphyton can have negative effects on habitat quality, water chemistry and biodiversity, and can reduce recreation and aesthetic values. The abundance of periphyton in rivers is influenced by a number of factors, but the two key factors that can be directly influenced by human activities are flow regime and nutrient concentrations. Periphyton has been identified as an attribute of ecosystem health within the National Policy Statement for Freshwater Management. This means that Regional Councils are required to set objectives (attribute state) for periphyton abundance that meet or exceed national bottom lines, and they then need to set limits on freshwater quality and quantity in their region to ensure these objectives are met. Consequently, the ability to predict periphyton abundance under different conditions is crucial for management of rivers to protect ecological and other values.

Establishing quantitative relationships between periphyton abundance, hydrologic regimes and nutrient concentrations has proven to be difficult but remains an urgent priority in New Zealand. A common index for predicting periphyton abundance has been the frequency of floods greater than 3 times the median flow (FRE3), and this has been successful on a regional average but can be quite unreliable on a site-specific basis.
This stems largely from our limited ability to transform flow data into ecologically meaningful physical processes that directly affect periphyton removal (e.g., drag,
abrasion, bed movement). The research we will present examines whether geomorphic variables, such as frequency of bed movement, are useful co-predictors in periphyton abundance-flow-nutrient relationships.

We collected data on channel topography and bed material size for 20 reaches in the Manawatu-Wanganui Region which have at least 5 years of flow, nutrient concentration and periphyton biomass data (laboratory measures of chlorophyll a and percentage cover of thin films, filaments and mats/sludge). For each reach we set up a 1-d hydraulic model and established relationships between discharge and a number of hydraulic and geomorphic variables, including the discharge required to partially and fully mobilise the bed sediment. These were then related to the flow and periphyton monitoring records to examine the strength of relationships.

Relating periphyton biomass data to antecedent flow data allowed us to identify threshold flows for periphyton removal. These flows were found to be 0.9 - 9.8 times the median flow, depending on the site, with the average across sites being 3.3 times the median flow. Results also showed that general mobility of the gravelly/cobbly bed material was not required to remove periphyton but that mobility of over-passing sand (through its abrasive action) is a key control on periphyton abundance. Relationships between soluble inorganic nitrogen and periphyton abundance were found to be strong at sites where sand is mobilized infrequently but weak at sites where sand is mobilized often. Overall results indicate that integrating understanding of geomorphology, hydrology and ecology can improve prediction of periphyton abundance in New Zealand rivers.

E-proceedings of the 36th IAHR World Congress
28 June – 3 July, 2015,
The Hague, the Netherlands

3D UNSTEADY FLOW ANALYSIS: A RETURN TO CLASSICAL HYDRAULICS

A.G. BARNETT(1)
(1) Hydra Software Ltd, Hamilton, New Zealand, barncon@xtra.co.nz

ABSTRACT
Following Saint-Venant, unsteady flow analysis is no different from steady flow analysis, except for an added term expressing local timewise variation in each equation. Where 3D steady flow analysis is feasible, 3D unsteady flow analysis is therefore a relatively simple extension. An outstanding example of practical 3D analysis is offered by boundary layer theory, where in flow regions near solid boundaries, kinematic limitations on flow directions allow significant simplification of steady 3D conservation balances. Although such flow regions have often been treated by 1D analysis, this has been as a matter of convenience rather than a requirement imposed by the nature of boundary layer flow. Indeed Saint-Venant himself had introduced 3D concepts such as wetted perimeter to his general theory, with excellent results supported by modern laboratory tests in 3D boundary layers formed in channels of compact cross-section shape. In such cases, analysis of variations of flow in the plane of a cross-section can be uncoupled from the longitudinal solution, which can then be computed separately as a first step. As well as the obvious value of full real-world dimensionality, such uncoupled 3D solutions have several advantages over conventional 2D models. First, the uncoupled longitudinal solution runs orders of magnitude faster than 2D solutions; second, the full lateral and depthwise solutions need only be completed by post-processing at selected points of interest; and third, solution mapping works on vector graphics, potentially providing horizontal channel resolution to within a few centimetres. 3D steady/unsteady analysis applies to all overland flow where Reynolds numbers are high enough for boundary layers to be fully turbulent, to ponding areas and to all reaches of channel except near those junctions where inflows fail to combine into a stable outflow pattern.

Keywords: Unsteady Flow, Saint-Venant, CELL Integrals, Vector Graphics

IPENZ Transactions

IPENZ Transactions are alive and well. The editor of the transactions Lindsay Robertson would welcome ”Rivers” related papers or topics to be submitted for consideration for inclusion in the IPENZ Transactions.

There are two templates on the IPENZ website, for papers that are either full, or "short communications".

There is a basic criteria that papers must be of interest to a significant group of professional engineers in New Zealand.

Papers are blind peer reviewed (ie, authors and reviewers' names are all hidden), and are published on the IPENZ website when the reviewers comments are addressed.

Lindsay would be very happy to see papers from the Rivers group coming through, and as we know, a published paper is a win for all concerned.

For further information contact Lindsay Robertson lindsay@tech-vantage.com

RIVERS GROUP STUDENT EVENTS

The NZ Rivers' Group committee is promoting a series of Student events for the six universities running river related courses or programmes. The five universities are: Auckland, Waikato, Massey, Victoria Canterbury and Otago.

Typically the Rivers Group is offering $250 for prizes to top or promising rivers students and $500 for for a Student "event" where the prizes would be presented.The first of these was held at Massey University on the 21st July where three prizes were presented:

- Top Rivers student - Charlotte Holdsworth
- Runner-up to the Top Rivers student – Emma Shandley
- Most promising 2nd Year Rivers student –Ashley Lovell

Congratulations to:
Charlotte, Emma and Ashley

Gary Williams spoke to the student group about wider issues of river management on a theme of "natural character" of rivers. His address was well received and appreciated by the students.Gary's address and the prize presentations were followed by a BBQ lunch for about 35 students.

Auckland student event: "The IPENZ River's Group will host an Auckland University Students Event on 12th November . Details to be announced next month.
Contact Jon Tunnicliffe for further information: Jon Tunnicliffe j.tunnicliffe@auckland.ac.nz

NEW ZEALAND PRACTICE IN FLOOD ESTIMATION SHORT COURSE

The University of Auckland, 10 -11 September 2015

New Zealand practice in flood estimation is set out in a number of codes and standards, many of which refer to overseas standards, in particular those used in Australia. Since the demise of the Ministry of Works and Development, oversight of this interlocking network of standard practice has largely been decentralised to Regional and Territorial Authorities. Their position has been complicated by the advent of proprietary software packages, which claim to offer standard solutions but sometimes give significantly different answers. New technology such as rain radar and Lidar terrain survey adds another dimension.

This short course provides an overview of existing flood estimation standards, with a critical examination of areas where these still apply, and where they fall short in the light of modern advances.

Register at
www.ipenz.org.nz/rivergroupup/events.cfm

MANAGING INFRASTRUCTURE AFFECTED BY RIVERS

The effective maintenance of a roading network is very dependent on managing the risks associated with erosion and inundation from rivers and streams. This workshop will provide an overview of river and stream processes, hydrological and hydraulic analysis tools, risk management techniques and an outline of protection options.

DATES AND LOCATIONS

Hamilton 23 September
Palmerston North 29 September
Christchurch 6 October
Dunedin 14 October
Auckland 21 October

Register@:
www.nziht.co.nz/short-courses/managing-infrastructure-affected -by-rivers/

AUCKLAND STUDENT EVENT

The IPENZ River's Group will host an Auckland University Students
Thursday, 12 November 2015
Details to be announced next month
Contact Jon Tunnicliffe for further information:
Jon Tunnicliffe j.tunnicliffe@auckland.ac.nz

THE WATERWAYS POSTGRADUATE STUDENT CONFERENCE 2015

Tuesday, 17 November, 2015
Lincoln University, Canterbury, New Zealand
IPENZ Rivers group will be a platinum sponsor of this event and will be presenting a prize for the best overall student presentation on river management. This free event showcases research on waterways at both University of Canterbury and Lincoln University. It covers research relating to freshwater management in ecology, engineering, social sciences, chemistry, economics and resource management.
For further information see http://www.waterways.ac.nz/conferences_workshops/pgstudentconf.shtml

NZFSS & ASL JOINT CONFERENCE 2015

23 - 26 November 2015
Silverstream Retreat, Wellington
www.nzawaterconference.com

NZ HYDROLOGICAL SOCIETY ANNUAL CONFERENCE

1 - 4 December 2015
The University of Waikato, Hamilton
www.nzhsconference.co.nz

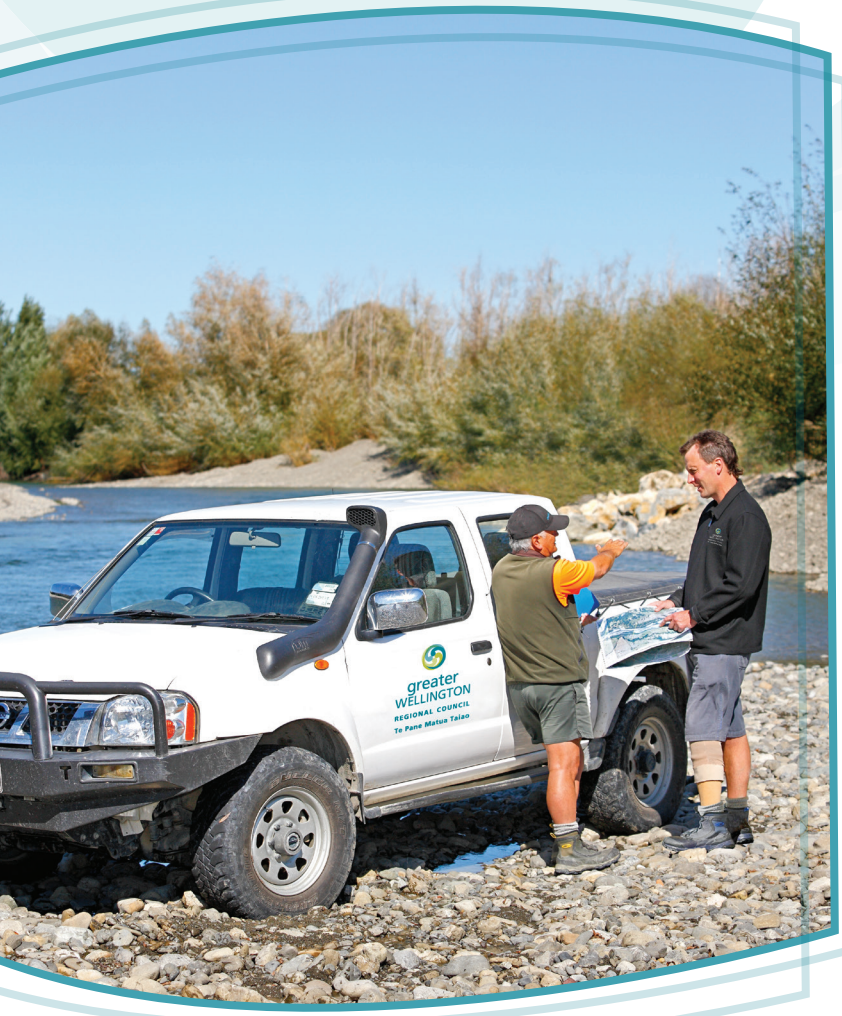
SUMMER WORK PLACEMENTS – WELLINGTON

The Greater Wellington Regional Council's Flood Protection Department has one or two paid work placements available for Natural Resources or Civil Engineering students. The positions would suit students at the end of their 3rd or final years who are seeking professional work experience. Previous summer students have worked on technical analyses, field work, data collection, consultation and reporting. This work feeds into departmental activities such as resource consent applications, engineering designs, floodplain management plan development, forward work planning and operational river management work.

We understand the development needs of engineering students and will try to provide work which meets your development objectives, as well as providing an interesting mix of work across the Wellington Region.

We are looking for students who:

- Have an interest in water engineering and particularly in rivers and streams
- Work well as part of a team, but can be self-directed for periods of time once working on a task
- Have good skills in Microsoft Office software – experience with hydraulic modelling software and ArcGIS may be handy but not essential



The Greater Wellington Regional Council works with communities to manage flood risk from the region's rivers and streams. We develop floodplain management plans, provide a free advice and consultation service, maintain and build flood protection works, work with the community to improve the environment and recreational opportunities and provide flood warnings. For more information please visit our website at www.gw.govt.nz/floodprotection.

If you are interested in working with us, please send a CV and covering letter (including indicative availability) to Sharyn Westlake by 21 September 2015: sharyn.westlake@gw.govt.nz

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

RIVERS GROUP SYMPOSIUM 2015

manatiaki kōawa
rivers
GROUP

A joint technical interest group of IPENZ & Water NZ

DATE: 5th - 6th NOVEMBER 2015
LOCATION:WAIRARAPA

On behalf of the Organising Committee I have great pleasure in introducing the 2015 Rivers Group Symposium. This year's theme is "Integrated River Management - from the Mountains to the Sea" and to make the most of this wide ranging theme we've decided to go with a road trip format where presenters talk about their projects using the natural environment as their "powerpoint presentation". We have a fantastic cross section of speakers lined up covering the full spectrum of issues that we are all grappling with across the country, from land/pest management in headwater catchments, to water storage/irrigation through the mid-catchment and flood/erosion hazards, climate change, water quality, ecology and cultural values throughout the system.

We'll be starting at the base of the Tararua Ranges and working our way down to Lake Wairarapa and Palliser Bay over two days taking in a night at the world famous Martinborough Wine Region. As well as our invited speakers throughout the day there will also be the opportunity for people to present mini – 2 minute presentations on any river management topic they are facing with. There will also be field demonstrations on Wolman pebble counts, electric fishing along with the opportunity to network with the leaders of the river management community.

On behalf of the Organising Committee, we look forward to seeing you in November.

Kyle Christensen
Chairman of the Rivers Group

REGISTRATIONS OPEN NOW

Member Earlybird Registration	$520.00
Non-Member Earlybird Registration	$580.00
Student Registration	$387.50

(prices are GST inclusive)

Your Registration includes:
2 days of field trips including bus transport
1 x Symposium Dinner Ticket
Morning & Afternoon Teas and Lunches both days
Breakfast on day two
Conference Folder

EARLYBIRD REGISTRATION CLOSES MONDAY 28TH SEPTEMBER

REGISTER ONLINE HERE

WEBSITE: http://www.ipenz.org.nz/riversgroup/