manatiaki kōawa
rivers
GROUP

A joint technical interest group of Engineering New Zealand & Water NZ

INSIDE THIS ISSUE

NEWSLETTER Issue 23 | September 2018

FROM THE CHAIR

Mark Hooker

Kia ora and welcome, especially to our new members.

The big news in this issue is updates on our 2018 and 2019 conferences. We have tended to alternate yearly between being part of a bigger (often international) conference and having a smaller conference of our own. This allows us to strike a good balance between exposing our group to a wide range of international influences and also being able to provide conferences that are tailored to the needs of our membership. This year's conference will be a local one.

I'm pleased to announce that we have a programme available for the 2018 conference and that earlybird registrations are now open (www.riversgroup2018.co.nz). It will be held at Massey University on 21st and 22nd November with the theme "Emerging Understanding on Key Issues Facing New Zealand's Rivers". It will be a workshop-style conference with longer sessions so that we can better explore and discuss each topic. Experts will present on recent research or publications followed by discussion on our experience of applying it (or how it could be applied). We have put together an impressive range of speakers on topics that should be of great interest, and I hope to see many of you there. Further details are provided later in this newsletter and on www.riversgroup2018.co.nz. I would like to thank the 2018 conference working group, and On Cue conferences, for their hard work in putting together such a great lineup.

Planning for our 2019 conference is also well underway because this one will be part of the international Rivers, Coastal and Estuarine Morphodynamics Symposium (RCEM 2019) – coming to New Zealand for the first time! Abstract submissions and registrations will open in November, with a draft programme being available in early 2019. More information is available at www.rcem2019.co.nz

We're in the process of making improvements to our website. As part of this we are seeking photos from our members showing their favourite rivers that we can use on the website. You'll hear more about this in the coming weeks and there are further details later in this newsletter. Please do submit some photos – we thought this was a great way of making our website look fresh and engaging but also more meaningful to our members. We have also added a section on the Arch Campbell Award. This is an award made each year at our conference. Think about who would be a deserving recipient. The criteria are:

- A notable published paper, presentation of written report pertaining to catchment hydrology, river and stream hydraulics, sediment transport or catchment or river management; or
- A notable contribution over a number of years to the advancement of knowledge or practice in the fields of catchment hydrology, catchment management or river engineering.

Since the last newsletter we've held regional events in Wellington, Manawatu and a student prizegiving event at Massey Uni. In the way of upcoming events besides our conference, we'll also be supporting the Waterways Postgraduate Conference in Christchurch and are planning events in Wellington, Auckland and Tauranga – so keep an eye on this newsletter and your inbox.

We have also done a piece of work on the identity and positioning of our group, which will guide future strategy as well as how we communicate with our members (and non members). An immediate outcome of this (and driven partly by IPENZ changing its name to ENZ!) has been to update our tagline which is now "working together to promote good river management". We felt this was reflective of the makeup of our group and what our members value from being part of it. I would be interested in what you think.

On a sadder note, I would like to acknowledge the passing of Daya Atapattu last month. Those of us who worked with Daya will miss his humour, expertise and dependably good advice.

Mark Hooker
Chair

MEET THE COMMITTEE

Graeme Campbell

Graeme Campbell, Greater Wellington Regional Council
Graeme's experience in the field of river and floodplain hydraulics has included extensive studies of computer modelling of flood extents, river characteristics, sedimentation, channel management, risk and damage assessment, planning and project management. He has personally undertaken design and investigation work on rivers and floodplains in Bay of Plenty, Poverty Bay, East Coast, Hawkes Bay, Wairarapa, Wellington and the Kapiti Coast. Since 2006 Graeme has been the Manager of the Flood Protection Department, Greater Wellington Regional Council (including both the Wairarapa and Wellington Flood Protection staff).

Laddie Kuta

Laddie Kuta, Hawkes Bay Regional Council
Laddie is a civil engineer with interest in a stochastic approach to hydraulic problem solving. He's been involved in floodway and flood hazard mapping in North America, wastewater design in the Canadian Arctic, closed-channel optimization on Canada's east coast, and project management throughout the Middle East. He is currently working as a Rivers and Stormwater Investigation Engineer throughout the top of the south island where his experience in water resources helps him deliver practical engineering solutions.

ABOUT THE EngNZ RIVERS GROUP

The Rivers Group was formed in 2009 to provide a forum for those involved with, and with an interest in rivers, flood risk management and the operational and environmental issues of catchments and river systems.
The Group incorporates a wide variety of fields and of practice and interest to do with rivers, including cultural health, water quality, water quantity, flood management, energy generation and environment protection, as well as promoting a multi-disciplinary approach for river management, that reflects cultural and societal diversity in an integrated and holistic manner.

Objectives

Key objectives of the Rivers Group are:

1. To facilitate cross-disciplinary interaction between individuals, communities and professionals involved in catchment management, flood risk management and river management throughout New Zealand;
2. To promote best practice, leadership and the sharing of technical knowledge in all aspects of catchment management, including flood risk management, river restoration and river engineering throughout urban and rural environments in New Zealand;
3. To support and promote relevant science and research in river and catchment management and to disseminate that information among professionals, academics, decision makers and the general public;
4. To promote and facilitate input into local and central government policies, strategies, standards and programmes affecting catchment and river management;
5. To assist in the integration of the principles of the Treaty of Waitangi in best practice river management.

Check out our new website
Our website link is: https://riversgroup.org.nz
For all events click on this link: https://riversgroup.org.nz/events/

ARTICLES

Peak runoff control for farm contaminant retention in the Waituna Catchment - Southland

Most agricultural contaminants in waterways (such as sediment, phosphorus, and E. coli) are mobilised and enter the stream during rainfall events that result in overland flow (surficial runoff). This research project is funded by Living Water (DOC/Fonterra Partnership) and being undertaken by Land and Water Science with the primary aim of determining the most effective areas in the catchment where mitigations could reduce this issue. This is being achieved through connecting the physiographic science approach at the catchment scale, and a hydrological assessment at the paddock scale. This information will be combined to inform the best locations for controlling contaminant losses through the construction of peak runoff control structures, as shown in Figure 1 and 2.

Outputs of this project include identifying where the structures could be placed, what the structures should look like and different monitoring options to quantify their effectiveness. The primary aim of the structures are to hold back the runoff and allow the contaminants to settle out before the water is slowly released out. A secondary benefit is reduced stream power downstream, which reduces the potential of stream bank erosion adding more contaminants as well as the mobilisation of contaminants already settled on the streambed (in the substrate/mud).

Following the project, Living Water will use this information to choose an appropriate subcatchment for testing the model. Farmers will then be approached to see if they would like Living Water to build and test these structures. And after their construction, the effectiveness of each structure will be assessed to understand whether they are both individually and collectively making a difference.

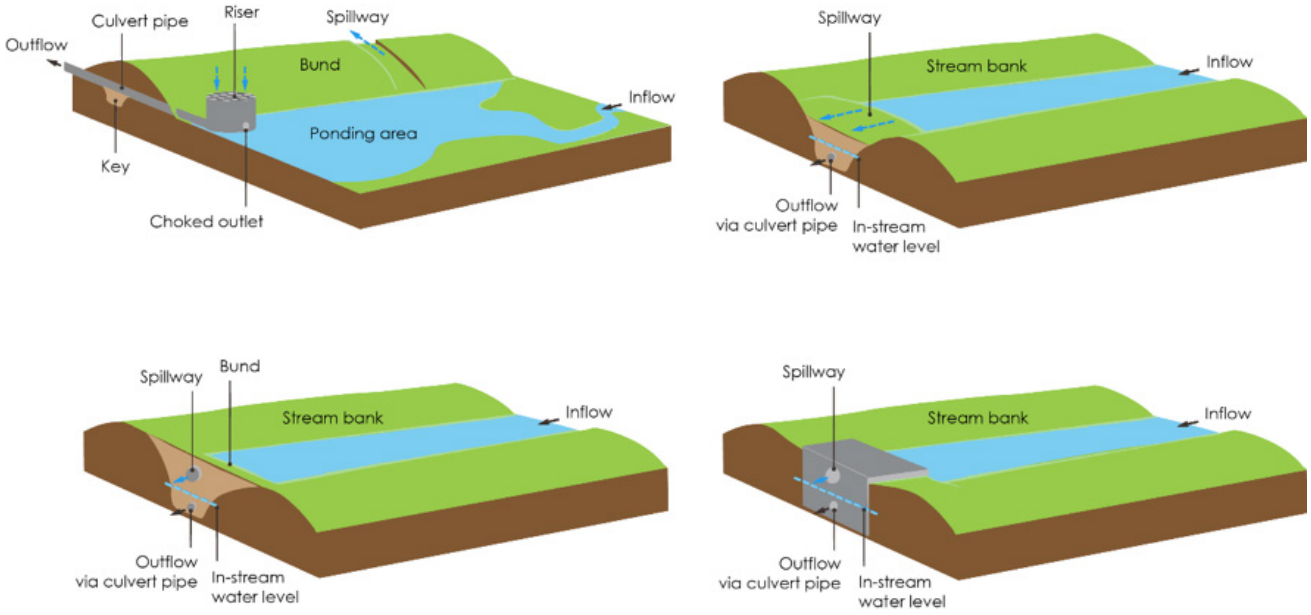


Figure 1: Potential peak runoff control structure design (adapted from Clarke, 2013; & Paterson et al., 2014).

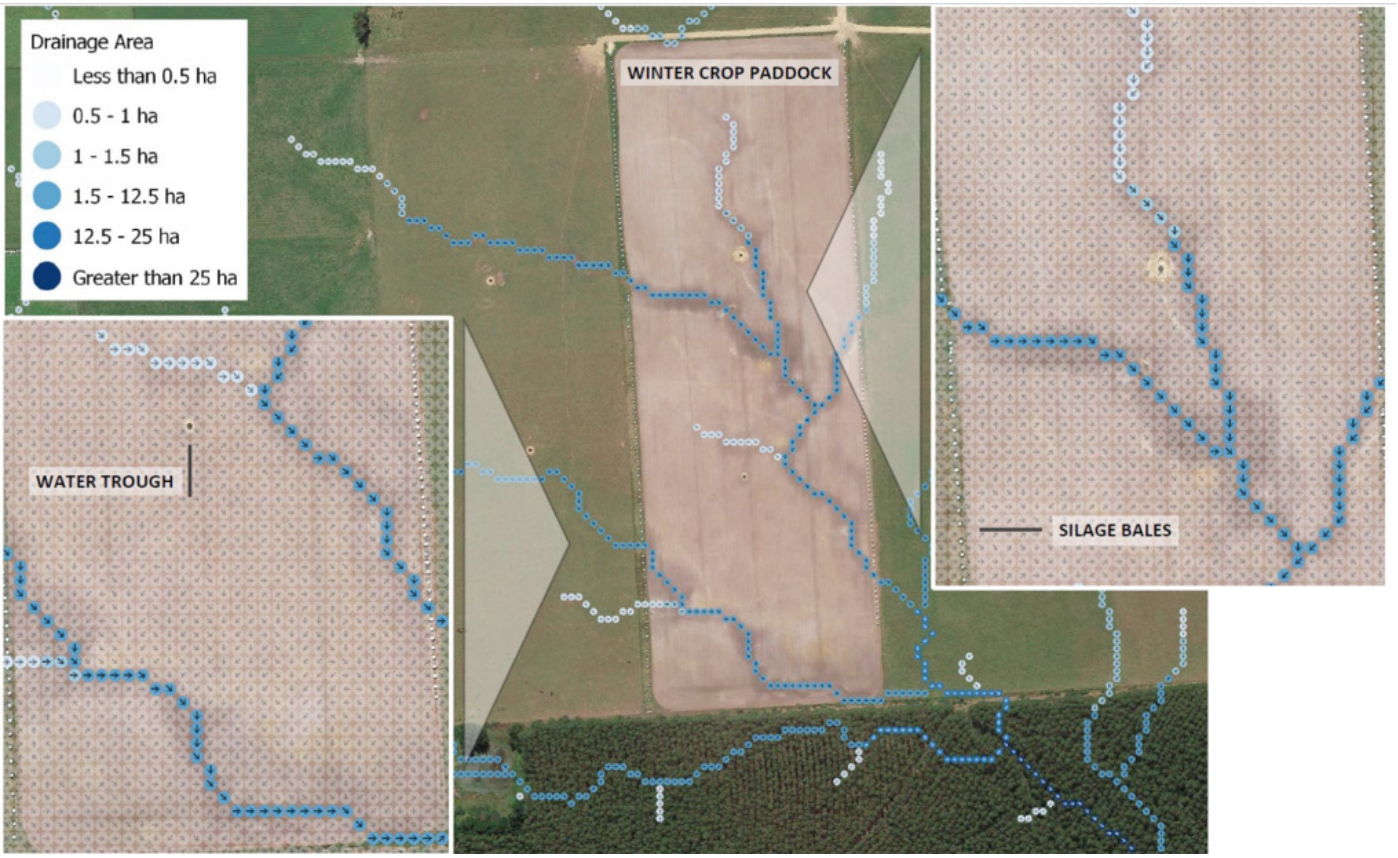


Figure 2: Paddock Scale Hydrological Assessment – showing the ephemeral stream (and/or tile drains) channels, water accumulation and flow direction arrows. These are the pathways overland flow (surficial runoff) will take across the landscape. Mitigations or interventions could be installed in these areas, capturing potential contaminants from entering the larger stream network.

For more information check out:
https://www.landwaterscience.co.nz
https://www.livingwater.net.nz/

Or Contact:
Matt Couldrey, Land and Water Science: matt@landwatersci.net
Nicki Atkinson, Living Water: natkinson@doc.govt.nz

References:
Clarke, D.T. (2013). The performance of Detainment Bunds (DBs) for attenuating phosphorus and sediment loss from pastoral farmland. Unpublished MSc thesis, Department of Biological Sciences, University of Waikato, Hamilton, New Zealand.

Patterson, J. (2014). The Rotorua P-Project - Attenuating nutrient and sediment loss from pastoral farmland during storm water runoff events. Presented to the Lake Rotorua Stake Holder Advisory Group.

SPECIAL EDITION

Too much brown, not enough blue

One example of how fine sediment gets into Cashmere Stream – sediment runoff from a development swamping sediment control measures

The catalyst for this newsletter was the International Erosion Control Association conference being held in Christchurch in August 2018. The conference theme of *'More Blue, Less Brown and Lots of Green – when science and engineering come together in beautiful ways'* struck a chord with us.

It's our organisation's goal to have **more blue**, **less brown** and **lots of green** to bring about a recovery of our cherished Christchurch waterway. But the water quality science is telling us that we have a long way to go to meet this goal – there's too much sediment reaching our waterway.

Results from our eight years of water clarity monitoring at 19 sites in Cashmere Stream reveal a bleak scorecard for the stream's health. Analysis of our over 4,000 water samples shows that 76% can be categorized as 'poor' to 'extremely poor' for water clarity. Simply put, there's too much brown sediment. The 2,800 ha Cashmere Stream catchment has nearly 60 km of drains and tributaries. Although rising from springs on the Plains, over half its catchment is ephemeral tributaries draining the Port Hills. It's these hill tributaries that account for the poor water clarity – especially Worsleys Drain, Cashmere Valley Drain, No 3 Drain, and Hoon Hay Valley Stream.

The Port Hills have a cover of loess, which is a very fine wind-blown silt. They were originally covered with forest, but fires centuries ago, and more recent agricultural and urban development have exposed their easily erodible soils. The 2017 fires and subsequent forest harvest have added to the influx of sediment.

Suspended sediment is the biggest water quality issue for Cashmere Stream. The water clarity monitoring results are proof that something needs to change. There's just **too much brown**.

How suspended sediment impacts stream health

Sediment in a stream is natural, but too much can cause problems. Excess sediment can block light for algae, harm fish gills and filter-feeding invertebrates, smother habitat and adversely affect visual appeal. The fine loess sediment from the Port Hills stays suspended in the water column, causing problems further downstream in the Opāwaho/Heathcote River and the Avon-Heathcote Estuary/Ihutai.

All the following species are impacted by suspended sediment in some way:

all photos © Shaf by McMurtrie

WAYS TO REDUCE SEDIMENT INPUT:

There's no single measure that will significantly reduce sediment input and lead to improving the health of Cashmere Stream. A combination of the following are needed...

Ensure:

- better auditing/checking that sediment control rules are strictly adhered to
- hill subdivisions use stormwater treatment systems that work for hill catchments
- the steeper and most erodible slopes in the catchment are revegetated
- the lower reaches of hill tributaries are transformed into shallow, wide wetlands
- all tributaries (hill or flat) are fenced and planted.

Avoid:

- forestry on steep erosion-prone soils
- over-grazing of hill pasture
- allowing urban developments to have exposed soil during the winter months
- unnecessary cutting of hillside slopes.

How CSCG is helping improve the health of Cashmere Stream

The CSCG is active in the catchment on a number of fronts:

- **Environmental watchdogs** – group members record water clarity at multiple sites throughout the catchment, to pinpoint sites of concern and highlight the need for more effective remedial action. This is ongoing since 2010.
- **Advocates** – we make submissions on public policy and resource consents, to promote more effective sediment and erosion control requirements and promote the establishment of wetlands and riparian planting.
- **Better solutions** – we have worked with developers to trial new measures to control erosion.
- **On the ground action** – we work with landowners and local authorities to restore waterways through fencing, planting and habitat enhancement.

DO WE NEED TO DO MORE TO HELP CASHMERE STREAM?

We need greater awareness of the sediment problem, a fresh look at current practices and a determination to strive to improve the health of our land and our water. That's the challenge for all of us – as catchment residents, land owners, land developers, policy makers, planners, scientists and practioners.

Restoration of Cashmere Stream


photo © Robin Smith

CASHMERE STREAM CARE GROUP

Let us know your comments & find out what else we're up to at...
www.facebook.com/CashmereStreamCareGroup

CASHMERE STREAM CARE GROUP COMMITTEE: Ken Rouse (Chair), Dave West, Robin Smith, Gordon Rudd, Karen Whitla, Julia Fettes, Lesley Carr, Devon Midgley
CONTACT DETAILS: cashmerestreamcaregroup@gmail.com
Newsletter Design: EOS Ecology – Science + Engagement / www.eosecology.co.nz

Cashmere Stream water clarity results

CSCG monitoring sites:

- **HILL TRIBUTARY**
- **PLAINS TRIBUTARY**
- **MAIN STEM OF STREAM**

- Hill tributary catchments
- Waterway
- Hill waterway (usually dry)
- Road boundaries

Water clarity in Cashmere Stream progressively gets worse along the length of the main stem. The average water clarity reading goes from:

88 cm in the headwaters = '**very good**' to
66 cm at the downstream end = '**very poor**'

This is mainly due to poor water clarity from tributary waterways, especially hill tributaries. At a water clarity reading of 9 cm ('**extremely poor**') the hill tributary Worsleys Drain had the lowest average clarity reading of all monitored sites.

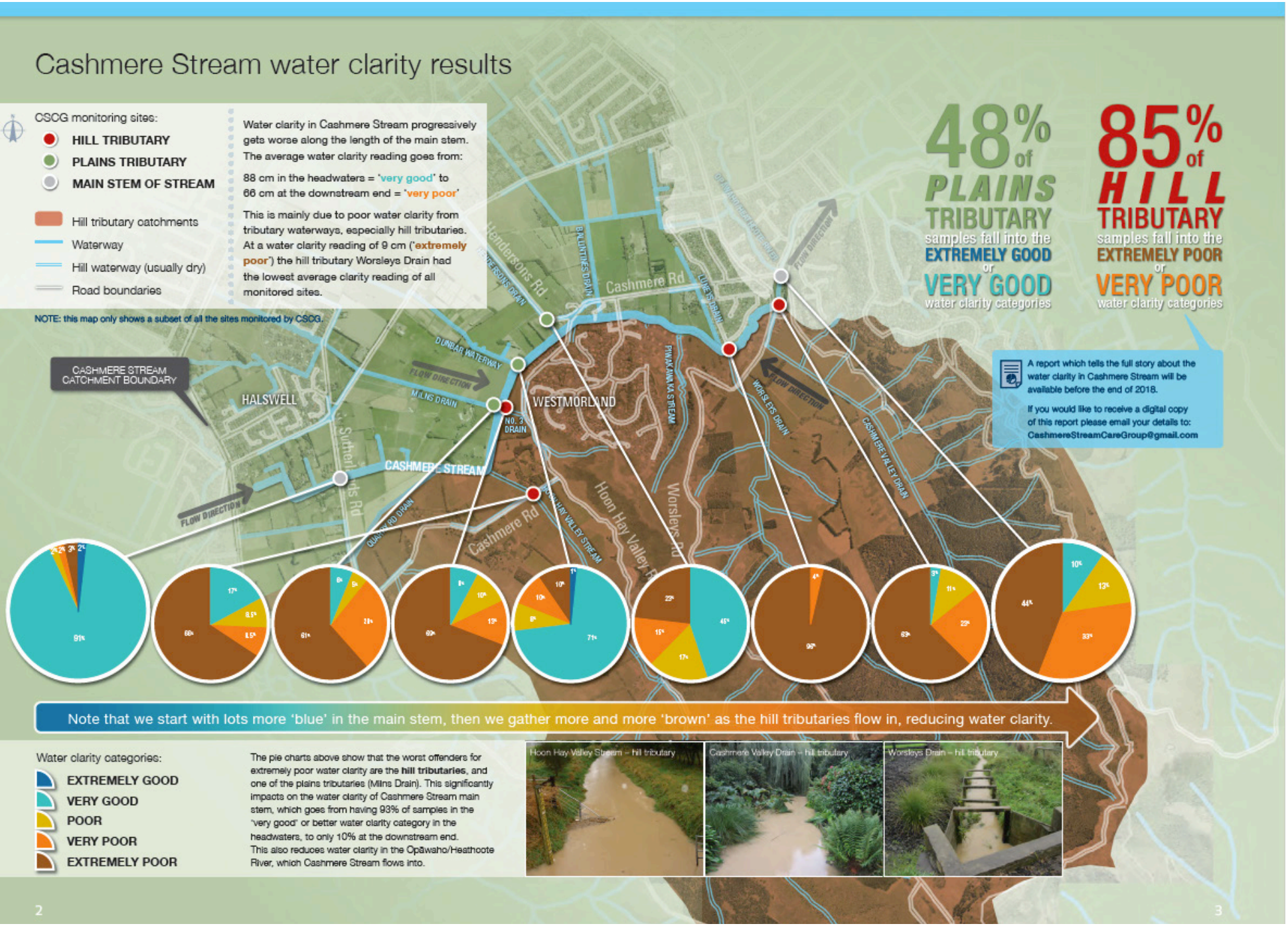
NOTE: this map only shows a subset of all the sites monitored by CSCG.

48% of PLAINS TRIBUTARY samples fall into the **EXTREMELY GOOD** or **VERY GOOD** water clarity categories

85% of HILL TRIBUTARY samples fall into the **EXTREMELY POOR** or **VERY POOR** water clarity categories

A report which tells the full story about the water clarity in Cashmere Stream will be available before the end of 2018.

If you would like to receive a digital copy of this report please email your details to: CashmereStreamCareGroup@gmail.com



Water clarity categories:

- **EXTREMELY GOOD**
- **VERY GOOD**
- **POOR**
- **VERY POOR**
- **EXTREMELY POOR**

The pie charts above show that the worst offenders for extremely poor water clarity are the **hill tributaries**, and one of the plains tributaries (Milns Drain). This significantly impacts on the water clarity of Cashmere Stream main stem, which goes from having 93% of samples in the 'very good' or better water clarity category in the headwaters, to only 10% at the downstream end. This also reduces water clarity in the Opāwaho/Heathcote River, which Cashmere Stream flows into.

Hoon Hay Valley Stream – hill tributary

Cashmere Valley Drain – hill tributary

Worsleys Drain – hill tributary

OBITUARY

Dayasiri Atapattu (Daya)

Everyone who knew Daya will share the loss of a genuinely friendly person with a very warm heart, ready smile and the patience to help others. Daya passed away peacefully at the Royal North Shore Private Hospital, Sydney on August 7, 2018 aged 71 years. Family was central to Daya's life; he was the loving husband of Ranjani, father to Asela and father in-law to Nadika. He was also a very much loved Granddad to Jasmine and Brian.

With his natural warmth came a quiet determination that made him a very well respected Civil Engineer. Daya had a Bachelor of Science (Engineering) degree from the University of Sri Lanka and a Master of Science (Engineering Hydrology) degree from the Imperial College, University of London. He practised as a Professional Engineer from 1973, migrating to New Zealand in 1990 and becoming a Registered Engineer in New Zealand in 1991 and a Chartered Professional Engineer and a Member of the Institution of Professional Engineers, New Zealand, in 2000. He had more than 40 years' experience in investigating, designing and constructing hydraulic structures.

In Sri Lanka Daya was chief design engineer in the irrigation department of the Sri Lankan Government Service, during which he was responsible for the design of a number of irrigation schemes in the south of the country. While his move to New Zealand in 1990 entailed a significant professional sacrifice, it was undertaken to ensure his family could enjoy greater opportunities to grow and to pursue their own interests.

Once settled here Daya was first employed as a senior design engineer in the Rivers Control & Land Drainage section of the Gisborne District Council between 1990 and 1998. What followed was a record of significant achievement.

In the early 1990's he prepared the Poverty Bay flats flood hazard plan, considered to be the first flood hazard plan developed for a major floodplain in New Zealand.This was followed by the upgrade of Gisborne's stormwater system in the mid-1990's for which he carried out most of the design work.

Daya then moved to Wellington in 1998 and took up a role in the Flood Protection Department of the Greater Wellington Regional Council as Team Leader for the implementation of the Western Floodplain Management Plans. Daya's first task was to complete the development of the Hutt River Floodplain Management Plan, which he achieved in 2001, which set the blueprint for protecting the lives and livelihoods of the communities of the Hutt Valley from major flooding. This was a considerable achievement requiring the skill and character to bring Hutt City Council, Upper Hutt City Council and Greater Wellington Regional Council together to jointly endorse and adopt the plan.

Daya then moved his focus onto completing the flood protection upgrades in the plan, including the upgrade of stopbanks in Alicetown and Strand Park and construction of new stopbanks in Boulcott, all of which provided significant improvements to flood protection in Hutt City. These initiatives were completed on programme and within budget, and left a legacy of spaces treasured by the communities they protect; a feat Daya had great pride in achieving. The last project Daya undertook was the initiation of what has become Riverlink, which will complete the last major section of stopbank improvements programmed in the Hutt River Floodplain Management Plan.

Daya's colleagues remember him for his quiet and sharp humour, his willingness to support them throughout their career development, and for his contribution to shared lunches, which always included a very special Sri Lankan curry, though we suspect his wife Ranjani often played a significant role in ensuring these dishes were delivered on time and to a suitably high standard.

Daya retired from Greater Wellington in 2016 and moved to Sydney with his wife in 2017 to be closer to his son Asela who had recently moved there with his family.

Graeme Campbell
Manager Flood Protection
Greater Wellington Regional Council

THE ARCH CAMPBELL AWARD NOMINATIONS OPEN

The Arch Campbell Award

This Award was established in memory of Arch Campbell to recognise his very significant contribution to soil conservation and river control and management in New Zealand.

Who was Arch Campbell

Arch Campbell served the Soil Conservation and Rivers Control Council and the subsequent National Water and Soil Conservation Organisation, which at the time was at the forefront of technical and policy developments. A major symposium on water, which he helped to organise in 1964, led to many recommendations to government and the formation of an Engineering and Scientific Committee on Water of NZIE and the Royal Society of NZ. He co-chaired this committee for many years, organising six-yearly Water Conferences.

Arch was also the chairman of the NZ Institution of Engineers Technical Group on Water and organised lively symposia on relevant topics within the annual NZIE conferences. Many engineers and water scientists now retired or in the latter stages of their careers will remember his wise mentoring and counsel.

More about the award

The Award was initiated at the 1994 Water Conference. The award at the time was for best presented paper or written report (for public release) on any matter related to hydrology, river or stream hydraulics, or river control methods in New Zealand. The recipient of the Award received a framed certificate and cash prize. In 2009 a joint initiative between IPENZ (now Engineering NZ) and Water New Zealand (formerly the NZ Water and Wastes Association) resulted in the establishment of a joint Rivers Group. At the suggestion of David Best, a life member of NZWWA, and with the agreement of Arch Campbell's family, the award was entrusted to the Rivers Group.

How to nominate

If you would like to nominate someone to be the recipient of this award please write to the committee through the EngNZ Rivers Group website. Link: https://riversgroup.org.nz/arch-campbell-award/

Nominations are now open and will close on Friday 1st November 2018

CONTESTABLE FUNDS 2018 APPLICATIONS OPEN

The Engineering New Zealand Rivers Group Student Research Grant

Funding Opportunities:

Grants of up to $3,000 are available to postgraduate researchers working on issues related to advancing river science and improving river management, depending on the merits of the project proposal and the level of competition in a given year.

What We Fund:

The research grants are aimed at supporting research that is focused on New Zealand's rivers, catchments and management of flood risk. Projects that inform or engage fresh perspectives on river management and modelling, or further our knowledge of river processes, including climatic, biotic, chemical, geologic, and/or hydrologic interactions, are encouraged. We support applied work on topics such as flood risk, sedimentation and erosion, water transfers, water quality and ecosystem function.

The fund is also intended to foster links amongst academe and partners in government, community groups and the private sector. We encourage broad sharing of project results, and thus we ask recipients to present their findings at the annual Rivers' Group forum or submit a report for publication in the Group's newsletter Flow.

Eligibility Criteria:

- Applicants must be enrolled for a postgraduate degree at a New Zealand institution
- Applicants need NOT be members of Engineering New Zealand to apply, though they are encouraged to become members of the Rivers Group.

Note that the fund is not intended to cover tuition, only costs related to research.

Application Process:

In addition to filling out the attached form, please provide the following:

- Applicant's academic CV
- Short note of support from academic supervisor, highlighting the candidate's qualifications for this work, and confirming that the project can be completed within the proposed timeframe.
- An itemized budget for the proposed work

2018 WATERWAYS POSTGRADUATE CONFERENCE

2018 Waterways Postgraduate Conference

Date: November 20, 2018
Time: 9am - 5.30pm
Location: Lincoln University, Commerce Lobby & C1
Register free

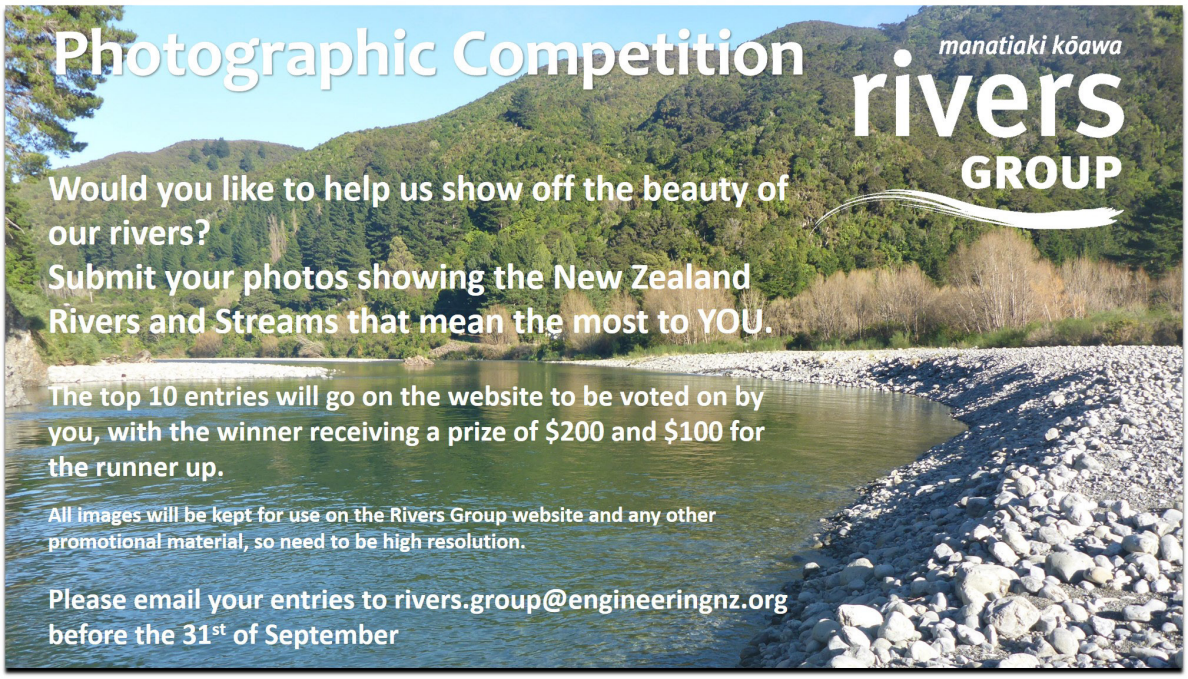
Engineering NZ and Water NZ Rivers Group have confirmed their support for the upcoming 2018 Waterways Postgraduate Conference. The Rivers Group is providing some financial support to help run the day and will also be giving out two student awards for best oral and poster river management presentations. This event showcases the latest research being undertaken by postgraduate students of University of Canterbury and Lincoln University in the field of freshwater management.

Visit: https://riversgroup.org.nz/events/

WORLD RIVERS DAY SUNDAY 23RD SEPTEMBER

WORLD RIVERS DAY
Sunday 23rd September is World Rivers Day. Please check the website link worldriversday.com/ and see if you can link with a local Group near you to participate

World Rivers Day is a celebration of the world's waterways. Running since 2005, it highlights the many values of rivers and strives to increase public awareness and hopefully encourage the improved stewardship of rivers around the world. Rivers in every country face an array of threats, and only our active involvement will ensure their health in the years ahead. World Rivers Day organizers encourage all of you to come out and participate. In particular, consider starting a Rivers Day event of your own, which might range from a stream cleanup to a community riverside celebration.



RIVERS GROUP

REGIONAL EVENT

5.30-7pm

Oct 16th TUES

EVENT ACTIVITIES:

Three presentations:

1. *Flood Risk & Asset Performance*, GWRC
2. *Post-quake Kaikoura Bridge Replacements: Tirohanga Stream*, Aurecon
3. *Situations & challenges in water supply: Vanuatu*, Engineers Without Borders

REFRESHMENTS PROVIDED.

TIME: 17:30 pm to 19:00 pm
LOCATION: Room Rutherford Room, 45-52 Willis St, Wellington

With the support of:

aurecon

RSVP by 2nd Oct

RSVP | Event information:
Sam Metcalfe: Sam.Metcalfe@aurecongroup.com
George Bowman: George.Bowman@gw.govt.nz

RIVERS GROUP ANNUAL CONFERENCE 2018

Engineering New Zealand/ Water NZ Rivers Group Conference

21st - 22nd November 2018
Massey University

Emerging Understanding on Key Issues Facing New Zealand's Rivers

manatiaki kōawa
rivers GROUP
A joint technical interest group of IPENZ & Water NZ

WELCOME

Engineering New Zealand/Water NZ Rivers Group are excited to invite you to the 2018 Conference to be held in Palmerston North on 21 -22 November.

The conference theme is "Emerging Understanding on Key Issues Facing New Zealand's Rivers". On day one, delegates will hear from a number of members from the industry and leading researchers on a range of subjects related to the challenges and successes of New Zealand Rivers. Day two includes a field trip to the Manawatu River and Gorge.

We look forward to seeing you in Palmerston North this coming November.

www.riversgroup2018.co.nz

KEY DATES

21 NOV — **Conference Welcome & Sessions**
Massey University

21 NOV — **AGM & Conference Dinner**
Wharerata Function Centre

22 NOV — **Field Trip**
Manawatu River & Gorge

- Registrations Open 14 September
- Early Bird Registrations Close 19 October

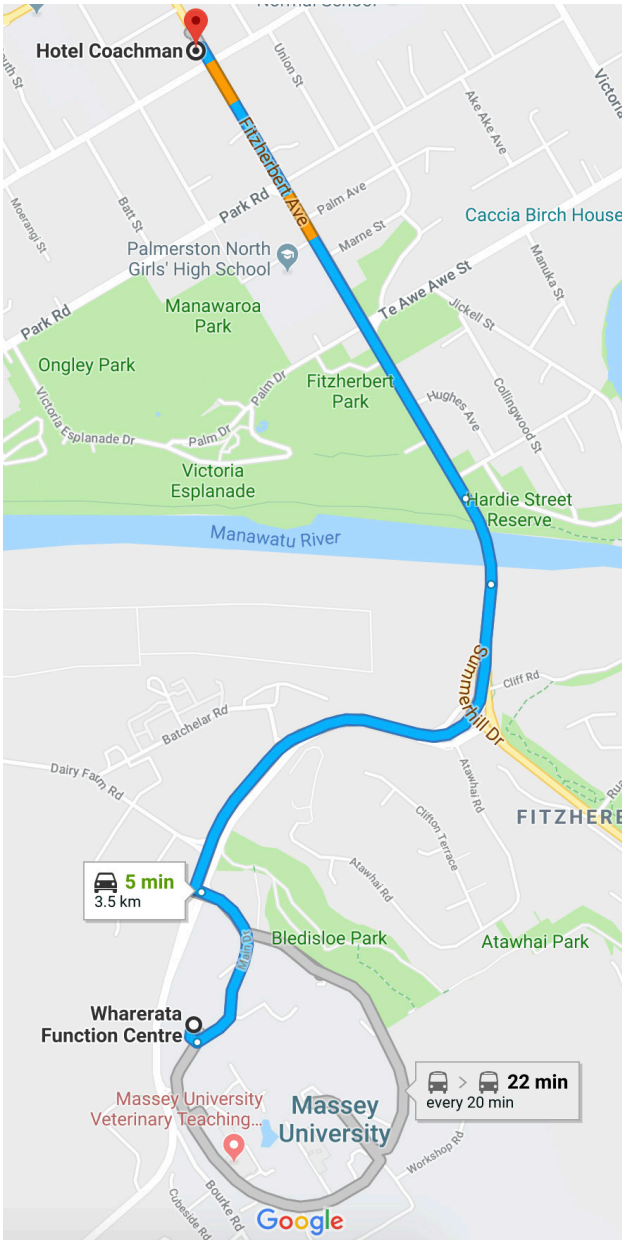
REGISTER NOW

CONFERENCE VENUE

Massey University - AgH Lecture Block
Tennent Drive, Massey University
Palmerston North

CONFERENCE DINNER

Wharerata Function Centre - Russell Room
Main Drive, Massey University
Palmerston North



FIELD TRIP

Departs Massey University
9:00am - 2:30pm

ACCOMODATION

Hotel Coachman
140 Fitzherbert Ave, West End
Phone: +64 6 356 5065
www.coachman.co.nz

REGISTRATION

	Early Bird	Late
Member	$480.00	$550.00
Non-Member	$565.00	$635.00
Student Registration	$280.00	$280.00

Day One Only	
Member	$380.00
Non-Member	$410.00

Additional Guest	
Dinner Tickets	$100.00

REGISTER NOW

Early Bird Registratins
Close 19 October

Registration Includes:

- All conference sessions
- Morning teas, lunches and afternoon teas
- Conference Dinner
- Field Trip

Prices are GST inclusive

www.riversgroup2018.co.nz

WHAT'S BEEN

WELLINGTON RIVERS GROUP AND COASTAL SOCIETY JOINT REGIONAL EVENT:

Way back on 20th June, the Rivers Group held a joint event with NZ Coastal Society in Wellington. NIWA kindly hosted about 30 of us at their Greta Point campus. Dr Michael Uddstrom presented to us about modern weather forecasting and why we need a supercomputer to do it (the case was well made!). Dr Scott Nodder took us through the recent tectonic story of Wellington Harbour including some surprising new information about faultlines under the harbour that included an element of scientific serendipity.

The presentations were followed by site tours. We got to see NIWA's new supercomputer and its associated new infrastructure, and the massive Brodie Store (aka the Shed of Broken Dreams) of marine scientific equipment. Some of us were even lucky enough to take a peek at the weird and wonderful specimens of NIWA's Marine Invertebrate Collection. It felt a bit like the movie Night at the Museum!

Mark Hooker | Senior Project Engineer - Floodplain Management Plans, Flood Protection

MANAWATU REGIONAL EVENTS

Manawatu Regional Rivers' Group Event

The Manawatu Rivers Group sponsored a very successful evening hosted by the Manawatu Branch of the Royal Society. Dr Catherine Knight from our Committee gave an excellent address about the early development in the Manawatu based around her book "Ravaged Beauty" as well as an outline of evolution of the historic environmental "policy" as covered in her great book "Beyond Manapouri – 50 years of Environmental Politics in NZ'"
Catherine's address was extremely well received with many questions and lively discussion. About 70 people attended.

Massey University Student Event

This was the fifth year the Rivers Group has sponsored an event at Massey University. The event takes the form of an address followed by presentation of prizes to the top Rivers students undertaking graduate courses run by Professors Ian Fuller and Russell Death.
This year we were fortunate again that Catherine Knight volunteered her time to address the student with a focus around river development in the Manawatu and its importance to the Manawatu economy.
The three prize winners this year were;

- Anna O'Hara: Top student in "River Processes"
- Ami Coughlan: Top Student in "Applied River Management" and
- Michaela Stout: Top Level 2 performing student in "Rivers and Slopes"

Congratulations to Anna, Ami and Michaela on your outstanding achievements.
The presentations were followed by a BBQ sponsored by the Rivers Group for all students. About 35 students and staff attended