manatiaki kōawa

rivers GROUP

A joint technical interest group of IPENZ & Water NZ

INSIDE THIS ISSUE

NEWSLETTER

Issue 15 | June 2016

FROM THE CHAIR

Kyle Christensen

WELCOME to Issue 15 of the Rivers Groups Newsletter, "Flow", our second for 2016.

Since our last newsletter the Rivers Group Committee has been busy running regional events and shaping up our joint annual conference with NZ Hydrological Society and Engineers Australia Water Division. In March we held a Delta Games Event in Wellington which was thoroughly enjoyed by all that attended and we are hoping to run this in other locations later in the year. We also had a joint function with the Manawatu IPENZ Branch where Professor Mark Jacklin gave a presentation on "Rivers of the Anthropocene". In April we had a joint after-work function with the Modelling Special Interest Group of Water NZ where we had an update on the NZ Rainfall Run-Off Guidelines from Nick Walmsley from Water NZ and an excellent presentation from Ben Fountain from Wellington Water and Charlotte Lockyer from Cardno on the development of hydrological standards for the Wellington Region. Charles Pearson from NIWA was also in attendance and provided an update on various projects NIWA are working on including a HIRDS update and the long awaited online tool updating the 1989 Regional Flood Frequency "Bible" that Charles co-authored with Alistair McKerchar.

In May a number of Rivers Group members were in attendance at the annual Water NZ Stormwater Conference in Nelson. This was an excellent conference with 330 attendees and a very high standard of technical papers including a number of rivers/flood hazard related papers, several of which we have included in this newsletter. A special word of congratulations to Rivers Group Member Mike Law of BECA who was awarded best conference paper for work on extrapolating climate change predictions for the Mackays to Peka Peka Expressway Project. All of the above events highlight the collaboration and crossover there is with a number of professional organisations across the country and it's great to be able to share ideas and learn from others who might bring a different perspective to the table.

There have also been some dramatic floods around the world and in NZ over the past couple of months with somewhat of a worldwide flood apocalypse in June 2016 with severe flooding in the USA, Mexico, Russia, China, France, Germany, Belgium, Ukraine and Romania. Across New Zealand the Wellington region, particularly Porirua has been hit by severe flooding one year on from the major floods of April and May 2015. In late March there was also a dramatic stopbank failure on the Waiho River at Franz Joseph which destroyed the Mueller Hotel. It was extremely fortunate that the proactive actions of the local hotel management and civil defence members initiated an evacuation of the 70 people in the hotel prior to the breach occurring, likely saving the lives of a number of the guests. It is situations like these that serve as a stark reminder of the very real nature of the risk that we manage with the work we do every day analysing, designing and managing flood and erosion risks across very large rivers and steep urban streams.

I trust that you will find the content of this newsletter interesting and I look forward to seeing you at one of our upcoming events.

Kyle Christensen
Chairman

The National Environment Monitoring Standards Project (NEMS) - What is it?

Jeff Watson - Manager Catchment Data (Horizons Regional Council)

Up until the late 1980's a significant amount of environmental monitoring in New Zealand was undertaken by the Ministry of Works and Development and this organisation provided a degree of national standardisation and leadership. Since then, central government funding has not been readily available for environmental monitoring and as a consequence, local government's monitoring networks and those of SOE's and private enterprise have increased significantly to fill the need. This multi-agency approach resulted in a growing divergence though the country in the way that environmental data measurements are taken, processed and archived.

Under the Resource Management Act, each individual Council is required to collect accurate and timely data to fulfill its obligations to manage the environment. At a national level, the Environmental Reporting Act requires that "reporting on our environment occurs on a regular basis and can be trusted by the public as independent, fair, and accurate."

Environmental data is vitally important to council functions as well as the wider community. Scientists and planners rely on data to make management decisions, engineers require information for design and operational purposes, health officers to ensure our environment is healthy, compliance teams to ensure rules are being met.

Accurate and consistent data is also required for national stock-takes and comparisons, and the need to have common methods of collecting, archiving and analyzing environmental data has become a priority. In recent times this has driven key initiatives such as Land and Water Aotearoa (LAWA), which is identified as a national priority for the collective Councils.

Two notable comments on the state of the nation's environmental data are summarised below:

The OECD's 2007 Environmental Performance Review stated that:

"Renewed efforts were needed to standardise local data collection methods to assist data aggregation and periodic reporting of key environmental indicators at a national level."

and

In the Environmental Reporting discussion document "Measuring Up" (MfE August 2011) Dr Nick Smith stated that:

"There is a lack of national consistency in what is measured, how and when"

In 2011, the Regional Chief Executives group agreed to a proposal from LAEMG Local Govt. Environmental Monitoring Group (LAEMG) to oversee the development of a set of National Environmental Monitoring Standards (NEMS). A NEMS Steering Group was set up with an on-going core membership of at least eight people made up of representatives from Regional Councils, Unitary Authorities, NIWA, Ministry for the Environment and the energy industry. This multiple organisation representation structure is designed to provide a holistic approach to creating and maintaining environmental

monitoring standards and guidelines that are of national relevance.

A key innovation of the NEMS initiative has been to successfully bring together representatives from across the environmental monitoring industry to work together to produce standards that are beneficial to all.

The NEMS Steering Group was tasked with:

- Identifying relevant environmental monitoring standards
- Establishing processes for the development and regular review of standards
- Securing funding for the creation and on-going maintenance of standards
- Successfully delivering high quality outputs in a timely manner

(Note:- Funding for the NEMS project has been provided by MfE, Envirolink and in-kind funding from NIWA, councils and the energy sector)

The NEMS Steering Group has to date successfully overseen the creation of a set of standards, by a number of working parties, which it anticipates will have lasting benefit to an increasingly fragmented environmental monitoring industry. To date the following NEMS documents have been produced:

- Quality Coding Schema
- Water level recording
- The measurement of open channel flow
- Rating curves
- Rainfall intensity recording for hydrological purposes
- Turbidity recording
- Dissolved oxygen recording
- Water temperature recording
- Soil water recording
- Water meter data for water resource Management
- A code of practice for the safe acquisition of field data around fresh water
- Glossary of Terms

These "Standards" provide for:

- Comparability of data
- Standardisation of training
- Appropriately specifying monitoring programmes
- Identification of data quality
- Standardisation of software functionality

Senior environmental monitoring practitioners from regional and unitary councils, CRIs, universities and private sector companies were recently invited to provide feedback on the relevance, usefulness, awareness and take up of NEMS documents. Pleasingly, 100% of respondents said that they were aware of NEMS and the figures presented below indicate the percentage of respondents who are currently using or are planning to use NEMS documents:

- Working around water = 100%
- Open channel flow= 94%
- Rainfall Intensity= 89%
- Water level = 89%
- Turbidity = 87%
- Quality coding schema = 83%
- Water temperature = 81%
- Dissolved oxygen = 80%
- Soil water = 77%
- Water meter data =72%.
- Rating Curves = had not been released at the time of the survey

The success of the project has been recognized by MfE and Council Managers in the form of an invitation to extend the NEMS programme to a wider set of standards. MfE has also recently endorsed the project with further funding.

There has also been considerable interest in this project from Environment Canada, other North American agencies and WMO.

NEMS
NATIONAL ENVIRONMENTAL MONITORING STANDARDS

WOULD YOU LIKE FREEBOARD WITH THAT?

Ian R. McComb – Tasman District Council, Mark Pennington – Tonkin+Taylor

ABSTRACT

For flooding assessments, it is common to see the addition of a freeboard allowance to account for uncertainties and other effects above a calculated water level. A uniform freeboard allowance is often globally applied, even when the magnitude of these uncertainties and presence or absence of other effects can easily be shown to vary significantly.

In this paper variation of model uncertainty is compared to freeboard offsets that are commonly applied across New Zealand. Multiple modelling scenarios have been used to investigate the sensitivity of outputs. The use of fuzzy maps is demonstrated to show how these can support a more detailed assessment of the freeboard - risk relationship.

This approach is compared with current practice across New Zealand and the pros and cons discussed. The implications of freeboard choices are considered in the context of urban flooding, river stop banks and coastal flooding situations.

KEYWORDS

Freeboard, Flooding, Modelling, Risk, Uncertainty

PRESENTER PROFILE

Ian is currently a 3-waters infrastructure planning engineer with Tasman District Council. Over his 25-year career in Australia and New Zealand he has developed a keen interest in the management of droughts and floods. He is now exploring our standard of responses to the challenging world we face.

1 INTRODUCTION

For flooding assessments, it is common to see the addition of a freeboard allowance to account for uncertainties and other effects above a calculated water level. A uniform freeboard allowance is often globally applied, even when the magnitudes of these uncertainties and presence or absence of other effects can easily be shown to vary significantly. However, there is a lack of guidance in the Building Code and NZS 4404:2010 the Land Development and Subdivision Infrastructure standard on the applicability of appropriate site-specific and/or variable freeboards. This paper therefore provides some suggested approaches.

The variation of model uncertainty is compared to freeboard offsets that are commonly applied across New Zealand. Multiple modelling scenarios have been run to investigate the sensitivity of outputs. The use of fuzzy maps is demonstrated to show how these can support a more detailed assessment of the freeboard - risk relationship.

This approach is compared with current practice across New Zealand and the pros and cons discussed. The implications of freeboard additions are considered in

the context of urban flooding, river stop banks and coastal flooding situations. The aim of the paper is to assist the search for improved approaches in line with the direction sought by recent publications from the Insurance Council of New Zealand (ICNZ, 2014) and the Ministry for the Environment (MfE 2015).

2 WHY HAVE FREEBOARD?

Freeboard acts as a safety net as part of the art of stormwater management in an uncertain world. This section briefly discusses different aspects that contribute to the need to have a freeboard allowance.

2.1 UNCERTAINTY

There is significant uncertainty in the modeling processes due to natural processes such as the starting or antecedent moisture content of the ground and the actual pattern of the rainfall. Both of these can have a significant effect on the runoff and hence flooding potential. Uncertainty in model results is often not quantified, yet the freeboard allowance applied is expected to cover this.

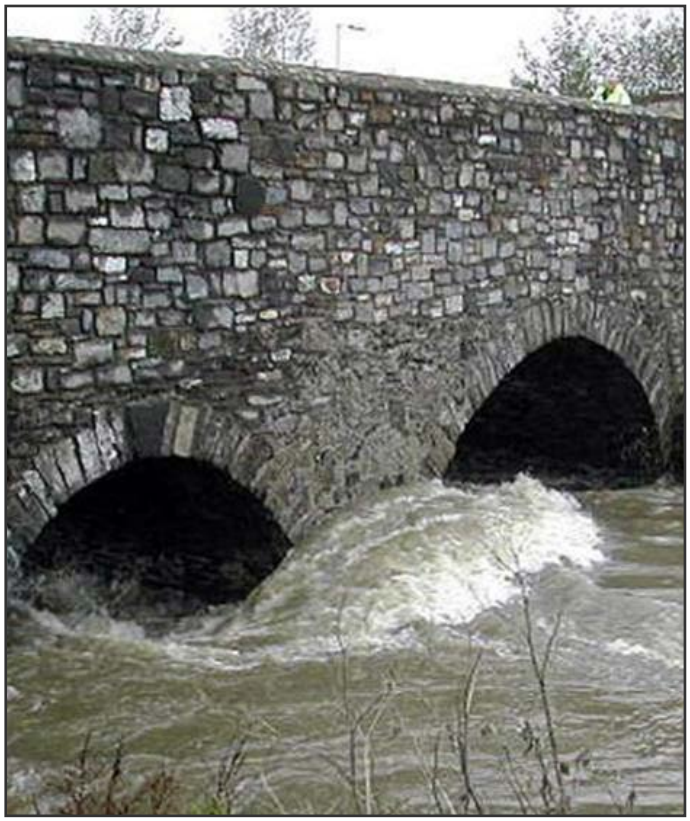
2.2 ERRORS

Technology errors can occur in modelling results due to inaccuracies in the LiDAR or other survey, the software that translates the ground levels to a surface or the modeling software that generates the flood height. Naturally, human errors in the modelling process can also be present.

Given that ground elevation data is frequently taken from LiDAR surveys, the accuracy of the LiDAR survey is fundamental in the accuracy of the final output. LiDAR terrain data is often used with above-ground features stripped out, and in areas where this has occurred the interpolated ground elevations may be prone to error.

2.3 LOCALISED BACKUP

Where flowing water impacts a structure or other obstruction, a localised increase in water levels can occur. This can be enough to cause structural damage or flow diversion.



Photograph: Localised flow backup

2.4 WAVES

Waves can occur due to pressure changes in a watercourse eg tidal bore or roll waves, wind or vehicles. In urban situations vehicles are the most likely source and the Building Verification Method E1/VM1 Clause 4.3.1 requires a 0.5m freeboard for residential properties when a pond of 100mm depth extends from a common vehicle area to the dwelling (BC, 2009).

2.5 SYSTEM CHANGES

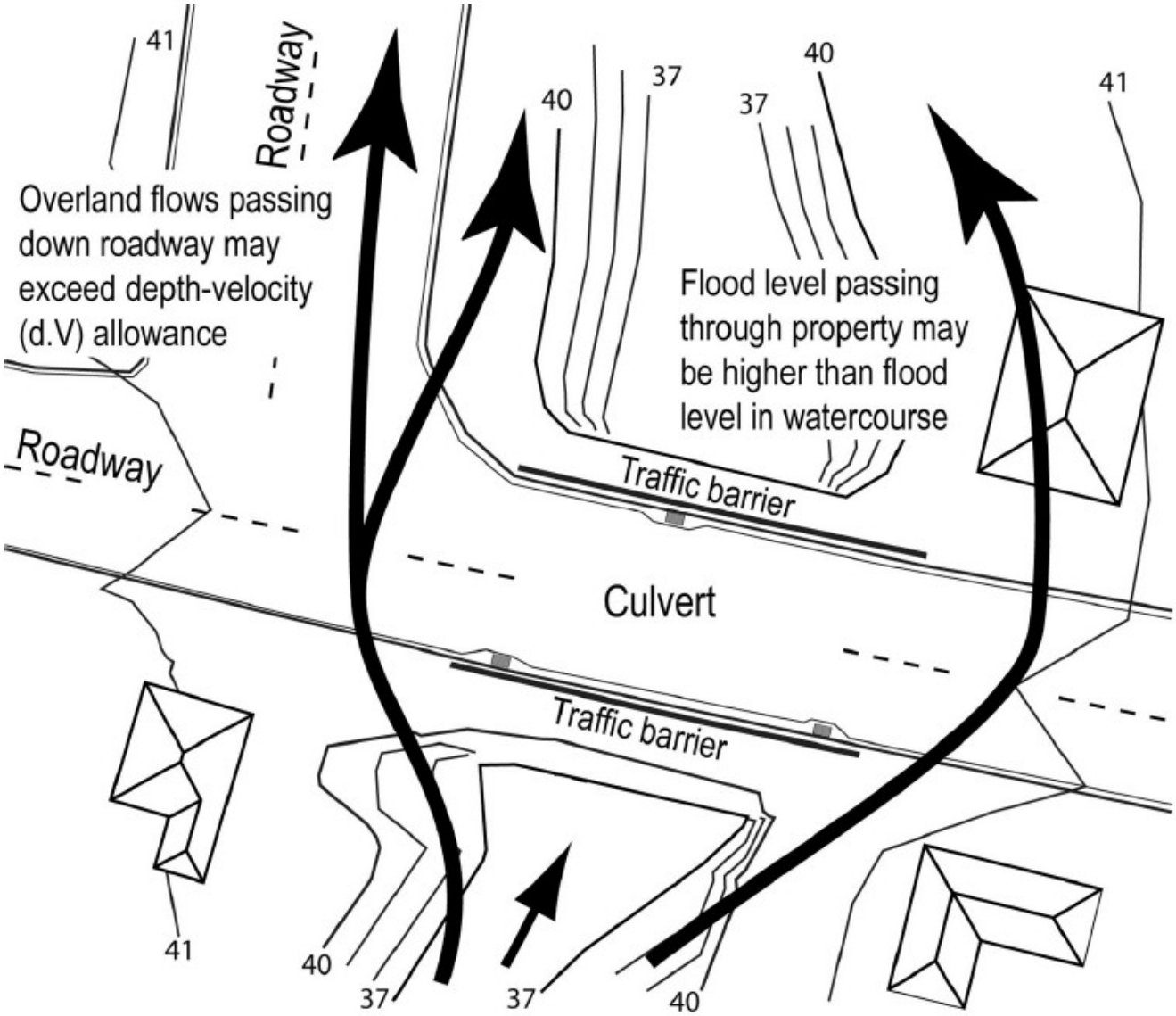
Climate variability is an obvious source

of system change however this should be allowed for in rainfall estimates in line with current government advice (NIWA 2009). Changes in the system performance due to development, system deterioration or maintenance activities can accumulate slowly and lead to unexpected problems. Others such as earthquake damage can happen very quickly and cause ongoing issues.

However, system changes are often difficult to foresee, but in any system change there is a reliance on the resultant effects never being worse as time progresses. As such, allowance for system changes in setting a freeboard may be irrelevant in many cases.

2.6 OVER-DESIGN SITUATIONS

Over-design situations mainly relate to rainfall in excess of the design rainfall. However, system blockage leading to unplanned flow routes is the other major cause of problems. For example, photograph 2 shows a pipe blocked in a 20% AEP storm event in Richmond in February 2016. Figure 1 shows an excerpt from an Australian rainfall and runoff publication suggesting contingency design thinking for such situations.



CELEBRATING WORLD FISH MIGRATION DAY

By Sjaan Bowie, DOC Technical Advisor - Freshwater | Mātanga Tāonga Wai Maori

World Fish Migration Day[1] is a global event that brings attention to migratory fish and their need for open river systems. The day aims to highlight the need to safeguard free-flowing rivers and to restore connections in waterways for migratory fish. The second World Fish Migration Day was celebrated recently on 22 May 2016.

Celebrations and events started in New Zealand, and followed the sun as 22 May dawned around the planet. There were over 450 events in 61 countries, varying from public education events, river tours, aquarium displays, dam removals to playing a human board game called 'the migratory fish'.

New Zealand waterways are home to around 40 native freshwater fish and several sports fish species. Many of these fish species need to move up and down within our waterways, and migrate between freshwater and marine habitats to complete their lifecycles.

Structures, such as, culverts, weirs, fords, dams, tide and flood gates, are commonly found today in streams and rivers throughout New Zealand. If they are badly designed, not installed correctly, or change over time they can obstruct fish migrations to upstream and downstream habitats. So these structures can threaten our freshwater fish, and safeguarding open pathways in our waterways is one key action we can all be involved in to ensure freshwater fish are able to complete their lifecycles.
In New Zealand four official events took place to promote World Fish Migration Day. Richmond, Nelson had the privilege of officially opening the 2016 global event and Christchurch, Hamilton and Gisborne hosted local celebrations. Opportunities to promote the cause were also picked up in other locations such as the Hawke's Bay. At all of the events, participants got the chance to interact and learn about the importance of open rivers and pathways for fish. They also got the opportunity to see some of the special freshwater fish that live in New Zealand waterways. Among the handouts provided to attendees was the new 'awesome eels' children's activity sheet that was produced in partnership with the New Zealand Fish Passage Advisory Group and Riverscapes Freshwater Ecology.

The Christchurch event was held at Ōpāwa School and involved a number of freshwater specialists, representing 13 different organisations and groups1, teaming up to create a fun-filled and educational interactive event. Over 500 children from preschools, schools and the public visited stations featuring our amazing native freshwater fish, sports fish, fish passage management and the local whitebait restoration project Whaka Inanka.

Children got to see whitebait eggs up close, watch sports fish and whitebait trying to negotiate fish passes, see ways we can find out what fish are in our streams, and could take home freshwater stickers, colouring sheets, books and posters that were being handed out.
Check out the amazing video of the World Fish Migration Day, Christchurch event.

Children checking out some of the giant bullies on display at the native fish station. Photographer: Sjaan Bowie (DOC)

Children watching little whitebait swim up the makeshift fish pass, and seeing how we can help them by putting rocks on smooth surfaces to slow the water down. Photographer: Sjaan Bowie (DOC)

Sjaan Bowie (DOC) looking at the adult inanga (whitebait) on display. Photographer: Nicola Toki (DOC)

Patrick Lees (NZ Fish Passage Advisory Group member) showing the children some of the ways to find out what fish are in our waterways. Photographer: Sjaan Bowie (DOC)

More information:
Fish passage management

[1] Department of Conservation, EOS ecology (Whaka Inaka project), Marine Ecology Research Group (University of Canterbury), Fish & Game (Central South Island & North Canterbury), Environment Canterbury, Working Waters Trust, Christchurch City Council, Avon-Ōtākaro Network, Ngai Tahu, New Zealand Fish Passage Advisory Group.

STOPBANKS RENEWAL PRIORITISATION

- A risk based approach for planning asset renewals

Ghassan Basheer | Waikato Regional Council

ABSTRACT

The Waikato Regional Council owns and manages more than 620 km of flood control stopbanks. The stopbanks provide flood protection for approximately 120,000 hectares of farmland and several urban settlements and towns. The asset management plans provide for condition and performance assessment of the stopbanks, based on annual visual inspections, regular surveys, monitoring during floods and regular reviews of the hydrology and hydraulics of the flood protection systems.

The service levels of the stopbanks are defined by their ability to withstand a specific design flood event without overtopping. Stopbanks heights are determined on the basis of the design flood level with an additional freeboard allowing for uncertainties in flood estimations and stopbank settlement. Maintaining the stopbanks at their design crest level requires regular surveys of crest levels, comparing these to design flood levels and topping up of stopbanks to required levels. In preparation for the Long Term Plan (LTP), a full review of stopbanks heights was carried in 2013 which found that approximately 90 km of stopbanks have lost the freeboard height through settlement and significant renewal works are required.

To ensure that budgets are spent to reduce risks to Council within the shortest timeframes, a risk based prioritisation process was developed to establish the LTP renewal works programme. The process has been applied utilising all the asset monitoring information and formed the basis for planning, and renewal works programme decision making during the last LTP.

This paper provides an outline of the process followed and examples of the resulting programme options to assist Council decisions making and adoption through the LTP.

KEYWORDS

STPP - Stopbank Renewal Prioritisation Process

WRC - Waikato Regional Council

ICMD - Integrated Catchment Management Directorate

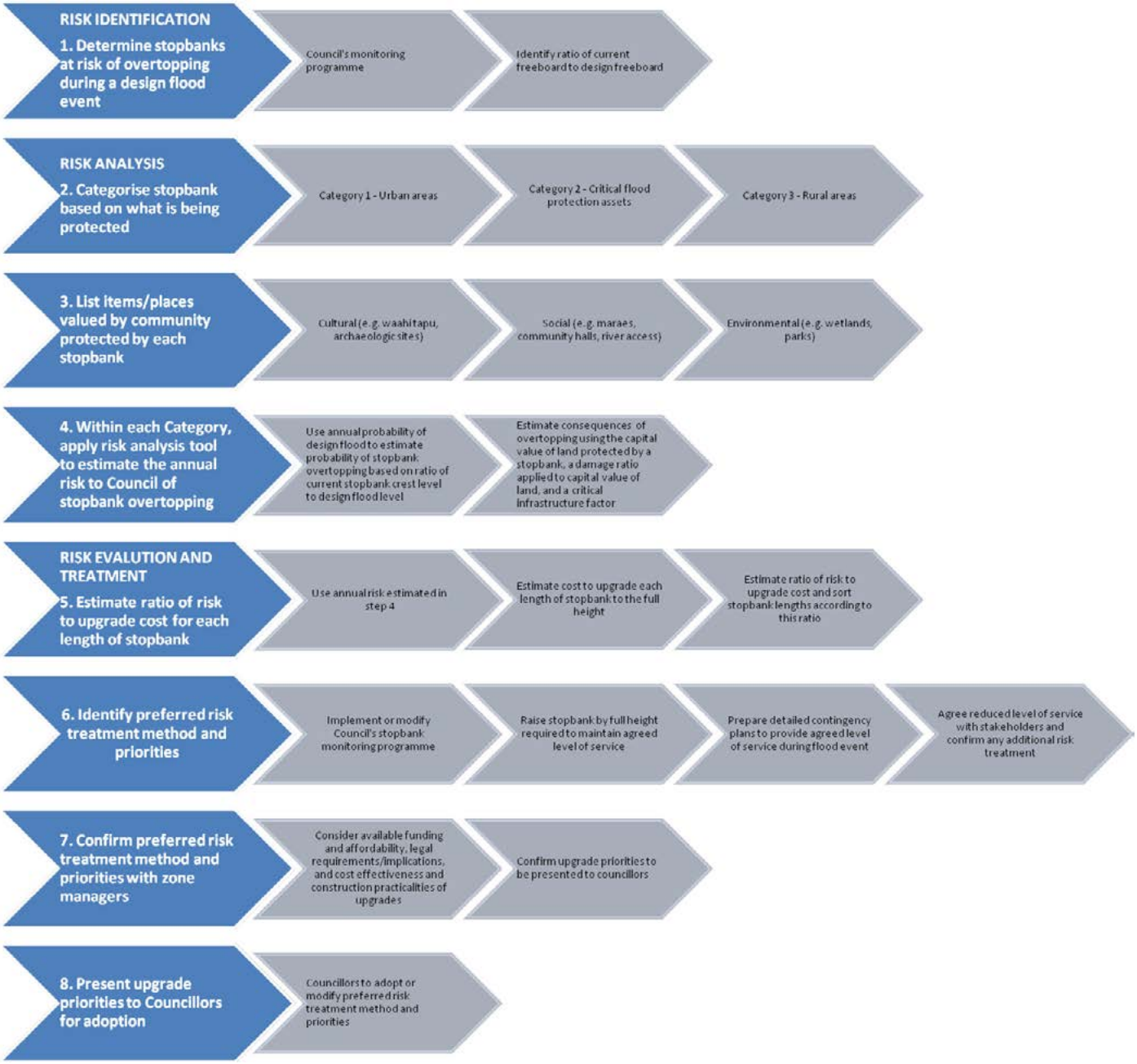
PRESENTER PROFILE

Ghassan Basheer holds a Bachelor of Science Degree in civil and construction engineering and a Masters Degree in Urban and regional Planning, University of Baghdad/ Iraq and is a member of the Rivers Group of IPENZ. Ghassan has more than 36 years experience covering a wide range of civil and environmental engineering design and construction fields especially river, flood protection and drainage engineering. Over the last 20 years Ghassan has been working with the Waikato Regional Council (WRC) and has filled a number of roles including the Assets Manager, Technical Services Programme Manager, Special Projects Manager and is currently the Principal Technical Advisor for the Integrated Catchment Management Directorate.

1 INTRODUCTION

1.1 BACKGROUND

The Integrated Catchment Management Directorate (ICMD) of the WRC is responsible for the management, maintenance and renewal of the flood protection



systems in the region. The major flood protection systems are located within two Zones, namely the Waihou-Piako Zone and Lower Waikato Zone. The systems include stopbanks, spillways, designated flood storage areas, pump stations, floodgates, control structures and major river and stream works. Together, these assets and works are designed to provide specific levels of flood protection (Level of Service) for people and property. The stopbanks within these systems form the main defences to floods and have a total length of more than 620 km with a total asset value of approximately $300 million.

In 2013, a full assessment of stopbank heights against design levels revealed that nearly 90 km of the stopbanks had their crest levels below or close to the design flood levels, with no adequate freeboard to withstand a design flood without overtopping. The overtopping failure is considered the most obvious mode that is avoidable through appropriate programmes of monitoring and renewal.

Legal advice obtained by Council in relation to Council's responsibility for delivering a level of services included that Council's duty of care requires that all reasonable steps are taken to address deficiencies in terms of stopbank height (or any other category

of under performance). The legal advice also acknowledged that financial constraints could be expected to limit the ability to address all under performance at once.

Therefore, the risk to Council could be managed and minimised if landowners were informed of the current situation, and stopbanks were prioritised for renewal within an agreed long term programme. To this end, Council carried out a targeted consultation programme as part of the 2013/2014 Annual Plan process.

Council also needed to ensure that there was a transparent, consistent, robust, and defensible process in place for assessing how stopbank renewals had been prioritised to derive a work programme.

The above led ICMD to develop the Stopbanks Renewal Prioritisation Manual, which adopted a prioritisation process based on Council's risk management policy and framework.

1.5 STOPBANKS RENEWAL PRIORITISATION PROCESS

ICMD technical engineering staff Murray Mulholland and Ghassan Basheer established a project to develop a prioritisation process based on a risk management framework in line with Council's risk management policy. To ensure robustness of the process, Casey Giberson of Tonkin and Taylor Consultants was employed to assist in the development of the process document. Following completion of the draft document, it was internally reviewed by Mark Pennington and David Bouma of Tonkin and Taylor and finally peer reviewed by Neil Jacka of AECOM consultants. The Manual was consulted on through Council's Catchment Committees and formally adopted by Council for prioritisation of stopbank renewal programmes during the last Long Term Plan.

The full document is available on
Waikato Regional Council website
www.waikatoregion.govt.nz

MOTHER OF ALL CLEAN UPS

On the eve of Mother's Day, thirteen hundred Christchurch people cleaned up rubbish from the city's river banks and estuary edge as a special gift to Mother Nature.

Nearly a thousand bags of litter were collected in the city's inaugural "Mother of All Clean Ups" and there were nearly 500 larger objects such as dumped mattresses, tv sets and building materials that were collected separately. In all, more than 20 tonnes of rubbish was picked up by the volunteers – far exceeding the organisers' expectations.

The event was jointly organised by the Avon-Ōtākaro Network (AvON), the *Ōpāwaho Heathcote River Network* and the Avon-Heathcote Estuary Ihutai Trust.

Fifty sixty community groups supervised the collections of litter.

"Today was a fantastic effort and the city can only say a humble thanks to all those who helped" said the Chair of the Estuary Trust, Bill Simpson, on behalf of the organisers. "The rubbish collected includes plastic bottles, bottle tops, fast-food wrappings and plastic bags. There was also a lot of building materials and polystyrene packaging". Without all that gunk the city is really shining today".

The event was supported by City Care and the City Council.

A number of IPENZ Rivers group members were involved in this great effort, including a special mother of all clean ups, held on the rear boundary of West Spreydon School where all 280 kids at the school got involved in collecting rubbish, and as a reward they got to see and feel some of longfin and shortfin eels living in the waterways".

Water New Zealand's 2016 Stormwater Conference

Water NZ Stormwater Conference held 18-20 May 2016 in Nelson was once again a huge success. This was the first time the conference was taken to Nelson and record numbers highlight the support from the industry in making this move.

The conference programme included Keynote presentations from Dr Deirdre Hart, University of Canterbury on Redefining Stormwater System Resilience in a Multi-hazard Environment; Professor Colin Thorne, University of Nottingham on Achieving Urban Flood Resilience: The Blue-Green Advantage; and Jim Sinner, Cawthron Institute on Challenges in Collaborative Planning.

This year the programme also included site visits around Nelson, which proved successful with two of the three selling out prior to the conference. Social functions such as the Harker Underground Construction Welcome Function and the Conference Dinner provided an excellent opportunity for delegates to unwind and network with peers.

The 2nd Asia Pacific Conference, which is the international version of the Stormwater Conference held every second year, will be held in May 2017 in Auckland.

Keep an eye out for more information.

– Harker Underground Construction Welcome Function

THE IPENZ RIVERS GROUP PUBLIC PROJECT GRANT

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

Closing Date: August 5th, 2016

Funding Opportunities:
Grants of up to $3,000 are available to support public sector groups (e.g. local government, community groups, not-for-profit, iwi/Maori) in works related to river management and restoration for one year, 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 projects that are focused on improving New Zealand's rivers, catchments and management of flood risk. Projects that seek to improve management of rivers, public education and/or further our knowledge of rivers, their values or processes are encouraged. We support works related to flood risk, sedimentation and erosion, water quality and quantity, and enhancing ecosystem function. Please review the key objectives of the Rivers Group when preparing your submission (http://www.ipenz.org.nz/riversgroup/About.cfm)

The fund is also intended to foster links amongst public sector groups and partners in government, academe 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 need NOT be members of IPENZ to apply, though they are encouraged to become members of the Rivers Group.

Application Process:
In addition to filling out the attached form, please provide the following:
- Professional CVs of the project leader(s)
- Background statement describing your group's structure and aims
- An itemized budget for the proposed work

The IPENZ Rivers Group Student Research Grant

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

Closing Date: August 5th, 2016

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 IPENZ 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

REGIONAL EVENTS

A well attended after-work presentation was held jointly by the Rivers Group/Water NZ Modelling SIG on 19th April at Cardno's Petone office.

Nick Walmsley from Water NZ provided an update on the proposal to produce New Zealand Rainfall/Runoff guidelines, and Ben Fountain (Wellington Water) and Charlotte Lockyer (Cardno) presented on the development of a standard hydrological model for catchments in the Wellington area.

Charlotte Lockyer from Cardno explaining the intricacies of the Wellington Hydrological Guidelines to Charles Pearson from NIWA along with 50 other rivers group members.

WORKSHOPS

RIVERS GROUP - RIVER MANAGEMENT WORKSHOP & FIELD TRIP

Dates: Workshop - Thursday 29th September | Field trip - Friday 30th September
Time: 9.30am - 5.00pm
Venue: Greater Wellington Regional Council's Council Chamber
Workshop Cost: $300.00 inc GST - Includes hand-outs, lunch, morning tea and afternoon tea
Field Trip Cost: $50.00 - Includes lunch

Closing date for registrations is 4pm Friday 2nd September

WORKSHOP OUTLINE.

FACILITATION
The workshop will be facilitated by Gary Williams, of Waterscape. He will lead out and facilitate the discussions, which will be case study focused and informed by the experiences of practitioners from around New Zealand.

FORMAT
The workshop will be an open discussion forum, to exchange experiences and examples of river management throughout New Zealand. The discussions will be facilitated around five general themes, and the discussions will be focused by case studies.

All participants will be asked to bring case studies, to demonstrate measures or techniques, or as a way of raising issues and concerns about river management and the effectiveness of different approaches and measures. The wider context of the case studies, in terms of reach characteristics and catchment setting will be important for understanding the issues and the river responses to works.

The discussions will be lead by a core group of experienced practitioners, who will bring case studies to demonstrate a range of issues, management approaches and techniques. For each theme, the discussions will be initiated by case studies of this core group, but a wide-ranging interaction between all participants will be encouraged. The aim is to share practical experience of what is done around NZ, while remaining open to a questioning of approaches and the objectives of river management.

PEOPLE
The workshop is intended to be a learning experience for all participants, including un-learnings! It is for all people who are actively involved with river management, as designers, asset managers, operational staff, and stakeholders. It is intended to be a professional development workshop and to pass on knowledge and practical know-how about all types of management measures used in waterways in NZ.

To ensure open discussions and allow full participation, numbers will be limited to 30 people.

THEMES

The workshop will be divided into five themes, with one theme for each session, and a general discussion at the end. Case studies will be allocated to a theme, and participants will be asked which theme their case studies refer to, and to indicate this in advance of the workshop. The session times for each theme will depend on the case studies, and this can be altered depending on interest, as expressed directly or through the case studies.

The themes pose management issues or questions that give context, and provide an objectives framework for the practical measures that are implemented in the field. They give a wide scope to the workshop, and the aim is to canvass a wide range of river management issues, but through real practical examples that people face in the field.

The themes are as follows:

- **Implications of River Dynamics for River Management — managing a continually changing natural system.**
  How do we take account of the changes in channel form and processes over time and along rivers? What are the management responses to changes in channel morphology and sediment transport, with aggradation/degradation trends or channel widening/revegetation, given the medium-term oscillations in flood intensities that occur in the NZ landscape?
- **Effects of Large Floods — mitigation, immediate responses, recovery and remedial measures.**
  How do we allow for the impacts and differing dynamics of large flood events, which give rise to significantly different channel forms and sediment fluxes. Should remediation be to the more 'normal' channel form and transport processes of small to medium sized flood events? What reserve areas or measures should be in place to mitigate adverse impacts? How do immediate responses mesh with longer-term recovery and remedial measures?
- **Risk Assessments — capital investments and repair strategies.**
  How do we assess waterway hazards and their respective levels of risk to human assets and for the river environment itself? What are our design and consultation processes about economic costs/benefits and environmental impacts? How are standards of protection set, with what residual risks? What are effective repair strategies to maintain the integrity of mitigation/protection measures and their nominated standard?
- **Managing the Margins — edge vegetation and bank protection.**
  Different ways of managing the river margins, and the edge effects of the hydro-morphological processes in the active channels (flows of water, sediments and debris/organic matter within a vegetated corridor). The different management strategies of fixed edges using solid rock works, and of diffuse and moveable edges with vegetation buffers. The design standards and implementation/construction requirements of the works or measures. How consistent are these standards and construction methods around the regions?
- **Managing the Active Channel — measures that affect channel form and sediment transport.**
  Different ways of altering channel form and the force/direction of flood flows within the active channel area. River responses to these alterations, and their per-

sistence or lack of persistence. Why, when and how do we undertake interventions that alter the active channel? Are there trade-offs between channel re-working or re-shaping works and edge measures, and how do edge measures impact on channel form and processes?

CONTEXT
The workshop has been organised by the Rivers Group for professional training and to provide a forum for the exchange of knowledge and experience among river management practitioners. The Rivers Group has done this, at the request of members, because there has been a lack of such training and opportunities for the exchange of ideas and know-how between practitioners.

The workshop has a broad scope to 'test the waters' and see where are the training and knowledge gaps, while ensuring useful outcomes for participants by having a practical case study focus. There are many issues around the themes, as well as knowledge and experience requirements, and this workshop can only touch on some of them. Depending on interest and the workshop outcomes, further workshops could be held that had a narrower focus or more specific aim, such as the development of standards and accepted procedures.

FIELD TRIP OUTLINE

Depending on interest, a field trip can be organised following on from the workshop.

PLACE & TIME
The field trip would be on Friday the 30th September, and leave Wellington from the Greater Wellington Regional Council building, at 9.00 am. A bus would take participants and return them to Wellington at the end of the day.

FIELD VISITS
The trip would cover the Waikanae and Otaki rivers in the Kapiti Coast district of Greater Wellington region, and the Ohau River in the Horowhenua district of Horizons region.

The three rivers flow from the Tararua Range to the west coast, across a narrow coastal plain. The lower plains reaches are managed, with council schemes, which include stopbanks, edge measures of vegetation buffers and structural works, and in-channel works, including gravel extraction. They have degradation reaches and aggradation along their lower reaches near the coast.

Staff from the councils will be on-site to explain the river management approaches and measures being used.

CONTENT
The themes of the workshop would be followed up during the field trip, with sites visited that demonstrate the issues. The site visits will be more informal, with plenty of time for discussions as a group and individually.

A separate email will be sent to all members with an invitation to attend the workshop along with the workshop flier, programme and the registration link early July.
In the meantime time book the dates in your diaries.
Once registration opens,remember to register early since spaces are limited for the workshop

CULVERT DESIGN WORKSHOP

A interactive workshop with presentations and practical lab demonstrations; with practitioners invited to share their experiences and views. The workshop is aimed at design professionals with some knowledge and experience in culvert hydraulics, and will not only focus on culvert hydraulics but cover wider application and considerations (e.g. fish passage)

Date: Tuesday 18th October
Time: 9.30am - 5.00pm
Venue: Auckland University Newmarket Campus, 42 Symonds St
Registration Cost: $375.00 inc GST (lunch included)

Topics:
- Design Parameters, hydraulics and methods
- Culvert types and performance
- Inlet & outlet design
- Ecological Considerations
- Asset management
- Climate change considerations
- Practical demonstrations at the new Auckland University's Newmarket Laboratories

Presenters:
- Gary Williams (Waterscape)
- Brian Kouvelis (Sustainable Futures NZ Ltd)
- Paul Franklin (NIWA)
- Sjaan Bowie (DOC)

For further information and pre-registration contact:
Brian Kouvelis at brian.kouvelis@xtra.co.nz

Registrations close 4pm Wednesday 31st August

(Spaces limited to 40 participants on first come basis)

A separate email will be sent to all members with an invitation to attend the workshop along with the workshop flier, programme and the registration link early July.
In the meantime time book the dates in your diaries.
Once registration opens,remember to register early since spaces are limited for the workshop

Rivers group reserves the right to cancel the workshop if there is insufficient registrations.

REGISTRATIONS NOW OPEN

www.nzhs2016.co.nz

PROGRAMME AT A GLANCE

Monday 28 November 2016
Workshops, including groundwater forum
Registration and welcome drinks: 5pm – 7pm
Venue: Copthorne Hotel

Tuesday 29 November 2016
Official Conference Opening
Venue: Millennium Hotel
Plenary Peter Goodwin: Idaho University
Poster Sessions 5.00pm - 6.30pm
AGMs: 6.30pm -7.30pm
Young Professionals function: 7.30pm onwards

Wednesday 30 November 2016
Plenary Jen Crawford: Anderson Lloyd
6.00pm-7.00pm Munro Oration

Thursday 1 December 2016
Plenary Rory Nathan: University of Melbourne
Conference closing at 5.00pm
Conference dinner: Skyline Gondola: 6pm

Friday 2 December 2016
Field trips

Conference Organising Committee
Charles Pearson (NZ Chair) // NIWA
Mark Babister (Australia Chair) // WMAwater
Sarah Mager // Otago University
Lawrence Kees // Environment Southland
Tim Davie // ECan
Jo Hoyle // NIWA
James Ball // University of Technology Sydney
Monique Retallick // WMAwater

Scientific Committee
Tim Davie // ECan
James Ball // University of Technology Sydney
Katherine Daniell - ANU
Brendan Berghout
Janice Green - BoM

Important Dates
Final papers must be received by:
26th June 2016
OR Extended Abstracts (2 Pages) by:
28th August 2016

CLICK HERE FOR LATEST CONFERENCE UPDATES

REGISTER ONLINE

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