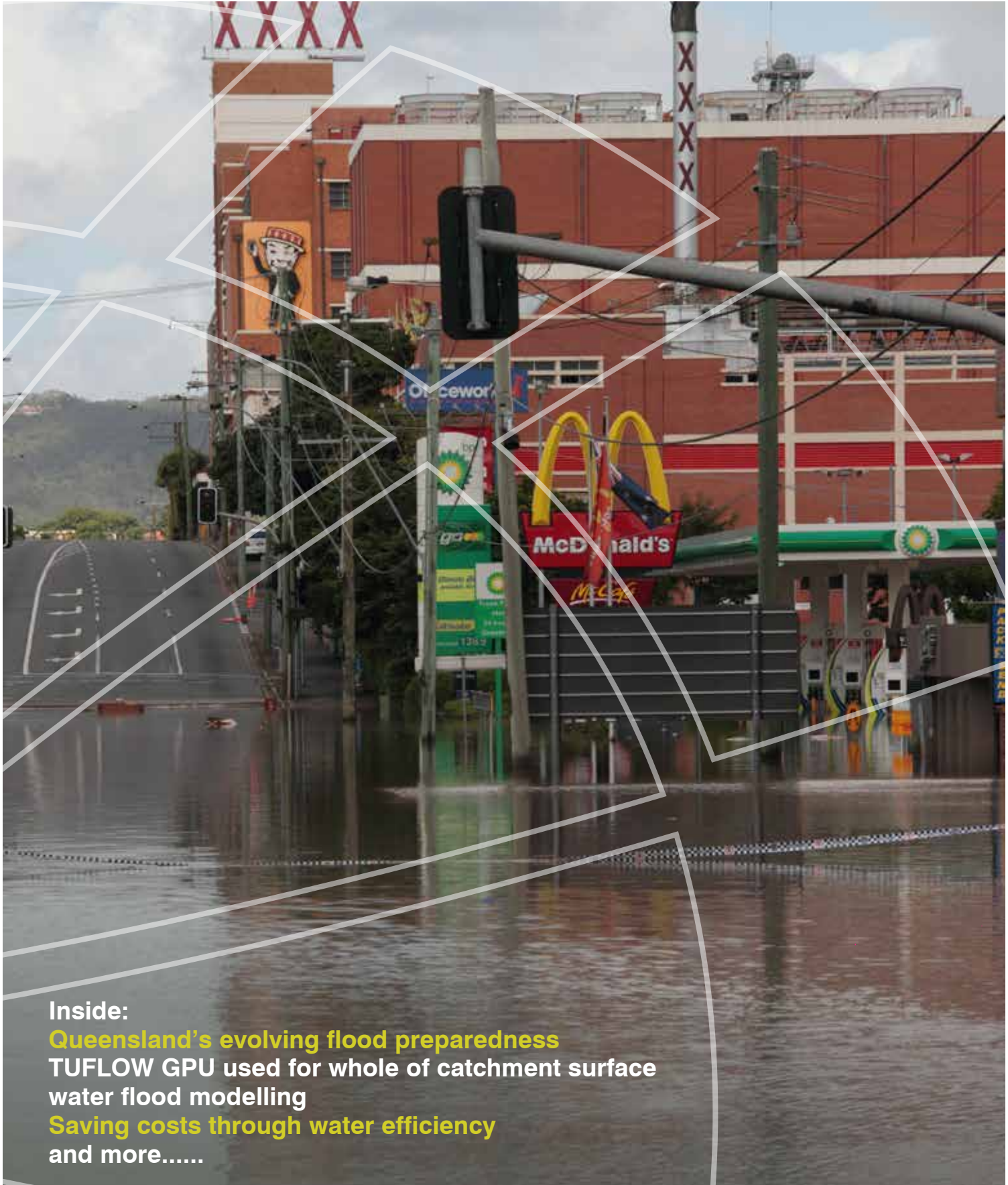


Water and Environment News



Inside:

Queensland's evolving flood preparedness

TUFLOW GPU used for whole of catchment surface
water flood modelling

**Saving costs through water efficiency
and more.....**

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Welcome

Welcome to the latest edition of the BMT WBM Water and Environment newsletter.

In accordance with our stated company objective of continuous improvement and of applying the latest technology to best effect in our service delivery, we have upgraded the way in which we will be delivering our newsletters from now on. We are now essentially embedding the newsletter within our website, thereby enabling you, our valued reader, to be both more selective in those articles which you choose to read and also providing a central repository of newsletters going forward. Hence, at any stage in the future should you wish to return to any newsletter for whatever reason to refresh your memory on previous articles, that will be possible. I trust you will enjoy the new format. Of course if at the same time you manage to browse through our website and learn more about BMT WBM, then that is hopefully an added bonus to us both.

By way of content, this newsletter addresses the usual cornucopia of projects, service delivery, software enhancements, promotional and new appointment news that we trust you find of interest. Of particular value to our Australian readers may be several of the international flood service provision related articles provided by Matt Roberts from the UK and Chris Huxley from the US.

Tony McAlister
Tony McAlister,
Managing Director,
Water & Environment Group

“this newsletter addresses the usual cornucopia of projects, service delivery, software enhancements, promotional and new appointment news”



Queensland's Evolving Flood Preparedness

A long standing drought across much of Queensland, Australia was abruptly brought to an end by a series of major extreme weather events and floods in 2010 and 2011. The highest profile of these was the 2011 flood that affected the State capital, Brisbane and many other locations in South East Queensland (e.g. Toowoomba, Ipswich, Grantham). Regional communities across much of the State also suffered enormously from a range of events, experiencing significant damage to transport and communications infrastructure as well as domestic properties. In the aftermath of Severe Tropical Cyclone Yasi and other extreme weather events in 2011, all Local Government areas of Queensland were disaster declared.

In response to this situation, the State Government established the Queensland Reconstruction Authority. This authority's remit was twofold: to oversee the re-building of damaged infrastructure and, more widely, to improve the State's preparedness for extreme weather events. A major aspect of enhancing preparedness has focused on improving information levels of the flood hazards posed to communities, together with communication and awareness raising that this information exists. The Queensland Flood Mapping Program (QFMP) was created to help meet this ambition. The program has been funded by the Natural Disaster Resilience Program and additional funding provided by the State Government.

To support and inform these activities, since 2012 the State Government has commissioned numerous numerical modelling studies of floods of a range of probable magnitudes and occurrences. BMT WBM has prepared modelling and flood mapping for a range of communities across Queensland.

To January this year, BMT WBM has investigated 26 communities across the state, together with undertaking several catchment-scale river basin modelling studies using the highly innovative TUFLOW GPU software package. BMT WBM has undertaken flood mapping studies for many locations where no information of this nature had previously existed, providing these communities with a valuable insight into the flood hazards which exist in their geographic domain.

One of the most valuable outcomes from the QFMP has been the identification of key actions and future priorities for flood affected communities. Better knowledge of the flood hazards is one piece of the puzzle. Communication of the increased information about flood hazards is an essential next step in the process of building understanding and resilience to the flood hazards facing many Queenslanders.

To assist, the State Government has produced a Flood Mapping Implementation Kit for Local Governments and disaster management groups. The newly acquired knowledge about flood hazards is being disseminated through the State Government's Floodcheck website and via Local Government and disaster management groups to residents and those likely to be on the ground coping with, or responding to, floods. For BMT WBM there is now a range of possibilities to assist Local Governments across Queensland in utilising this new knowledge, raising peoples' understanding of flood hazards and consequently improving flood resilience. This presents an exciting future opportunity.

As Albert Einstein is quoted as saying, "Any fool can know. The point is to understand".



Any fool can know. The point is to understand



QFMP Stats:
Since 2011 -- over **12,000** individual flood mapping products for **177** flood prone communities across **53** local government areas, plus catchment-scale mapping of **14** major catchments.

For more information please contact:
David Sturgeon-Smith
Project Manager
BMT WBM Brisbane
David.Sturgeon-Smith@bmtwbm.com.au



Gold Sponsor of the 2015 FMA Conference



BMT WBM is proudly Gold Sponsor for the forthcoming Floodplain Management Association National Conference to be held in Brisbane from the 19th to the 22nd of May 2015. This year's conference theme is 'Building a Flood Resilient Australia', reflecting a growing trend to empower communities to better withstand and recover from flooding through flood resilient infrastructure and building design. BMT WBM has a long history of developing new ideas and solutions which have helped communities across Australia improve their flood resilience.

We are thrilled to announce that seven of our floodplain management experts will be presenting at this year's conference on a range of key issues supporting the theme of Building a Flood Resilient Australia.

Our presentation topics include the Brisbane River Flood Study, the Flood Integrated Decision Support System developed for Melbourne Water, a floodplain risk management study undertaken for the Byron Bay area and a North Queensland project helping to improve community flood resilience.

If you are attending the conference, please stop by our conference booth to say hello, ask a few questions from our presenters, and meet our specialist flood personnel. Find out 'Where Our Knowledge Can Take You'.

Keep calm and plan on?

Have Estuary Management Plans contributed to the ecologically sustainable management of our estuaries?

Around 100 Estuary Management Plans (or their equivalent) have been prepared in NSW, mostly by consultants on behalf of Local Governments and Estuary Management Committees, with assistance and funding from the NSW Government's Coastal and Estuary Management Program. While it has always been a requirement of the NSW Government to undertake a review of the implementation progress of individual plans several years after they are implemented, a large scale audit of plan implementation and overall success across the State has never been conducted and is long overdue.

As such, Michelle Fletcher and Damion Cavanagh of BMT WBM decided to undertake the first step towards such a retrospective review of NSW Estuary Management Plans. The initial focus was assessing the outcomes of the many (20+) Estuary Management plans that BMT WBM has prepared over more than 10 years as a self-designed professional development exercise. This activity was later expanded to include plans prepared by other consultants. The review also built upon an earlier audit of ten Estuary Management Plans commissioned by the State Government in 2003 (MHL, 2003).

The results of our latest work were presented in November, 2014 at the NSW Coastal Conference in Ulladulla.

The review identified several key trends in plan implementation. External drivers were consistently found to be an important consideration. For example, actions involving physical works were found to be more frequently implemented than those requiring planning and development controls, primarily because they were more likely to satisfy relevant criteria for funding. Unfortunately, many of the physical works implemented up to 10 years ago, such as stormwater treatment devices (predominantly funded through the NSW Stormwater Trust) have not been adequately maintained since installation and in many cases the anticipated environmental benefits of these devices have not resulted. Disposal of water and sediment accumulated within these structures was also shown to be a consistent challenge, requiring careful environmental management and often being prohibitively expensive. There were other examples of the influences of external drivers over the period of implementation, such as conversion to the standard instrument LEP and the influence of Catchment Management Authorities.

The importance of internal communication also was found to be critical in the success or otherwise of Estuary Management Plans. Additionally, some actions have been proposed within the plans that were reviewed that are considered simply un-implementable due to unrealistic costs or a complete lack of community support and political will.

The outcomes of the review highlighted a range of low cost actions, with few trade-offs and significant benefits, that should be undertaken by Councils and other authorities - regardless of successful grant funding through the State's Estuary Management Program. Importantly, the review gave us valuable feedback about writing practical plans that are ultimately implemented, to the real benefit of our valuable estuaries.



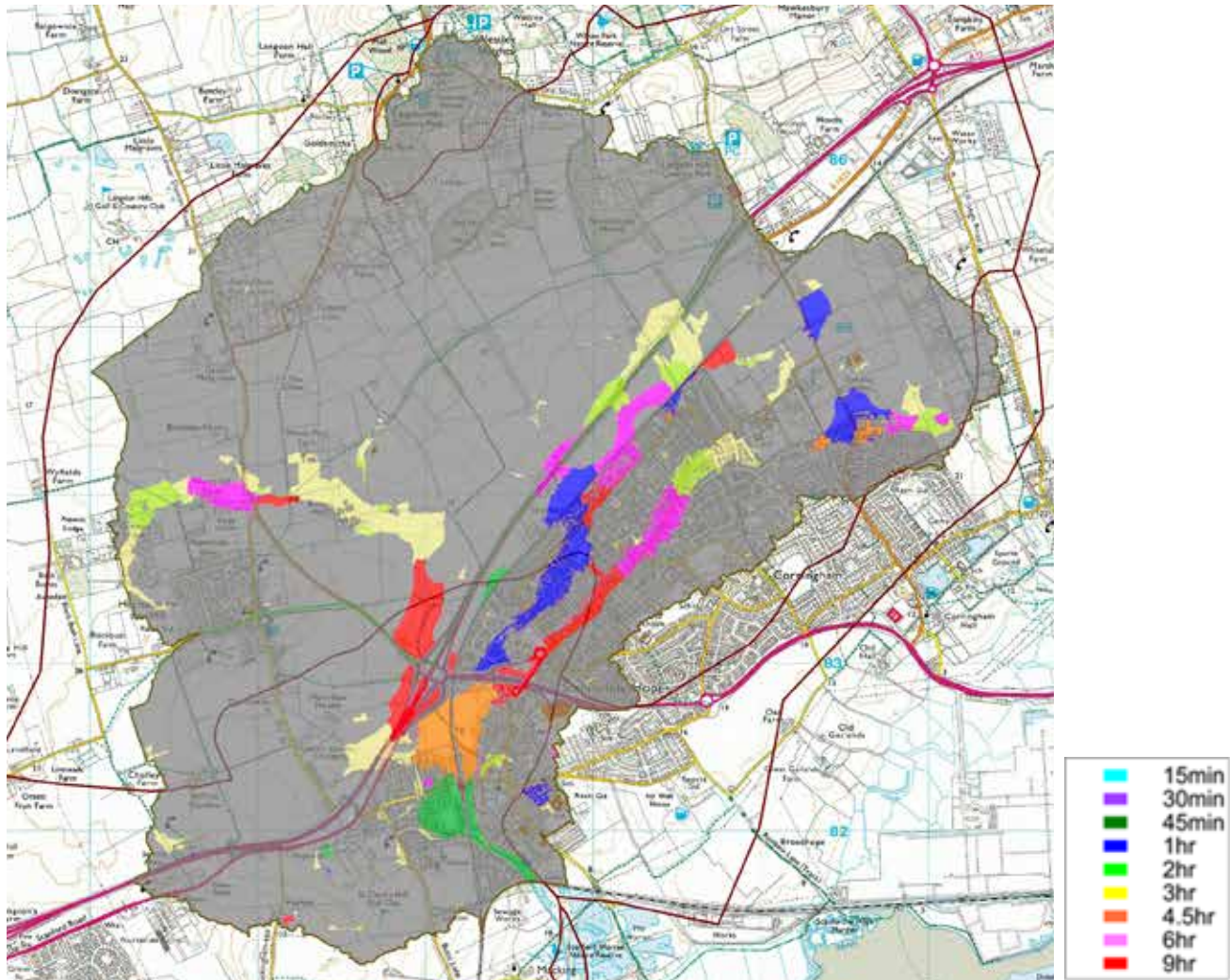
For more information please contact:
Jo Tinnion
Leading Floodplain Management Consultant
BMT WBM Brisbane
Jo.Tinnion@bmtwbm.com.au



For more information please contact:
Michelle Fletcher
Senior Coastal Scientist
BMT WBM Newcastle
Michelle.Fletcher@bmtwbm.com.au



How “Critical” is Critical Duration?



The accurate assessment of flood risk and flood damages in any catchment relies on the best possible calculations of peak flood discharges, stages, and maximum runoff volumes. Each of these fundamental parameters is affected by the nature of the particular location being investigated and importantly how it is connected to upstream catchments and downstream drainage infrastructure. TUFLOW GPU has been used in our UK office for whole-of-catchment surface water flood modelling as an alternative to using conventional hydrological models (which are often constrained as they cannot properly simulate the hydraulics of drainage infrastructure) to determine the critical duration storms specific to each study reach across/within a catchment.

The substantial parallel computing ability of TUFLOW GPU means that we can now quickly model multiple storm durations to identify how critical duration events vary within a catchment by simulating both the hydrology (through the distributed direct rainfall runoff capability of TUFLOW GPU) and the hydraulics of the major drainage infrastructure within the catchment (which are directly simulated within TUFLOW GPU).

The analysis above shows such an application and illustrates that, even within a small urban area, modelling more than one critical duration storm is necessary to produce the most accurate representations (i.e. the highest) flood discharges and stages.

For more information please contact:
Mat Roberts
Operations Manager
BMT WBM UK
mat.roberts@bmtwbm.co.uk



Water Efficiency to Save Costs



Water efficiency may not be a high political priority in many urban areas of Australia at the moment due to the prevailing higher than normal rainfall conditions being experienced by much of the country. However, there are an increasing number of organisations that are realising there has never been a better time to take a fresh look at their resource usage costs. Some, more enlightened, organisations also realise that in just a few years we will be in drought conditions again. For many of these organisations, this has been the path to some of the most profitable return on investments imaginable.

In the past 6 months, BMT WBM staff have been busy taking a closer look at water use patterns in a wide range of properties – including iconic entertainment facilities, large universities, stadiums, council parks and buildings, residential apartment buildings, a zoo, tourist parks, commercial laundries, aged care facilities, hotels, manufacturing plants, and many more.

Environmental sustainability is sometimes a factor for these sites, but the most common driver is economic – seeking ongoing cost savings through practical improvements and reductions in water usage, often with startlingly low payback periods. As a result of our work, one manufacturing plant alone is looking at water bill savings of over \$700,000 per annum, with a payback period counted in months rather than years.

Even for well-managed sites, our investigations typically identify practical cost-effective opportunities to save 25-60% of current water use, plus compounded cost savings from associated embedded energy and staff time savings.

The key reason these opportunities often remain unrealised for many sites is that there is no ‘silver bullet’ or simple solution to water efficiency. Even within specialised sectors, the best results almost always require close investigation and analysis at the individual site level with appropriate equipment and expertise – and experienced, unbiased help with this can be surprisingly hard to find.

BMT WBM is committed to the highest standard of water efficiency auditing, training and assistance - and is endeavoring to keep up with increasing private demand across most sectors.

For more information please contact:
Adam Jones
Environmental Engineer
BMT WBM Sydney
Adam.Jones@bmtwbm.com.au



more

NEWS

TUFLOW used for U.S. Army Corps Flood Risk Economic Assessment

The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HEC-FDA) program serves as the U.S. Army Corps of Engineers' primary tool for formulating and evaluating flood damage reduction plans using risk-based analysis methods. Ongoing development includes an enhancement to incorporate 2-dimensional floodplain data into HEC-FDA analyses on flood risk management studies.

TUFLOW has been used by the USACE for the first time to provide the hydraulic model input dataset for HEC-FDA flood risk economic modeling as part of the Lower Cache Creek Feasibility Study. The City of Woodland, as the local sponsor for the project, retained the services of Wood Rodgers, Inc. to develop a detailed TUFLOW hydraulic model of the lower Cache Creek system. The City's model was then used by the USACE to identify potential alternatives to reduce flood risk to lands adjacent to Cache Creek and to provide a recommendation to Congress for authorization to implement the proposed solutions.

BMT WBM Silver Sponsors of the 2015 Healthy Waterways Awards

BMT WBM is proud to once again be Silver Sponsor of the 2015 Healthy Waterways award and category sponsor of the Government Award to recognise the excellent efforts being made by government agencies to manage our waterways and the longer term goals of balancing our urban and natural environments.



Healthy Waterways' Chief Executive Officer, Ms Julie McLellan, welcomed BMT WBM on board "Without the support of organisations like BMT WBM, the Healthy Waterways Awards could not continue to recognise those who dedicate their time selflessly for the benefit of our waterways," Ms McLellan said.

Honouring our waterway champions, the 2015 Healthy Waterways Gala Dinner is being held on the 19th June at the Hilton Hotel in Brisbane.

<http://healthywaterways.org/awards>

TUFLOW FV New Features and Application Seminar in Sydney

Following the successful seminar in Brisbane, we are pleased to announce the next TUFLOW FV seminar in Sydney (13th May). This free seminar will be led by Dr Ian Teakle, the primary author of TUFLOW FV. The interactive session will introduce new TUFLOW FV features and showcase recent engineering and environmental assessments undertaken by TUFLOW FV users. Further seminars are planned for other parts of the country.

More information and details on how to register can be found at <http://tuflow.com/Training.aspx?ws>

BMT WBM Sponsor the 18th Annual International River Symposium

We are proud to be a Silver Sponsor of the 18th Annual International River Symposium in Brisbane this September.



The theme for the 2015 Symposium is "Healthy Rivers – Healthy Economies". This is a perfect opportunity for BMT WBM to ensure our knowledge of the prudent management of rivers and their contributing catchments is more extensively recognised.

Anyone interested in attending or presenting a paper is encouraged to do so. Please visit:

<http://riversymposium.com/program-2014/abstract-and-poster-submissions-2/>

New Appointments

BMT WBM has announced a number of new appointments within its Water and Environment Group.

Erin Sellers will take on the role of Team Leader for the company's Sydney office.



Erin Sellers

Erin has 17 years' experience in flooding, floodplain management, catchment management and water sensitive urban design, in Australia, UK and Ireland. Erin comes to BMT from Fairfield City Council where he led their catchment management team of 12 people. He has also had an active role in Stormwater NSW and the Sydney consortium to the CRC for Water Sensitive Cities.

Greg Fisk, National Practice Leader (Environment) and Dr Michael Barry, Manager Catchments and Receiving Environments, have also recently accepted additional responsibilities within the business.



Greg Fisk

Greg will take up a position of Business Development Manager with Dr Michael Barry assuming the position of Technical and Innovation Manager wherein he will champion, facilitate and co-ordinate technical development, research, innovation and knowledge development.



Dr Michael Barry

BMT WBM Sydney has moved!

Our Sydney office has relocated to Smail St, Ultimo where our staff are enjoying their new open-plan space!



BMT WBM Sydney



For more information please contact:
Chris Huxley
TUFLOW Software
Sales and Support (USA)
Chris.Huxley@bmtwbm.com.au

BMT WBM has a proven record in addressing today's engineering and environmental issues.

We aim to continue to enhance our services, capabilities and areas of application to meet the community's future development and environmental protection needs.



1 Number of BMT WBM offices in region

● BMT offices

BMT WBM Brisbane

Level 8
200 Creek Street
Brisbane Queensland 4000
PO Box 203 Spring Hill QLD 4004
Tel +61 7 3831 6744
Fax +61 7 3832 3627
Email bmtwbm@bmtwbm.com.au

BMT WBM Denver

Suite 120
8200 S. Akron Street
Centennial
Denver Colorado CO 80112
United States
Tel (+1) 303 792 9814
Fax (+1) 303 792 9742
Email denver@bmtwbm.com

BMT WBM Melbourne

Level 5
99 King Street
Melbourne Victoria 3000
PO Box 604 Collins Street West
VIC 8007
Tel +61 3 8620 6100
Fax +61 3 8620 6105
Email melbourne@bmtwbm.com.au

BMT WBM Newcastle

126 Belford Street
Broadmeadow New South Wales 2292
PO Box 266 Broadmeadow
New South Wales 2292
Tel +61 2 4940 8882
Fax +61 2 4940 8887
Email newcastle@bmtwbm.com.au

BMT WBM Northern Rivers

Suite 6
20 Byron Street
Bangalow New South Wales 2479
Tel +61 2 6687 0466
Fax +61 2 6687 0422
Email northern.rivers@bmtwbm.com.au

BMT WBM Perth

Level 3
20 Parkland Road
Osborne Park WA 6017
PO Box 1027 Innaloo WA 6018
Tel +61 8 9328 2029
Fax +61 8 9486 7588
Email perth@bmtwbm.com.au

BMT WBM Sydney

Suite G2
13-15 Smail Street
Ultimo Sydney New South Wales 2007
Tel +61 2 8960 7755
Fax +61 2 8960 7745
Email sydney@bmtwbm.com.au

BMT WBM United Kingdom

1st Floor
International House
St Katharine's Way
London
E1W 1AY
Tel +44 (0) 20 8090 1566
Email london@bmtwbm.co.uk

BMT WBM Vancouver

401 - 611 Alexander Street
Vancouver
British Columbia V6A 1E1
Canada
Tel (+1) 604 683 5777
Fax (+1) 604 608 3232
Email vancouver@bmtwbm.com