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WATERFRONT

April, 2006

Newsletter of Engineers Australia's National Committee on Water Engineering

Australian Runoff Quality Released

Dr Tony Wong and Professor George Kuczera at the Sydney workshop

Australian Runoff Quality (ARQ) – A guide to Water Sensitive Urban Design is a document aimed at providing an overview of current best practice in the management of urban stormwater in Australia within the context of total urban water cycle management and integration of management practices into the urban built form. In addition to the issue of stormwater quality, major Australian urban areas have experienced raw water supply shortages in recent years and the potential synergies between ***stormwater quantity*** management/reuse and ***potable water*** use minimization have been identified by the industry as a priority issue.

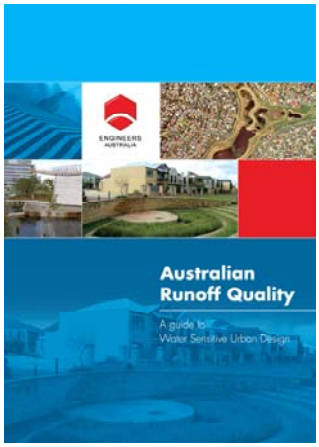
Innovation and capacity building to create Water Sensitive Australian cities is stipulated in the intergovernmental agreement of the National Water Initiative signed between the Commonwealth of Australia and the Governments of New South Wales, Victoria, Queensland, South Australia, the Australian Capital Territory and the Northern Territory. ***Australian Runoff Quality*** provides a framework for successful approaches in Water Sensitive Urban Design, addressing various spatial scales of integration of urban drainage planning with the design elements of urban hydrology, ecologically sustainable development, land use planning, urban landform and asset life cycle economics.

The document also presents an overview of institutional capacity building activities to underpin the sustainability of the technological approaches to WSUD. The document provides guidance on the following fundamental questions in WSUD:

- What objectives should we be trying to meet with respect to urban water pollution;
- What pollutant loads can be expected from urban catchments around the country;
- How can these pollutant loads be managed using the range of management practices available to us;
- Procedures for the estimation of a range of urban stormwater contaminants;
- Design guidelines for commonly applied stormwater quantity and quality management practices;
- Procedures for the estimation of the performance of these practices;
- How does the governance of urban water infrastructure affect the applicability and long-term viability of the range of management practices identified; and
- How can we integrate stormwater quantity and quality management with the 'conventional' elements of the urban water cycle (*i.e. sewage and potable water*)

The document contains 14 chapters and draws on the latest findings and recommendations from Australian and international research and practice. Recognised experts in relevant fields were invited to prepare relevant chapters of ***Australian Runoff Quality*** under the editorial leadership of Dr Tony Wong. ARQ is published by Engineers Media for Engineers Australia and gives details of current best practice in the management of urban stormwater in Australia.

The document was issued as a draft in June 2003 for an 18-month industry consultation. Following this, the document was revised and submitted for technical review by a panel of eminent scientist and practitioners in March 2005. Final comments were received in August 2005 and the authorship team completed the document in November 2005.



You can purchase your copy of the ARQ via the internet or by email or post.
The cost is $120 +GST (members) or $160+GST (non-members).
Contact details are below:

www.engineersmedia.com.au/bookshop

eabooks@engineersmedia.com.au

Post: EA Books, PO Box 588, Crows Nest NSW 1585

By Dr Tony Wong

In the Pipe NCWE Chairman's Message

Welcome to the first edition of WaterFront, the newsletter of the National Committee on Water Engineering (NCWE). The water engineering community in Australia is very active, yet news and developments seem to filter slowly across state boundaries. Let's check this proposition out. Did you know that in early April a major international conference on water sensitive urban design was held in Melbourne? Did you know that Australian Runoff Quality is now available in hardcopy and very soon in electronic format from Engineers Media? Did you know that a major revision of Australian Rainfall and Runoff is well underway and that it will significantly affect practice as we presently know it? Do you know the schedule of Australian conferences coming up in the next few years? Most likely you answered a fuzzy yes to some of these questions. This is why WaterFront is being launched, to help keep you informed of latest developments and activities within the water engineering community. Please share it with your colleagues or, better still, get them to register on the email distribution list by contacting the editor Associate Professor Martin Lambert on mlambert@civeng.adelaide.edu.au. I trust you will find WaterFront useful and informative.

George Kuczera
Outgoing chairman
National Committee on Water Engineering

Professor George Kuczera

A&RR Update

AUSTRALIAN RAINFALL & RUNOFF – 4th EDITION

Australian Rainfall and Runoff is one of the most influential and widely used documents published by EA Media on behalf of Engineers Australia. The current edition, initially published in 1987 and in a split book form in 1998, has received widespread Australian and international acclaim. Furthermore, the general community has recognised the importance of Australian Rainfall and Runoff to the practice of hydrologic engineering in Australia through the many awards that the current edition received when first published.

Since publication of the current edition, there have been advances in the application of engineering hydrology which warrant the updating of the current document. This has already led to the revision of Book 6 on Estimation of Large and Extreme Floods in 1999. Furthermore, the issues of environment sustainability and water conservation are increasingly requiring the application of updated or new engineering hydrology techniques.

In recognition of these advances and changing community concerns, the National Committee on Water Engineering (NCWE) of Engineers Australia has committed itself to the preparation of a new updated and revised edition of Australian Rainfall and Runoff. In-line with this commitment, Associate Professor James Ball was asked by the NCWE to manage all the technical issues associated with the revision. A dedicated web address (www.arr.org.au) has been created to disseminate information about issues and practices associated with Australian Rainfall and Runoff and to receive feedback from users of the document about their needs and concerns.

As part of the preparation of the revised edition, views of users have been sought through presentations at most Divisions of Engineers Australia. These presentations have discussed the traditional focus of Australian Rainfall and Runoff as well as the need to provide additional information on the hydrology of rainfall and runoff for water quality investigations in both urban and rural areas, the use of catchment simulation techniques, the integration of hydrologic and hydraulic models, and hydrological aspects of integrated water management within urban areas. These views and other feedback formed the basis of the structure proposed for the new edition.

For more details about the revision process or to provide comment and feedback to the book review teams please visit www.arr.org.au.

By Associate Professor James E Ball

Water Engineering Hall of Fame

The Water Engineering Hall of Fame honours individuals who have made outstanding and lasting contributions to the water engineering profession in Australia. These individuals have shaped the theory and practice of water engineering. The Hall of Fame not only seeks to acknowledge their contributions but also seeks to document their legacy to develop a sense of tradition and appreciation of the history of the profession.

Professor Eric Laurenson

Eric Marwick Laurenson (1932 – 2003)

After graduating from the University of New South Wales as a Civil Engineer in 1952, with First Class Honours and University Medal, Eric Laurenson began an outstanding career in water engineering and hydrology. In his first job, with the NSW Public Works Department, he undertook detailed design flood estimation work for Eucumbene Dam. In 1956 he joined the staff of the School of Civil Engineering of the University of NSW, and in 1963 completed a PhD with a thesis on the topic "Hydrograph synthesis by runoff routing". In his fourteen years at UNSW Eric Laurenson built up a solid reputation as an academic and rose to the rank of Associate Professor. In 1970 he moved to Papua New Guinea where he served as Head of the School of Engineering and Professor of Civil Engineering at the PNG University of Technology at Lae until 1972.

In 1973 Eric Laurenson took up the Chair of Civil Engineering (Water Resources) at Monash University, and for the next 25 years led a group that had a major impact on hydrology and water engineering in Australia. He maintained research contacts with the Massachusetts Institute of Technology, Imperial College London, Colorado State University and the University of Karlsruhe in Germany. After his retirement at the end of 1997, Eric Laurenson remained active in research and consulting, serving as a reviewer of many important water resource studies.

Eric Laurenson's major professional achievements:

Education and university

Eric made key contributions to the education and training of Australian and overseas engineering hydrologists and water resource engineers. At UNSW he helped initiate the highly successful three months Hydrology Course and was involved in developing a course work Masters program. At Monash he played a similar role in the coursework Masters program and the Monash Water Engineering Workshop series. All of these made major contributions to increase the skill base in Australian water resources engineering.

"Australian Rainfall and Runoff"

From the initial work of the Institution of Engineers, Australia's Technical Committee on Stormwater Standards in the mid 1950s, which led to the first (1958) edition of "Australian Rainfall and Runoff" (ARR), Eric contributed significantly towards the development of sound guidelines for design flood estimation in Australia. Through his work on storm loss rates, flood routing and runoff routing he also made major contributions to the 1977 and 1987 editions of ARR.

RORB

Perhaps Eric's best known contribution to engineering hydrology is the RORB program for flood estimation using runoff routing which he developed in conjunction with Russell Mein. An initial version of the program was released at the first Monash Water Engineering Workshop in 1975. Over the next 20 years Eric remained in close contact with the practical users of the program, adding many enhancements and adaptations to allow its use in a wide range of practical applications.

Flood estimation research

Apart from his pioneering research on runoff routing methods, Eric made major contributions to many areas of flood estimation research, including frequency analysis, dam safety, design losses, flood routing, and joint probability of factors affecting runoff generation and flow. For the latter, his 1974 paper in Water Resources Research "Modelling of stochastic-deterministic hydrologic systems" established a probabilistic framework that was able to deal with a broad range of joint probability problems in hydrology, and is a seminal paper in this area.

Key Papers

- Laurenson, E.M. and Pilgrim, D.H. (1963). Loss rates for Australian catchments and their significance. IEAust, *The Journal*, Jan.-Feb. 1964, 9-24.
- Laurenson, E.M. (1964). A catchment storage model for runoff routing. *Journal of Hydrology*, Vol 2, 141-163.
- Mein, R.G., Laurenson, E.M. and McMahon, T.A. (1974). Simple nonlinear model for flood estimation. ASCE, *Journal of the Hydraulics Division*, Vol. 100, HY11, 1507-1518.
- Laurenson, E.M. (1974). Modeling of stochastic-deterministic hydrologic systems. *Water Resources Research*, 10/5, 955-961.
- Laurenson, E.M. (1987). Back to basics on flood frequency analysis. IEAust, *Civil Eng. Trans.* Vol. CE29, 47-53.
- Laurenson E.M and Kuczera, G.A. (1999). Annual exceedance probability of probable maximum precipitation. *Australian Journal of Water Resources*, 3(2), 167-176.

Call for Papers

Australian Journal of Water Resources

The AJWR provides a forum for Australian & International researchers and practitioners to publish high quality articles on issues related to and affecting hydrology & water resources in Australia. Topics covered range from rainfall & rainfall modelling, climatic variability & change, assessment & management of water resources, catchment hydrology, environmental flows and hydraulics, open channel flow and hydraulic structures. Instructions for prospective authors can be found at:
http://www.engaust.com.au/transactions/pub_info1.asp

Upcoming Papers

Australian Journal of Water Resources

Technical Papers –
A finite volume solution for a ring tank failure parametric study
AF Nielsen, CA Adamantidis, SG Roberts & C Zoppou

Diverse drop structure applications in an open channel
L Toombes

Improving stream health in urban areas by reducing runoff frequency from impervious surfaces
A R Ladson, C J Walsh and T D Fletcher

WBNM runoff routing parameters for South and Eastern Australia
M J Boyd & N D Bodhinayake

Investigation of design rainfall temporal patterns in the Gold Coast region of Queensland
A Rahman, M Islam, K Rahman, S Khan and S Shrestha

Conference Papers -
Joint probability and design storms at the crossroads
G Kuczera, M Lambert, T Heneker, S Jennings, A Frost and P Coombes

Bridge abutment scour: estimation & protection
BW Melville

Evaluation of hydrologic & hydraulic models for real-time flood forecasting use in the Yangtze River catchment
MS Markar, SQ Clark, Y Min & J Zheng

Technical Note -
Rock chutes: a review of damage and failure mechanisms
A R Ladson, R H Hardie and R J Keller

Discussions -
A quantile regression technique to estimate design floods for ungauged catchments in south-eastern Australia
Discussion by R French, Reply by R Rahman

Storms, storm bursts and flood estimation: a need for review of AR&R procedures
Discussion by R French, Reply by T Rigby, M Boyd, S Roso and R VanDrie

Field performance of a vortex type gross pollutant trap
Discussion by L Herngren and M Powell, Reply by I Cordery

Upcoming Events

Adelaide Floods of November 2005: Half Day Seminar, 2nd May 2006

During the evening of the 7th and morning of the 8th November widespread rainfall occurred over much of the Adelaide Hills and the Barossa Valley. The rainfall resulted in flooding along a number of creeks running though the eastern and south eastern suburbs of Adelaide and the Gawler River. Significant flows were also experienced in a number of other catchments.

Come and hear about the flooding from speakers having a range of perspectives including the prediction of the flood, its hydrology and impact, the emergency response and measures being implemented to plan for future floods.

WHEN : 1.00 pm to 5.30 pm, Tuesday 2nd May 2006

WHERE: Conference Room 2 – Ground Floor, Department for Transport, Energy and Infrastructure Building – Warwick Street, Walkerville

COST: $ 70 per person / $35 concession (GST free, as the Hydrological Society is not registered for GST).

30th Hydrology and Water Resources Symposium

Covering an assorted range of speakers and submitted abstracts, the 30th Hydrology and Water Resources Symposium will be held in Launceston at the Hotel Grand Chancellor from **4th- 7th December 2006**. The City of Launceston will be celebrating its 200th anniversary, appropriately with the conference theme of past, present and future.

For more information visit:
http://www.cdesign.com.au/hydrology2006/

Links

Sydney Division Water Panel:
http://www.sydneywaterpanel.org.au/

Queensland Division Water Panel:
http://qld.ieaust.org.au/jetspeed/?group=water

West Australian Division Water Panel:
http://www.wa.engineersaustralia.org.au/groups/hwr.shtml

Victorian Water Engineering Branch:
http://www.vic.ieaust.org.au/groups/branches08.html

Hydrological Society of South Australia:
http://www.hydsoc.org/