

Proceedings of the

# **THIRD AUSTRALIAN STREAM MANAGEMENT CONFERENCE**

## **The Value of Healthy Streams**

Brisbane, Queensland  
27 - 29 August 2001

Edited by

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Proceedings published by



Australian Stream Management Conference (3rd: 2001: Brisbane, Qld.)

Third Australian Stream Management Conference proceedings: the value of healthy streams, 27-29 August 2001, Brisbane, Queensland

ISBN 1 876006 80 3

1. Stream conservation - Australia - Congresses. I. Cooperative Research Centre for Catchment Hydrology. II. Title. III. Title: The value of healthy streams

333.91621530994

### **Keywords**

Streams (in Natural Channels)  
River Management  
Environmental Management  
Ecological Management  
Riparian Vegetation  
Water Quality (Natural Waters)  
Aquatic Environments  
Floods and Flooding  
Sedimentation  
Restoration  
Urban Areas  
Biological Analysis  
Land Use  
Monitoring  
Flow Regulation  
Erosion

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# Research for Stream Managers

Australia's stream managers need tools to help them predict the catchment scale consequences of land use changes on flow, sediment and nutrient movement, and water quality in streams.

The CRC for Catchment Hydrology's central goal during 1999-2006 is to develop an integrated toolkit of models able to predict the movement of water, particulates, and solutes from land to rivers, linking the impact of climate variability, vegetation, soil, and water management.

*For catchment and water managers, this system will enable them to fully evaluate the short- and long-term outcomes of policy decisions at regional scales.*

To meet our objective, the Centre is running six multi-disciplinary research programs:

- Predicting catchment behaviour
- Land-use impacts on rivers
- Sustainable water allocation
- Urban stormwater quality
- Climate variability
- River restoration

**There are many ways for you to access the CRC's research outcomes:**

## Catchword

- Our monthly newsletter details advances in knowledge and techniques for natural resource management as well as relevant upcoming events and publications. Subscribe to Catchword at [www.catchment.crc.org.au/subscribe](http://www.catchment.crc.org.au/subscribe) or contact 03 9905 2704

## Our publications

- Many of our technical and industry reports are available for downloading from our website. Visit [www.catchment.crc.org.au/publications](http://www.catchment.crc.org.au/publications)

## Seminars, workshops and short courses

- The CRC regularly holds a range of presentations and workshop around Australia. Regular updates are listed at [www.catchment.crc.org.au/events](http://www.catchment.crc.org.au/events)

## Our website

- At [www.catchment.crc.org.au](http://www.catchment.crc.org.au) you can download models, obtain a list of all of our publications and videos, find contact details for all CRC staff and search our links to other hydrology based sites.

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*Australia's inland rivers face many problems including rising water tables and salt loads, sediment from erosion, nutrient and other substance pollution (eg. mine run-off, organic wastes). These problems are not limited to one particular area but occur across the nation and resources are needed to address their causes.*



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The Natural Heritage Trust through its National Rivercare Program represents a significant investment in activities that will improve the health of Australia's river systems outside the Murray-Darling Basin (a parallel program, Murray-Darling 2001 looks after rivers within the basin).

The National Rivercare Program is administered by Agriculture, Fisheries and Forestry - Australia, the Commonwealth Department with portfolio responsibility for water management. The National Rivercare Program complements the Department's work in relation to the Council of Australian Governments National Water Reform Framework, the National Water Quality Management Strategy and the recently announced \$1.4 billion National Action Plan on Salinity and Water Quality. The Department sees addressing river health issues as integral to successful water resources management.



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of the Environment and Heritage,  
promotes, supports and implements  
the conservation and sustainable use  
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The Department administers,  
as part of the Natural Heritage Trust,  
the National River Health Program which is building  
a foundation for the sustainable use and protection  
of our water resources.

<http://www.ea.gov.au/>



***Environment  
Australia***

***Department of the Environment and Heritage***

# Brisbane City Council

## improving our waterways from Backyard to Bay

Brisbane City Council is committed to addressing the threats to the health of Brisbane's waterways and bay, while protecting the city from the adverse impacts of flooding and securing public access to waterways.

Council's approach is focused on Integrated Water Cycle Management, which is reflected in the development of Waterway Management Plans and its Urban Stormwater Management Strategy, Brisbane River Corridor Management Plan and City Plan.

The key components of Council's Waterways Program include:

- stormwater quality improvement
- ecological health and riparian management
- flood management
- waterways usage
- community participation.

Council has produced a range of guidelines for planners, developers, engineers and builders to assist in the protection of the city's waterways.

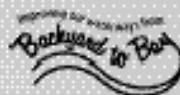
Guidelines are available for:

- Natural Channel Design
- Sediment Basin Design Construction and Maintenance
- Subdivision and Development
- Erosion and Sediment Control
- Stormwater Quality Improvement Devices (SQIDs)
- Pollutant Export Modelling (including spreadsheet)
- Identifying and Applying Water Quality Objectives in Brisbane City

For further information about Council's Waterways Program, services available or for copies of these guidelines phone Council on (07) 3403 8888 or visit [www.brisbane.qld.gov.au](http://www.brisbane.qld.gov.au)

Council offers the following water and environment services:

- waterway and floodplain management planning
- stormwater drainage investigation and design
- natural channel design
- creek and river bank restoration
- environmental management plans and impact statements
- water quality management and monitoring
- flood emergency planning and flood monitoring.



## What does the RBMS do?

The RBMS has about 400 members and is influential in the natural resource and integrated catchment management field with government and catchment management authorities in Australia. The RBMS was established to "advance a balanced approach to land, water & natural resource management on a catchment basis".

We do this by:

- being open to all involved or interested in our aims;
- holding conferences on topics relevant to our aims;
- publishing a regular newsletter;
- maintaining a web site at **[www.vicnet.net.au/~rbms](http://www.vicnet.net.au/~rbms)**;
- operating a worldwide internet discussion list under the title of ICM-L;
- assisting students undertaking research work at Honours & Post Graduate levels;
- assisting in information gathering & dissemination;
- supporting a non-profit foundation; and,
- being an independent body of opinion.

## How can the RBMS help you?

If you are interested in any of the following topics:

- Catchments
- Land & Water
- Rivers
- Riparian Zones
- Floodplains
- Wetlands
- Animals and Plants
- Sedimentation
- Erosion
- Pollution
- Urban Development
- Agriculture
- Recreation
- People

then **YOU** will benefit from being a member of the RBMS. The RBMS's annual subscription is only \$40 per annum for members and \$20 per annum for full-time students.

## It's an exciting time to become a member!

The RBMS is currently preparing a 5 year strategy and outcomes of the strategy aim to:

- Improve member services
- Keep the Society relevant & vibrant
- Improve communication
- Advance nationalisation

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We aim to be the leading organisation in Australia for meeting the technical, professional and networking needs of those interested in river and catchment management.

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If you require further information please see our website [**[www.vicnet.net.au/~rbms](http://www.vicnet.net.au/~rbms)**] or contact Lance Lloyd, RBMS President, on (03) 9884 5559 or by email at [rbms@vicnet.net.au](mailto:rbms@vicnet.net.au) You can become a member via the web site [by printing out and sending the membership form] and begin to reap the membership benefits.

# The Department of Natural Resources and Mines

The Department of Natural Resources and Mines (NR&M) supports Queensland's economic and social development through the sustainable use and management of the state's land, water, mineral, petroleum and vegetation resources. NR&M works to achieve social, economic and biophysical prosperity.

The Department, in partnership with the community, develops and implements policy and planning frameworks and provides natural resource information, community education, monitoring and evaluation services.

## Managing Land

The Department administers over 36,000 leases and other tenures over state land, as well as the management and transfer of all Queensland land titles. NR&M provides valuation, surveying and mapping products.

NR&M is at the forefront of the national fight against salinity and declining water quality.

Landcare and integrated catchment management is an integral part of NR&M's community approach to local natural resource management.

## Managing Water

The Department is working with local communities to plan current and future water needs and how best to manage them in a sustainable way. NRM provides advice on rural water use efficiency, riverine management, water quality and hydrology. Science and research areas include climate forecasting, streamhealth monitoring, sediment transport and nutrient impacts on the Great Barrier Reef.

## Managing Vegetation

Twenty regional vegetation management plans are being developed to address issues such as salinity control and regrowth management as well as protection of native vegetation. The Statewide Landcover and Trees Study (SLATS) uses satellite technology to map vegetation and land cover.

## Managing Minerals, Petroleum and Other Extractive Materials

NR&M is responsible for supporting, promoting and monitoring Queensland's mining industry which provides tens of thousands of jobs and contributes around \$500 million a year to the Government in the form of rent and royalties. NR&M promotes the state's mineral potential and regulates its resources. This includes gathering geological data, managing mine safety, and promoting environmental best-practice mining methods.

### Further Information:

Free faxback and mail-out service: 1800 240 691

Natural Resources and Mines services information:

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We will have a stand at the Conference so drop in talk to us about your river management issue. We will have a wide range of our products for you to look at: including

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## Our Vision

Prosperity with Care - our contribution to economic welfare must be delivered with equal attention to the quality of the social wellbeing of our communities.

## Our Purpose

To ensure Victoria's natural and cultural assets are managed to secure social, environmental and economic benefits for both current and future generations.

*NRE has significant responsibilities for the development, conservation and protection of Victoria's natural and cultural resources. Over 4000 staff deliver services to a diverse community and a wide range of stakeholders throughout the State.*

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## Third Australian Stream Management Conference

The overall theme of this Third Australian Stream Management Conference is **"the value of healthy streams"**. We deliberately restricted the scope of this conference to emphasise the science and economics of stream management. Community management and institutional arrangements were emphasised in the Second Stream Management Conference held in Adelaide in 1999. Thus, we called for papers under four specific themes:

- **Ecosystem services provided by streams**
- **Biophysical interactions in streams**
- **Hydrological connectivity (along streams, in the stream bed, and onto floodplains), and**
- **Tools and techniques for stream management.**

These themes capture some of the rapid deepening and broadening of stream management in Australia. Here are some observations that we have made from the one hundred or so papers published in these proceedings.

### **The Good News**

- There is a huge amount of fantastic work going on in Australian streams – and this work is as good as any you will find in the world. Members of the public are joining with government, CSIRO and academics in unprecedented numbers to address the complex problems of streams.
- Stream management works are increasingly being justified on environmental and ecological grounds alone. We no longer have to justify work on the grounds that it will protect infrastructure and economic assets. Nevertheless, the ecosystem services provided by healthy streams is often justification enough to maintain and improve stream condition.
- It is encouraging to see the number of stream rehabilitation projects that are being rigorously evaluated, often incorporating both physical and biological measures. This bodes well for the effectiveness of future works.
- Management actions are being explored at a whole of catchment scale for the first time. Similarly, we can begin to see the critical economic role that our streams play for our nation.
- A major effort is being directed at preserving and protecting our remaining good streams, as well as fixing the damaged ones.

### **The Not-so-good News**

- It is exciting to see so many tools being developed to assist in stream management. These range from conceptual procedures, through to on-ground methods. Most of these tools, however, remain as ideas, and their effectiveness still has to be demonstrated. Similarly, many rehabilitation projects are being started, but it will be many years before their effectiveness can be demonstrated. We look forward to future conferences where we can see convincing evaluation of both tools and entire projects.
- The challenge of stream rehabilitation is also demonstrated by the papers that you will not find in these proceedings. For example we do not yet have enough papers from outside of SE Australia, or enough ecological and biological papers, or evaluations of outcomes of stream rehabilitation projects. These are just some of the areas of work that we need to have before we can be confident that we can rehabilitate our streams. We can look forward to these gaps being filled in future stream management conferences.
- One of the great challenges of stream rehabilitation is to integrate across not only academic disciplines, but also between scientists and managers. We are doing much better in this area, but there is still a long way to go. One of the particular challenges here is for different groups to come to terms with the complexity and uncertainty of our infant science (or is that Art?).
- Many types of streams are under-represented in the mix of papers found here. Although we have papers from most areas of Australia, we are underweight in work on ephemeral systems (that, after all, make-up nearly 80% of all streams in Australia), and urban streams.

Now we should turn to the challenges of producing these proceedings! We, as editors, plus one or two other reviewers, have refereed each paper in these proceedings. This has been an arduous task for everybody – especially with our not-always-successful experiment in managing all papers through a web based Intranet site! However, we are generally delighted with the quality of the reviews, and the quality of the final papers. We are confident that these proceedings represent a benchmark in the stream management industry in Australia. We would like to sincerely thank the many dozens of people who reviewed papers for the conference.

We would also like to thank the many people who contributed directly to the production of these proceedings. David Perry, from the Cooperative Research Centre for Catchment Hydrology, coordinated the publication process. Without his calm and unflagging efforts we never would have achieved the publication deadlines, or the quality of this publication. Thanks also to John Amprimo of the Queensland Department of Natural Resources and Mines, who tirelessly coordinated the conference, and stoically put up with delays. Elizabeth Butler, from Monash University, designed the front cover, Baron Frankel of Frankely Speaking formatted the articles, and Docucopy of Melbourne printed the proceedings professionally and smoothly.

Now, can we conclude with our own experiment – never before attempted at a major conference. Some of the editors of the proceedings are of the opinion that nobody ever reads the foreword to conference proceedings. In order to test this hypothesis, there will be jelly babies waiting at the registration desk for every person at this conference who goes and asks for them! We are wagering that we won't dispose of more than 20 jelly babies during the conference! Please enjoy the conference and these mighty proceedings!

For updates on these proceedings, or electronic copies of papers, please visit the Australian Stream Management Conference website at [www.catchment.crc.org.au/streamconference](http://www.catchment.crc.org.au/streamconference)

**(The Editors)**

Ian Rutherford  
Fran Sheldon  
Gary Brierley  
Christine Kenyon  
(1 August, 2001)

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Andrew Webb  
Ashley Webb  
Erwin Weinmann  
Stuart Whitten  
Simon Wiggins  
Scott Wilkinson  
Will Williams  
Bill Young



## AUTHORS INDEX

Abbe, Tim B. ....	73	Carroll, Chris.....	121
Abernethy, Bruce .....	1	Cawley, Robert.....	127
Avery, Estelle.....	483	Chessman, Bruce .....	135
Babakaiff, Scott .....	483	Chesterfield, Chris.....	265
Bacon, Peter E.....	7	Chiew, Francis H.S.....	141, 611
Bartley, Rebecca .....	15	Choy, Satish .....	413
Beavis, Sara.....	23, 373	Clark, Kim.....	461
Bennett, Jeff. W. ....	665	Clifton, Craig.....	149
Bennett, John.....	29, 35	Cockayne, Bernie .....	413
Bennison, Garry .....	461	Coleman, John R. ....	217
Bevitt, Robyn.....	205	Conover, Kathryn .....	109
Binning, Carl.....	157, 571	Conrick, Diane.....	413, 461
Blake, Nigel .....	67	Cook, L.S.J. ....	87
Boey, Adam .....	45	Cork, Steven .....	157, 571
Bormann, Kathryn.....	253	Corlis, Peter .....	483
Boulton, Andrew.....	259	Cottingham, Peter.....	289
Bourgues, Sophie .....	285	Craigie, Neil M.....	239
Bourne, Paul.....	51	Croke, Barry F.W. ....	163, 455
Breen, Peter.....	289	Cuddy, Susan M. ....	169, 611
Breen, Peter F.....	625	Curtis, Allan .....	175
Bren, Leon J. ....	225	Daily, Gretchen C.....	561
Brierley, Gary J. ....	59, 489	Davies, P.E. ....	87
Brizga, Sandra.....	239	Davies, Peter M. ....	413, 605
Broderick, Tony .....	67, 483	Davis, J. Richard .....	315
Brooks, Andrew P.....	73, 483	Dawes, Warrick .....	315
Brophy, Jim.....	253	Dilworth, Timothy.....	181
Bruce-Burgess, Lydia.....	81	Dougall, Cameron .....	121
Bryant, Marc .....	387	Douglas, Grant.....	103
Bunce, Sarah E.H.....	87	Dragovich, Deirdre .....	653
Burgman, Mark .....	289	Dudgeon, Stephen .....	187
Burrows, Damien W. ....	95	Duncan, Hugh P. ....	217
Butler, Barry .....	95	Dwyer, Christopher F. ....	551
Caiger, Leeta .....	7	Dyer, Ben .....	191
Caitcheon, Gary .....	103	Dyer, Fiona.....	695
Cameron, Wayne.....	109	Eberhard, Rolan.....	197
Candy, Rex B.....	297, 303	Ekanayake, Jagath .....	507
Capon, Samantha .....	115	Erskine, Wayne D.....	205, 653, 659

Evans, Richard .....	149	Johnson, Denise.....	413
Evans, W. Ray.....	315	Judd, Dean A. ....	551
Feehan, Pat.....	289	Karssies, Linda.....	349
Fielding, Jodie.....	211	Keller, Robert J.....	681
Finlayson, Brian.....	397	Kenyon, Christine.....	355
Fletcher, Tim D. ....	217, 225, 625	Konnoff, Deborah.....	309
Ford, Phillip .....	285	Krasnicki, Tom. J. ....	361
Foreman, Mark.....	277	Lake, P. Sam.....	369
Frazier, Paul.....	277	Larsen, Daniel .....	673
Fryirs, Kirstie .....	59, 489	Lewis, Barry .....	23, 373, 501
Gallant, John .....	323	Lewis, Sarah .....	121
Gilmour, Juliet K.....	163	Lintermans, Mark .....	379
Gippel, Christopher J. ....	73, 231, 239, 583	Lobegeiger, Jaye.....	413
Gittins, Robert.....	7	Lu, Hua.....	323
Grace, Michael R. ....	285, 289, 639	Lucas, Rohan.....	271
Grant, John.....	647	Lymburner, Leo.....	611
Grayson, Rodger .....	397, 427	Mackenzie, Rachel .....	387
Greenway, Margaret.....	245	Maguire, James.....	277
Grove, Jacquie.....	7	Mann, Rob A. ....	45
Hader, Walter.....	483	Marden, Michael .....	507
Hairsine, Peter B. ....	253, 571	Marsh, Nick.....	391, 397
Hancock, Gary .....	103	Marshall, Christopher .....	413
Hancock, Peter .....	259	Marshall, Jonathan.....	413
Harch, Bronwyn.....	413	Marshall, Natalie .....	403
Hardie, Ross.....	265, 271	Marston, Frances M.....	169, 611
Hardwick, Lorraine .....	277	Martin, Candace .....	617
Harper, Michael .....	285	Massey, Cliff .....	489
Hart, Barry T.....	285, 289, 435, 639	McGrath, Chris.....	421
Haupt, Leanne J. ....	297, 303	McGregor, Glenn.....	413
Heller, Dave .....	309	McIntosh, Peter .....	87
Herron, Natasha F. ....	315	McKergow, Lucy.....	427
Houshold, Ian.....	197, 329	McWilliam, E. ....	435
Hughes, Andrew O.....	103, 323, 529	Micic, Svetlana.....	109
Jakeman, A.J. ....	455	Millar, Glen .....	121
Jansen, John D. ....	73	Miller, David .....	589
Jeannelle, Sebastien .....	611	Miners, Brett.....	205
Jenkins, Graham A.....	217	Moffatt, David.....	413
Jerie, Kathryn.....	329, 391	Moran, Chris J. ....	323, 529
John, Jacob.....	337	Morrison, Mark .....	29

Mosisch, Thorsten.....	461	Roper, Brett B.....	309
Moulton, Dane .....	35	Rose, Teresa .....	205
Moulton, Timothy P.....	35, 441	Rowan, Donna.....	507
Nanson, Rachel A. ....	447	Rustomji, Paul .....	529, 555
Nanson, Gerald C.....	447	Rutherford, Ian D. ....	15, 391, 397, 681
Negus, Peter .....	413	Salzman, James .....	561
Newham, Lachlan T.H. ....	163, 455	Sanders, Norrie.....	35
O'Donohue, Mark .....	461	Scanlon, Philip J.....	141, 611
Ogden, Ralph .....	469, 477	Scott, Anthony.....	103, 323
Olley, Jon .....	103	Seaton, Shane P. ....	169, 611, 631
Outhet, David.....	483, 489	Serena, Melody.....	565
Page, Ashley .....	493	Seymour, Scott .....	239
Paige-Johnson, Denise .....	343	Shelton, David .....	157, 571
Papworth, Michael .....	501	Stauffacher, Mirko.....	571
Parry, Rachel.....	157, 571	Stevens, Scott .....	121
Peljo, Lucy .....	211	Stevenson, Janelle .....	323
Peters, David.....	329	Stewardson, Michael J.....	577, 583
Phillips, Chris.....	507	Swinnerton, Melanie .....	565
Phillips, Ngaire .....	35, 513	Taylor, Matt.....	73
Polson, Carolyn.....	245	Telfer, Damon .....	589
Prentice, Gavin.....	521	Tennant, Wayne.....	175
Proctor, Heather .....	245	Thomason, Christy .....	211
Prosser, Ian P. 103, 323, 349, 427, 529, 555, 701		Thompson Jr., Barton H. ....	561
Pyke, Graham.....	7	Thoms, Martin C. ....	469, 597, 695
Rahman, Joel M. ....	169, 611, 631	Thomson, Chris .....	413
Rahman, Khondker .....	537	Till, Bill .....	605
Raine, Allan .....	259, 483	Torre, Antonietta .....	605
Rawling, Judith .....	7	Tuft, Robyn .....	7
Read, M. G.....	361	Turner, Lisa .....	205
Redfern, Fiona.....	35	Verbunt, Mark .....	611
Reed, Adrian .....	427, 647	Vertessy, Robert A .....	169, 571, 611
Reid, Rowan.....	545	Walker, Bob .....	521
Rhodes, Tim.....	231	Wallbrink, Peter.....	103, 617
Riddiford, John A.....	551	Waller, K.....	461
Ritchie, Rebecca .....	121	Walsh, Christopher J. ....	625
Roberts, Jane .....	191	Wansbrough, Tanya M. ....	1
Robertson, Alistar .....	175	Washusen, Russell.....	545
Rohde, Ken .....	121	Waters, Michael.....	435
Rooney, William.....	7	Watson, Fred .....	611, 631

Watts, Kellie E.N. ....	639
Weaver, David .....	427, 647
Webb, Ashley A. ....	205, 653, 659
Weber, Tony .....	211
Western, Andrew .....	397
Whitten, Stuart M.....	665
Wieman, Ken .....	309
Wiggins, Simon.....	673
Wilkinson, Scott N.....	681
Williams, Geoff A.....	565
Wilson, Cathy .....	617
Wong, Tony H.F. ....	217, 625
Woods, Deborah .....	689
Worley, Marianne .....	565
Young, Bill.....	529
Young, William.....	477, 695, 701

# TABLE OF CONTENTS

## Volume I

### A

Where does river rehabilitation fit in catchment management? <i>Abernethy, Bruce and Tanya M. Wansbrough</i> .....	1
---	---

### B

Urban impacts on biophysical condition of Hornsby Shire streams <i>Bacon, Peter E.; Robyn Tuft, Judith Rawling, Leeta Caiger, William Rooney, Robert Gittins, Graham Pyke and Jacquie Grove</i> .....	7
Statistics, snags and sand: Measuring the geomorphic recovery of streams disturbed by sediment slugs <i>Bartley, Rebecca and Ian Rutherford</i> .....	15
The impact of farm dams on the management of water resources within the context of total catchment development <i>Beavis, Sara and Barry Lewis</i> .....	23
Estimating the environmental values of New South Wales rivers <i>Bennett, Jeff and Mark Morrison</i> .....	29
Identification and protection of waterway ecological values <i>Bennett, John; Norrie Sanders, Dane Moulton, Fiona Redfern and Ngairé Phillip</i> .....	35
Guidelines for site management plans in response to recreational water quality monitoring – developing case studies in the Hawkesbury-Nepean River catchment <i>Boey, Adam and Rob A. Mann</i> .....	45
Urban waterways: Vital components of urban biological networks and essential elements for their functional sustainability <i>Bourne, Paul</i> .....	51
Creating a catchment-framed biophysical vision for river rehabilitation programs <i>Brierley, Gary J and Kirstie Fryirs</i> .....	59
“River of dreams: build it and they will come” (hopefully) <i>Broderick, Tony and Nigel Blake</i> .....	67
Putting the wood back into our rivers: An experiment in river rehabilitation <i>Brooks, Andrew P.; Tim B. Abbe, John D. Jansen, Matt Taylor and Christopher J. Gippel</i> .....	73
Appraisal: the 'acid test' of river restoration <i>Bruce-Burgess, Lydia</i> .....	81
Effects of pre-Code forest clearfelling on the geomorphology and sedimentology of headwater streams in upland granite terrain, Tasmania <i>Bunce, Sarah E.H.; Peter McIntosh, P.E. Davies and L.S.J. Cook</i> .....	87
Managing livestock to protect the aquatic resources of the Burdekin catchment, North Queensland <i>Burrows, Damien W. and Barry Butler</i> .....	95

## C

Sediment delivery from Moreton Bay's main tributaries: A multifaceted approach to identifying sediment sources <i>Caitcheon, Gary; Ian Prosser, Peter Wallbrink, Grant Douglas, Jon Olley, Andrew Hughes, Gary Hancock and Anthony Scott</i> .....	103
Tools and techniques used by the Bulimba Creek Catchment Coordinating Committee to improve the Bulimba Creek <i>Cameron, Wayne; Kathryn Conover, and Svetlana Micic</i> .....	109
Flood for thought: Relationships between flow and vegetation dynamics in large arid floodplains <i>Capon, Samantha</i> .....	115
Neighbourhood catchments: A new approach for achieving ownership and change in catchment and stream management <i>Carroll, Chris; Ken Rohde, Glen Millar, Cameron Dougall, Scott Stevens, Rebecca Ritchie and Sarah Lewis</i> .....	121
The influence of hydrological connectivity on water quality in an anthropogenically flooded River Red Gum ( <i>E. camaldulensis</i> ) forest <i>Cawley, Robert</i> .....	127
MARA (Multi-Attribute Reach Assessment): Simultaneous and rapid evaluation of river ecosystem 'health' and conservation values <i>Chessman, Bruce</i> .....	135
Estimation of pollutant concentrations for Environmental Management Support System (EMSS) modelling of the south-east Queensland region <i>Chiew, Francis H.S. and Philip J. Scanlon</i> .....	141
A framework to assess the environmental water requirements of groundwater dependent ecosystems <i>Clifton, Craig and Richard Evans</i> .....	149
A framework for applying the concept of ecosystem services to natural resource management in Australia <i>Cork, Steven; David Shelton, Carl Binning and Rachel Parry</i> .....	157
A Comparison of Rainfall Estimation Techniques <i>Croke, Barry F.W.; Juliet K. Gilmour and Lachlan T.H. Newham</i> .....	163
Alternative approaches to incorporating management options into water quality modelling <i>Cuddy, Susan M.; Joel M. Rahman, Frances M. Marston, Shane P. Seaton and Robert A. Vertessy</i> .....	169
Understanding landholder willingness and capacity to improve the management of river frontages <i>Curtis, Allan; Alistar Robertson and Wayne Tennant</i> .....	175

## D

Bio-geomorphology: Is there a linkage between riparian vegetation and patterns in fluvial geomorphology? <i>Dilworth, Timothy</i> .....	181
Obi Obi Creek large woody debris habitat restoration project <i>Dudgeon, Stephen</i> .....	187
Automation: An opportunity for improving the health of weir pools in the Murray-Darling Basin <i>Dyer, Ben and Jane Roberts</i> .....	191

## E

- River management in karst terrains: Issues to be considered with an example from Mole Creek, Tasmania  
*Eberhard, Rolan and Ian Houshold* ..... 197
- Benchmarking of present river condition after 34 years of large scale interbasin water transfers: Snowy River, Australia  
*Erskine, Wayne D.; Ashley Webb, Lisa Turner, Brett Miners, Teresa Rose and Robyn Bevitt* ..... 205

## F

- Waterway health assessments - A useful tool in urban waterway management planning  
*Fielding, Jodie; Lucy Peljo, Christy Thomason and Tony Weber* ..... 211
- Managing impacts of urbanisation on receiving waters: A decision-making framework  
*Fletcher, Tim D.; Tony H. F. Wong, Hugh P. Duncan, John R. Coleman and Graham A. Jenkins* ..... 217
- The role of land tenure in determining the condition of riparian zones  
*Fletcher, Tim D. and Leon J. Bren* ..... 225

## G

- Stream velocity distribution: A potentially useful variable for stream health assessment  
*Gippel, Christopher, J. and Tim Rhodes* ..... 231
- The application of fluvial geomorphology to stream management in the Melbourne Water area  
*Gippel, Christopher J.; Scott Seymour, Sandra Brizga and Neil M. Craigie* ..... 239
- A comparison of aquatic biota and water quality in two tributaries of Native Dog Creek with different land-use activities  
*Greenway, Margaret, Carolyn Polson and Heather Proctor* ..... 245

## H

- Stock tracks and the delivery of pollutants to streams by overland flow  
*Hairsine, Peter B, Kathryn Bormann and Jim Brophy* ..... 253
- Surface-subsurface hydrological connectivity in sand-bed streams  
*Hancock, Peter; Andrew Boulton, and Allan Raine* ..... 259
- A risk-based approach to prioritisation of waterway management programs  
*Hardie, Ross and Chris Chesterfield* ..... 265
- Geomorphic categorisation of the streams in the Hawkesbury-Nepean Catchment: An application and review of the River Styles™ Framework  
*Hardie, Ross and Rohan Lucas* ..... 271
- Providing water to Murrumbidgee billabongs – Maximising ecological value  
*Hardwick, Lorraine; James Maguire, Mark Foreman and Paul Frazier* ..... 277
- Nutrient release from lowland river sediments  
*Harper, Michael; Sophie Bourgues, Michael R. Grace, Phillip Ford and Barry T. Hart* ..... 285
- Application of ecological risk assessment in river management  
*Hart, Barry T.; Michael R. Grace, Peter Breen, Peter Cottingham, Pat Feehan and Mark Burgman* ..... 289

An adaptive management Approach to Rehabilitation of the Tributaries of the Gippsland Lakes <i>Haupt, Leanne J. and Rex B. Candy</i> .....	297
An innovative stream assessment process – The Genoa River <i>Haupt, Leanne J. and Rex B. Candy</i> .....	303
Durability of Pacific Northwest instream structures following floods of a five-year or greater return interval <i>Heller, Dave; Brett B. Roper, Deborah Konnoff and Ken Wieman</i> .....	309
Planting trees for salinity management – will they help meet end of valley targets? <i>Herron, Natasha F., J.; Richard Davis, Warrick Dawes and W. Ray Evans</i> .....	315
Gully density mapping for Australian river basins <i>Hughes, Andrew O.; Ian P. Prosser, Janelle Stevenson, Anthony Scott, Hua Lu, John Gallant and Chris J. Moran</i> .....	323

## J

Stream diversity and conservation in Tasmania: Yet another new approach <i>Jeri, e Kathryn; Ian Household and David Peters</i> .....	329
Diatom Prediction and Classification System for Urban Streams – An Overview <i>John, Jacob</i> .....	337
The condition in the Queensland Murray-Darling Basin using the ‘State of the Rivers’ Method <i>Paige-Johnson, Denise</i> .....	343

## K

Designing grass filter strips to trap sediment and attached nutrient <i>Karssies, Linda and Ian P. Prosser</i> .....	349
Palaeoecological evidence for historical floodplain responses to river regulation: Barmah Forest, south-eastern Australia <i>Kenyon, Christine</i> .....	355
AUSRIVAS in Tasmania: The development of a rapid bio-assessment tool and its incorporation into statewide monitoring strategies <i>Krasnicki. Tom. J. and M. G. Read</i> .....	361

## Volume II

### L

Restoring streams: Re-building and re-connecting (KEYNOTE ADDRESS)	
<i>Lake, P. Sam</i> .....	369
Licensing of aquaculture developments in Victoria	
<i>Lewis, Barry and Sara Beavis</i> .....	373
Rehabilitation of fish habitats in a sediment impacted reach of the Murrumbidgee River, ACT	
<i>Lintermans, Mark</i> .....	379

### M

Controlling exotic pest fishes in Queensland: Strategies, tools and techniques	
<i>Mackenzie, Rachel and Marc Bryant</i> .....	387
Predicting pre-disturbance loading and distribution of large woody debris	
<i>Marsh, Nick; Ian Rutherford and Kathryn Jerie</i> .....	391
Enhancing instream habitat with large woody debris: A flume experiment	
<i>Marsh, Nick; Andrew Western, Rodger Grayson, Ian Rutherford and Brian Finlayson</i> .....	397
Geomorphology and Physical Limnology of Floodplain Lakes - Two Case Studies of Stratification in the Macdonald River Valley, New South Wales	
<i>Marshall, Natalie</i> .....	403
Relationships Between the Ecological Condition of Rivers and Modifications to their Flow Regimes: An Integrated Study using Multiple Indicators	
<i>Marshall, Jonathan; Satish Choy, Glenn McGregor, Bernie Cockayne, Peter Negus, Christopher Marshall, Diane Conrick, Chris Thomson, Jaye Lobegeiger, Denise Johnson, Peter Davies, David Moffatt and Bronwyn Harch</i> .....	413
Queensland laws protecting riparian vegetation	
<i>McGrath, Chris</i> .....	421
Before and after riparian management: Sediment and nutrient exports from a small agricultural catchment, Western Australia	
<i>McKergow, Lucy; David Weaver, Ian Prosser, Rodger Grayson and Adrian Reed</i> .....	427
An ecological risk assessment of a trial application of active barrier materials to control sediment nutrient release: a qualitative ecological risk assessment for Lake Carramar	
<i>McWilliam, E.; Barry T. Hart and Michael Waters</i> .....	435
Beyond monitoring - the understanding of biodiversity and ecosystem functioning in streams of the Atlantic Rainforest, Brazil	
<i>Moulton, Timothy P</i> .....	441

### N

Estimated total stream power as a tool for predicting channel erosion in a disturbed catchment, coastal New South Wales	
<i>Nanson, Rachel A. and Gerald C. Nanson</i> .....	447
Design of water quality monitoring programs and automatic sampling techniques	
<i>Newham, Lachlan T. H.; Barry F. W. Croke and A.J. Jakeman</i> .....	455

## O

Stream health and value in SE Queensland	
<i>O'Donohue, Mark; Thorsten Mosisch, Garry Bennison, Kim Clark, Diane Conrick</i> .....	461
Effects of reduced flooding on the soils and plants of a lowland semiarid floodplain in south-central Queensland	
<i>Ogden, Ralph and Martin Thoms</i> .....	469
Prediction of river bed sediment size as a function of stream power and channel confinement in the Murrumbidgee catchment above Wagga Wagga	
<i>Ogden, Ralph and William Young</i> .....	477
Gravel bed river riffle restoration in New South Wales	
<i>Outhet, David; Andrew Brooks, Walter Hader, Peter Corlis, Allan Raine, Tony Broderick, Estelle Avery and Scott Babakaiiff</i> .....	483
Application of the River Styles framework to river management programs in New South Wales	
<i>Outhet, David; Kirstie Fryirs, Cliff Massey and Gary Brierley</i> .....	489

## P

The economics of water quality – an investigation within the Condamine Catchment, Murray-Darling Basin, Queensland	
<i>Page, Ashley</i> .....	493
The condition of streams in the Queensland Murray Darling Basin using the ‘State of the Rivers’ method	
<i>Paige-Johnson, Denise</i> .....	343
Some thoughts on humans and waterways	
<i>Papworth, Michael and Barry Lewis</i> .....	501
Soil stabilising characteristics of native riparian vegetation in New Zealand: Application to stream bank stability	
<i>Phillips, Chris; Michael Marden, Donna Rowan and Jagath Ekanayake</i> .....	507
Determining the conservation values of rivers - trial of a new method in the Burnett Catchment, Central Queensland	
<i>Phillips, Ngairé</i> .....	513
Condamine Balonne water quality management plan	
<i>Prentice, Gavin and Bob Walker</i> .....	521
Predictions of the sediment regime of Australian rivers	
<i>Prosser, Ian P.; Andrew Hughes, Paul Rustomji, Bill Young and Chris Moran</i> .....	529

## R

A Tool to Design Natural Urban Channel Systems	
<i>Rahman, Khondker</i> .....	537
Sawn timber from 10-year-old pruned <i>Eucalyptus nitens</i> (Deane & Maiden) grown in an agricultural riparian buffer	
<i>Reid, Rowan and Russell Washusen</i> .....	545
The development of waterway action plans by the North East Catchment Management Authority in association with ID&A Pty. Ltd.	
<i>Riddiford, John A.; Christopher F. Dwyer and Dean A. Judd</i> .....	551

Rivers - do they all have the same sensitivity to change? An assessment of the geomorphic stability of rivers in coastal south eastern Australia <i>Rustomji, Paul and Ian Prosser</i> .....	555
---	-----

## S

Protecting Ecosystem Services: Science, Economics, and Policy (KEYNOTE ADDRESS) <i>Salzman, James; Barton H. Thompson Jr. and Gretchen C. Daley</i> .....	561
Attributes of Preferred Foraging Habitats of Platypus ( <i>Ornithorhynchus anatinus</i> ) <i>Serena, Melody; Melanie Swinnerton, Marianne Worley and Geoff A. Williams</i> .....	565
Application of an ecosystem services inventory approach to the Goulburn Broken Catchment <i>Shelton, David; Steven Cork, Carl Binning, Rachel Parry, Peter Hairsine, Rob Vertessy and Mirko Stauffacher</i> .....	571
The flow events method for developing environmental flow regimes <i>Stewardson, Michael J.</i> .....	577
Uncertainty in stream rehabilitation planning: an example from the Snowy River <i>Stewardson Michael J., and Christopher J. Gippel</i> .....	583

## T

Zen and the art of river management: A socio-geomorphological experiment exposed <i>Telfer, Damon and David Miller</i> .....	589
The interplay between the disciplines in river science (KEYNOTE ADDRESS) <i>Thoms, Martin C.</i> .....	597
The importance of large woody debris replacement in sandy river systems <i>Till, Bill; Peter M. Davies and Antonietta Torre</i> .....	605

## V

New software to aid water quality management in the catchments and waterways of the south-east Queensland region <i>Vertessy, Robert A.; Fred G.R. Watson, Joel M. Rahman, Susan M. Cuddy, Shane P. Seaton, Francis H. Chiew, Scanlon, Phillip J.; Frances M. Marston, Leo Lymburner, Sebastien Jeannelle and Mark Verbunt</i> .....	611
---	-----

## W

Contribution of sediment and sediment bound <b>P</b> from different landuses to two contrasting streams in temperate and tropical Australia <i>Wallbrink, Peter J.; Candace Martin and Cathy Wilson</i> .....	617
Developing predictive ecological capacity for a stormwater management decision-making framework <i>Walsh, Christopher J.; Tim D. Fletcher, Tony H.F. Wong and Peter F. Breen</i> .....	625
Deploying environmental software using the Tarsier modelling framework <i>Watson, Fred; Joel Rahman and Shane Seaton</i> .....	631
Biogeochemistry of a Sand Slug Stream <i>Watts, Kellie E.N.; Barry T. Hart and Michael R. Grace</i> .....	639

Relationships between stream order and management priority: A water quality case study <i>Weaver, David; Adrian Reed and John Grant</i> .....	647
Cataclysmic erosion, <i>Tristaniopsis laurina</i> colonisation and the late holocene stability of Bruces Creek, Nadgee State Forest, NSW <i>Webb, Ashley A.; Wayne D. Erskine and Deirdre Dragovich</i> .....	653
Large woody debris, riparian vegetation and pool formation on sand-bed, forest streams in southeastern Australia <i>Webb, Ashley A. and Wayne D. Erskine</i> .....	659
Values, incentives and private land management <i>Whitten, Stuart M. and Jeff. W. Bennett</i> .....	665
Water resource planning – groundwater and surface water interactions in Western Queensland <i>Wiggins, Simon and Daniel Larsen</i> .....	673
Rehabilitating pool and riffle sequences: The role of alternate bar dynamics and flow constriction <i>Wilkinson, Scott N.; Robert J Keller and Ian D. Rutherford</i> .....	681
Public environmental reporting: Application to the water industry and stream management <i>Woods, Deborah</i> .....	689

## Y

An index of river hydrology change for use in assessing river condition <i>Young, William; Fiona Dyer and Martin Thoms</i> .....	695
Modelling long-term average nutrient loads in large-scale river networks <i>Young, William and Ian Prosser</i> .....	701