The Brisbane Declaration

*Environmental Flows*¹ are Essential for Freshwater Ecosystem Health and Human Well-Being

This declaration presents summary findings and a global action agenda that address the urgent need to protect rivers globally, as proclaimed at the 10th International Riversymposium and International Environmental Flows Conference, held in Brisbane, Australia, on 3-6 September 2007. The conference was attended by more than 750 scientists, economists, engineers, resource managers and policy makers from more than 50 countries.

Key findings include:

**Freshwater ecosystems are the foundation of our social, cultural, and economic well-being.** Healthy freshwater ecosystems – rivers, lakes, floodplains, wetlands, and estuaries – provide clean water, food, fiber, energy and many other benefits that support economies and livelihoods around the world. They are essential to human health and well-being.

**Freshwater ecosystems are seriously impaired and continue to degrade at alarming rates.** Aquatic species are declining more rapidly than terrestrial and marine species. As freshwater ecosystems degrade, human communities lose important social, cultural, and economic benefits; estuaries lose productivity; invasive plants and animals flourish; and the natural resilience of rivers, lakes, wetlands, and estuaries weakens. The severe cumulative impact is global in scope.

**Water flowing to the sea is not wasted.** Fresh water that flows into the ocean nourishes estuaries, which provide abundant food supplies, buffer infrastructure against storms and tidal surges, and dilute and evacuate pollutants.

**Flow alteration imperils freshwater and estuarine ecosystems.** These ecosystems have evolved with, and depend upon, naturally variable flows of high-quality fresh water. Greater attention to environmental flow needs must be exercised when attempting to manage floods; supply water to cities, farms, and industries; generate power; and facilitate navigation, recreation, and drainage.

**Environmental flow management provides the water flows needed to sustain freshwater and estuarine ecosystems in coexistence with agriculture, industry, and cities.** The goal of environmental flow management is to restore and maintain the socially valued benefits of healthy, resilient freshwater ecosystems through participatory decision making informed by sound science. Ground-water and floodplain management are integral to environmental flow management.

**Climate change intensifies the urgency.** Sound environmental flow management hedges against potentially serious and irreversible damage to freshwater ecosystems from climate change impacts by maintaining and enhancing ecosystem resiliency.

**Progress has been made, but much more attention is needed.** Several governments have instituted innovative water policies that explicitly recognize environmental flow needs. Environmental flow needs are increasingly being considered in water infrastructure development and are being maintained or restored through releases of water from dams, limitations on ground-water and surface-water diversions, and management of land-use practices. Even so, the progress made to date falls far short of the global effort needed to sustain healthy freshwater ecosystems and the economies, livelihoods, and human well-being that depend upon them.

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¹ *Environmental flows* describe the quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems.
Global Action Agenda

The delegates to the 10th International Riversymposium and Environmental Flows Conference call upon all governments, development banks, donors, river basin organizations, water and energy associations, multilateral and bilateral institutions, community-based organizations, research institutions, and the private sector across the globe to commit to the following actions for restoring and maintaining environmental flows:

**Estimate environmental flow needs everywhere immediately.** Environmental flow needs are currently unknown for the vast majority of freshwater and estuarine ecosystems. Scientifically credible methodologies quantify the variable – not just minimum – flows needed for each water body by explicitly linking environmental flows to specific ecological functions and social values. Recent advances enable rapid, region-wide, scientifically credible environmental flow assessments.

**Integrate environmental flow management into every aspect of land and water management.** Environmental flow assessment and management should be a basic requirement of Integrated Water Resource Management (IWRM); environmental impact assessment (EIA); strategic environmental assessment (SEA); infrastructure and industrial development and certification; and land-use, water-use, and energy-production strategies.

**Establish institutional frameworks.** Consistent integration of environmental flows into land and water management requires laws, regulations, policies and programs that: (1) recognize environmental flows as integral to sustainable water management, (2) establish precautionary limits on allowable depletions and alterations of natural flow, (3) treat ground water and surface water as a single hydrologic resource, and (4) maintain environmental flows across political boundaries.

**Integrate water quality management.** Minimizing and treating wastewater reduces the need to maintain un-naturally high streamflow for dilution purposes. Properly-treated wastewater discharges can be an important source of water for meeting environmental flow needs.

**Actively engage all stakeholders.** Effective environmental flow management involves all potentially affected parties and relevant stakeholders and considers the full range of human needs and values tied to freshwater ecosystems. Stakeholders suffering losses of ecosystem service benefits should be identified and properly compensated in development schemes.

**Implement and enforce environmental flow standards.** Expressly limit the depletion and alteration of natural water flows according to physical and legal availability, and accounting for environmental flow needs. Where these needs are uncertain, apply the precautionary principle and base flow standards on best available knowledge. Where flows are already highly altered, utilize management strategies, including water trading, conservation, floodplain restoration, and dam re-operation, to restore environmental flows to appropriate levels.

**Identify and conserve a global network of free-flowing rivers.** Dams and dry reaches of rivers prevent fish migration and sediment transport, physically limiting the benefits of environmental flows. Protecting high-value river systems from development ensures that environmental flows and hydrological connectivity are maintained from river headwaters to mouths. It is far less costly and more effective to protect ecosystems from degradation than to restore them.

**Build capacity.** Train experts to scientifically assess environmental flow needs. Empower local communities to participate effectively in water management and policy-making. Improve engineering expertise to incorporate environmental flow management in sustainable water supply, flood management, and hydropower generation.

**Learn by doing.** Routinely monitor relationships between flow alteration and ecological response before and during environmental flow management, and refine flow provisions accordingly. Present results to all stakeholders and to the global community of environmental flow practitioners.
Delegates to the 10th International Riversymposium and International Environmental Flows Conference, held in Brisbane, Australia, on 3-6 September 2007, represented the following organizations, governments and institutions:

Abare, AUSTRALIA
Academy of Natural Sciences, USA
Adelaide & Mount Lofty Ranges Natural Resources Management Board, AUSTRALIA
Aga Khan Development Network (AKDN), PAKISTAN
Agricultural Science & Technology Research Institute, KOREA
Agriculture University, INDIA
Anadolu University, TURKEY
ARI, Department Of Sustainability & Environment, AUSTRALIA
Arkansas State University, USA
Asian Development Bank, PHILIPPINES
Association for Water & Rural Development, SOUTH AFRICA
Australian Agency For International Development (AusAID), AUSTRALIA
Australian Government, AUSTRALIA
Australian National University, AUSTRALIA
Australian River Restoration Centre, AUSTRALIA
Australian Rivers Institute, Griffith University, AUSTRALIA
Australian Water Association, AUSTRALIA
Australian Water Quality Centre, AUSTRALIA
AWARD, SOUTH AFRICA
AWMC, AUSTRALIA
B4C Bulimba Creek Catchment Coordinating Committee, AUSTRALIA
Bangladesh University of Engineering & Technology, BANGLADESH
Bayside Creek Catchment, AUSTRALIA
Beijing Normal University, CHINA
Blackwood Basin Group, AUSTRALIA
BPA Environment, Fish & Wildlife, USA
Brisbane City Council, AUSTRALIA
Brisbane Water, AUSTRALIA
Bureau of Land Management, USA
Bureau of Meteorology, AUSTRALIA
Canegrowers, AUSTRALIA
Cape Action for People & the Environment (C.A.P.E), SOUTH AFRICA
Cape to Cape Catchments Group, AUSTRALIA
Cardwell Shire River Improvement Trust, AUSTRALIA
CDM, USA
CEA, CHILE
Central Queensland University, AUSTRALIA
Central Research Institute for Complex Use of Water Resources, BELARUS
Central West Catchment Management Authority, AUSTRALIA
Centre for Ecology & Hydrology, UK
Centre for Environmental Management, SOUTH AFRICA
Centre for Public Awareness of Science, ANU, AUSTRALIA
Centro de Ciencias de Sinaloa, MEXICO
Centro de Estudios Ambientales (CEDEA), ARGENTINA
Charity Organisation for Environmental Research, CAMEROON
Charles Darwin University, AUSTRALIA
Charles Sturt University, AUSTRALIA
Chinchilla Shire Council, AUSTRALIA
Chittering Landcare Centre, AUSTRALIA
City of New York Dept of Parks & Recreation, USA
Clark Fork Coalition, USA
Cochin University of Science & Technology, INDIA
Colorado State University, USA
Condamine Balonne Water Committee, AUSTRALIA
Connell Wagner, AUSTRALIA
Conservation Council of Western Australia, AUSTRALIA
Conservation International, USA
Conservation Volunteers Australia, AUSTRALIA
Corangamite CMA, AUSTRALIA
Corvinus University of Budapest, HUNGARY
CRC for Water Quality & Treatment, AUSTRALIA
CRC IF, AUSTRALIA
CSIRO, AUSTRALIA
CSIRO Land & Water, AUSTRALIA
CSIRO Mathematical & Information Sciences, AUSTRALIA
CSIRO Sustainable Ecosystems, AUSTRALIA
Cubberla-Witton Catchments Network, AUSTRALIA
Culture and Environment Preservation Association, CAMBODIA
Daly River Aboriginal Reference Group, AUSTRALIA
Dawson Catchment Coordinating Association Inc, AUSTRALIA
Department of Conservation, NEW ZEALAND
Department of Ecology, Washington, USA
Department of Environment & Climate Change, AUSTRALIA
International WaterCentre, AUSTRALIA
IPH-UFRGS, BRAZIL
Ipswich City Council, AUSTRALIA
Irrigation Association of Australia, AUSTRALIA
James Cook University, AUSTRALIA
Japan Water Agency, JAPAN
Japan Water Resources Environment Technology Center, JAPAN
John Wilson & Partners Pty Ltd, AUSTRALIA
KBR, AUSTRALIA
Kaipara District Council, NEW ZEALAND
Kedron Brook Catchment Network, AUSTRALIA
Kellogg Brown & Root Pty Ltd, AUSTRALIA
Komati Basin Water Authority, SWAZILAND
Korea Land Corporation, KOREA
Kyoto University, JAPAN
Laguna Lake Development Authority, PHILIPPINES
Lake Simcoe Region Conservation Authority, CANADA
Land & Water Australia, AUSTRALIA
Lesotho Highlands Development Authority, LESOTHO
Lesotho Highlands Water Commission, SOUTH AFRICA
Lloyd Consulting Pty Ltd, AUSTRALIA
Logan City Council, AUSTRALIA
Los Algarrobos Civil Association, ARGENTINA
Lower Murray Darling Catchment Management Authority, AUSTRALIA
Makerere Institute of Social Research, UGANDA
Makerere University, UGANDA
Maroochy Shire Council, AUSTRALIA
Mary River Catchment Coordination Committee, AUSTRALIA
Mekong River Commission, LAOS
Melbourne Water, AUSTRALIA
Merri Creek Management Committee, AUSTRALIA
Mhlathuze Water, SOUTH AFRICA
Mid Coast Water, AUSTRALIA
Ministry for the Environment, NEW ZEALAND
Ministry of Agriculture & Forestry, NEW ZEALAND
Ministry of Water, TANZANIA
Mitchell River Watershed Management Group Inc., AUSTRALIA
Moggil Creek Catchment Management Group, AUSTRALIA
Monash University, AUSTRALIA
Monash University, AUSTRALIA
Moreton Bay Environment Alliance, AUSTRALIA
Murray CMA, AUSTRALIA
Murray Wetlands Working Group, AUSTRALIA
Murray-Darling Basin Commission, AUSTRALIA
Murrumbidgee Catchment Management Authority, AUSTRALIA
N4C Norman Creek Catchment Coordinating Committee, AUSTRALIA
Nakdong River Environment Research Center, South Korea, KOREA
National Fish & Wildlife Foundation, USA
National Water Commission, AUSTRALIA
Natural Heritage Institute, USA
Natural Resources, Environment & the Arts, AUSTRALIA
Nature Conservation Council of NSW, AUSTRALIA
Ningbo Municipal Research & Design Institute of Environmental Protection, CHINA
Noblewater, AUSTRALIA
North Central Catchment Management Authority, AUSTRALIA
North Central Texas Council of Govts, USA
North East Catchment Management Authority, AUSTRALIA
Northern Catchments Network, AUSTRALIA
NSW Department of Primary Industries, AUSTRALIA
NSW Department of Water & Energy, AUSTRALIA
NSW Dept of Environment & Climate Change, AUSTRALIA
NSW Murray Wetlands Working Group, AUSTRALIA
Office of Lake Macquarie & Catchment Coordinator, AUSTRALIA
Ok Tedi Mining Limited, PAPUA NEW GUINEA
Opus International Consultants, AUSTRALIA
Oregon State University, USA
Oregon Water Trust, USA
Otago Regional Council, NEW ZEALAND
Oxford University, UK
Oxley Creek Catchment Association Inc, AUSTRALIA
OYO Corporation, JAPAN
Pacific Hydro, CHILE
Pakistan Water Partnership (PWP), PAKISTAN
Pangani Basin Water Board, TANZANIA
Parramatta City Council, AUSTRALIA
Parsons Brinckerhoff, AUSTRALIA
PD Naidoo & Associates, SOUTH AFRICA
Pine Rivers Catchment Association Inc, AUSTRALIA
Planet Radio, AUSTRALIA
PLW Development Solutions Limited, UK
Pollution Probe, CANADA
Probe International, CANADA
Projeto Aguas do Rio Doce, BRAZIL
Pukyong National University, KOREA
Pullen Pullen Catchments Group, AUSTRALIA
Pusan National University, South Korea, KOREA
Queensland Conservation Council, AUSTRALIA
Queensland Environmental Protection Agency, AUSTRALIA
Queensland University of Technology (QUT), AUSTRALIA
Ramsar Convention on Wetlands, SWITZERLAND
Reef Plan Secretariat, AUSTRALIA
Rio Tinto, AUSTRALIA
River Research Centre, INDIA
River Restoration Centre, UK
Rosalie Shire Council, AUSTRALIA
Rural Solutions SA, AUSTRALIA
S. Brizga & Associates Pty Ltd, AUSTRALIA
SA Department for Environment & Heritage, AUSTRALIA
SA Government, AUSTRALIA
SA MDB NRM Board, AUSTRALIA
Save Our Waterways Now, AUSTRALIA
Save the Mary River Coordinating Group Inc, AUSTRALIA
Schweizerische Greina-Stiftung, SWITZERLAND
Seoul National University, KOREA
SEQ Healthy Waterways Partnership, AUSTRALIA
SEQWater, AUSTRALIA
Shoalhaven City Council, AUSTRALIA
Sironko District, UGANDA
Sisters of Mary, AUSTRALIA
SKM, AUSTRALIA
SMEC Australia, AUSTRALIA
Sonoran Institute & The University Of Arizona, USA
Sontek/YSI, AUSTRALIA
South West Catchments Council, AUSTRALIA
Southern Institute of Water Resources Research, VIETNAM
Southern Waters Ecological Research and Consulting, SOUTH AFRICA
Stanwell Corporation, AUSTRALIA
State Hydrological Institute, RUSSIA
Stockholm International Water Institute, SWEDEN
Streamline Research Pty Ltd, AUSTRALIA
SunWater, AUSTRALIA
Sutherland Shire Council, AUSTRALIA
Swan Catchment Council, AUSTRALIA
Swedish Univeristy of Agricultural Sciences, SWEDEN
Sydney Catchment Authority, AUSTRALIA
Syrix Environmental PL, AUSTRALIA
Tasmanian Aquaculture & Fisheries Institute, AUSTRALIA
Territory & Municipal Services, AUSTRALIA
Tetra Tech Inc, USA
The Australian National University, AUSTRALIA
The Green Corridor Project (BRICMA), AUSTRALIA
The Nature Conservancy, AUSTRALIA
The Nature Conservancy, CHINA
The Nature Conservancy, COLOMBIA
The Nature Conservancy, HONDURAS
The Nature Conservancy, MEXICO
The Nature Conservancy, USA
The University of Hong Kong, CHINA
The University of Melbourne, AUSTRALIA
The University of Queensland, AUSTRALIA
The Wilderness Society, AUSTRALIA
Thiess Services Pty Ltd, AUSTRALIA
Tien Giang Irrigation Management Public Company, VIETNAM
Tipa & Associates, NEW ZEALAND
Torbay Catchment Group, AUSTRALIA
Toyo University, JAPAN
Trot Unlimited, USA
Tweed Kenya Mentoring Program, KENYA
Tweed Shire Council, AUSTRALIA
Ume University, SWEDEN
UNEP, KENYA
UNESCO, FRANCE
UNESCO IHE, NETHERLANDS
Universidad Autonoma de Sinaloa, MEXICO
University of Agriculture, NIGERIA
University of Applied Sciences, GERMANY
University of Auckland, NEW ZEALAND
University of Brasilia, BRAZIL
University of California, Berkeley, USA
University of California, Davis Extension, USA
University of Cape Town, SOUTH AFRICA
University of Guelph, School of Engineering, CANADA
University of Johannesburg, APK, SOUTH AFRICA
University of London, UK
University of Maryland, USA
University of North Texas, USA
University of Peradeniya, Sri Lanka, SRI LANKA
University of Southern Queensland, AUSTRALIA
University of Technology Sydney, AUSTRALIA
University of the Witwatersrand, SOUTH AFRICA