



Dr Peter Coombes

“Systems thinker, scientist, modeller and visionary”

Qualifications

Doctor of Philosophy, University of Newcastle, 2002
Bachelor of Engineering (Civil) (Hons), 1997
Bachelor of Surveying (Hons), 1998
Associate Diploma of Engineering (Hons), 1992

Industry sectors served

Government and Government Departments
Developers, Constructors, Architects
Water Corporations
Catchment Managers
Floodplain Managers

Affiliations and appointments

Associate Professor of Chemistry, Molecular Science and Engineering, University of Melbourne
Associate Professor of Integrated Water Cycle Management in the School of Environmental and Life Sciences at the University of Newcastle
Member, Institution of Engineers, Australia
Member, Australian Water Association
Member, International Water Association

Training and specialist skills

Sustainable Developments
Sustainability Problem Solving
Capacity Building
Policy and Technical Advice
Management of multiple disciplinary teams
Leadership

Profile

Dr Coombes has spent more than 30 years dedicated to the development of systems understanding of the urban, rural and natural water cycles with a view to finding optimum solutions for the sustainable use of ecosystem services, provision of infrastructure and urban planning. He has been involved in a wide range of projects, advised many clients and governments, providing strategic design, policy and economic advice to the satisfaction of governments and the development industry.

Key strengths

- Ability to understand and solve complex problems with associated leadership
- Capacity building and management of multiple disciplinary teams involved in change processes
- Strong experience of political processes involved with water cycle management policies at federal, state and local government levels. Indeed this experience includes initiating policy reform at Ministerial levels.
- Data collection, forensic analysis, software development and simulation of systems
- The ability to design and deliver integrated systems, particularly water cycle services
- Technical investigation and academic research using first principles engineering analysis, investment economics and microbiological science
- Extensive government, policy and regulatory understanding of water, urban development, planning and sustainability issues
- Creation of evidence based policies and regulation

- Excellent oratory skills - public speaking, seminars, technical lectures and media engagements
- Strong written communication style - technical publications, consultancy reports, public policy and public commentary such as opinion pieces

Summary of experience

Consulting and research

- Designed and developed over 100 sustainable developments in Australia and internationally
- Author of over 150 research publications, including book chapters, journal articles, keynote papers and conference publications, and supervision of 5 completed PhD research programs
- Delivery of many research and consulting projects across science, engineering and economic issues relating to water resources including integrated water cycle management, source control, catchment management, ecological sustainability, water demand, water balance modelling, water resource economics and bio-chemistry
- Awarded more than \$3 million in competitive and industry research funding
- Founding and Managing Director of Bonacci Water (2008 - 2012)
- Managing Director of Urban Water Cycle Solutions (1998 -)
- National research leader for innovative Water Sensitive Urban Design strategies in eWater CRC (2005 – 2010)
- Chairman of the Stormwater Industry Association
- Initiator and advisor on the creation of the Bluescope Water by Bluescope Steel

Government advisory

- Chief Water Scientist for the Victorian Government (2012 -)
- Member of water advisory panel of the Prime Minister's Science, Engineering and Innovation Council (2006-07)
- Member of the Urban Water Advisory Panel of the National Water Commission (2006 -)
- Advisor, United Nations Water Security Section, Environment and Development Division
- Advisor to international Governments including Canada, Saudi Arabia, India, Korea and New Zealand
- Assisted New South Wales, Victoria, Western Australian and Queensland Governments in the development of water, planning and regulatory policy (1999 -)
- Author of policy reviews and design guides for Water Sensitive Urban Design and Integrated Water Cycle Management across all levels of Government
- Member of Victorian Government's Our Water Our Future panel on alternative water sources (2007)
- Advisor on regional stormwater management projects for the Victoria Department of Sustainability and Environment (2006).
- Author of and expert adviser to the Victorian Government *Living Melbourne, Living Victoria* water policy for Greater Melbourne (2010 -)
- Author of the integrated systems analysis, alternative water and business strategy for the Greater Sydney region for the Board of Sydney Water Corporation.
- Leader and co-developer of the original capacity building program for integrated water cycle management and water sensitive urban design in the Hunter region of New South Wales that

involved 16 local government areas, water authorities, government agencies and the community (1998 – 2002).

- Special project officer, Infrastructure and Planning Manager, Newcastle and Maitland City Councils
- Director of the program to develop the Melbourne Integrated Water Cycle strategy for the Office of Living Victoria
- Leader of water reform process of restoring the Al Asfar Lake system in the historical city of Al Hasa in Saudi Arabia

Conferences and publications

- Chair, 13th International Rainwater Catchment Systems Conference, Sydney, 2007
- Chair, 5th International Water Sensitive Urban Design Conference, Sydney, 2007
- Co-author of "Australian Runoff Quality"

Career highlights

- Appointment as Victoria's Chief Water Scientist and contribution to the successful Melbourne's Water Future Strategy submission to the Victoria Government Cabinet.
- Strong experience in leading high level teams in complex and challenging political environments
- Development of non-linear economic methods that account for the actual depreciation of water assets that allow more realistic planning for infrastructure management
- Establishment of the one of the first stormwater management divisions within a local government authority.
- Development of integrated systems analysis approaches (Systems Frameworks) that allow understanding of the decentralised, multiple scaled and regional impacts of water, energy and environmental solutions throughout cities, regions and countries. This process provides understanding of the performance of solutions at multiple scales in response to multiple objectives.
- Development of dynamic systems economic methods to allow understanding of the value of solutions at multiple scales across society.
- Delivery of systems analysis and policy research, and applied policy processes to led to government policies to allow and encourage urban rainwater harvesting and decentralised water management. In particular, research and policy advice that ultimately led to creation of the state environmental policy BASIX in New South Wales. This project included significant interaction with the NSW Cabinet.
- Completion of PhD research that developed a systems approach to water cycle management and economics. Followed by the award of an Australian Research Council Post Doctoral Fellowship and ultimately an Associate Professor at University of Newcastle and Melbourne University. Awarded over \$3 million in competitive and industry research funding, and completion of a large number of influential publications in less than a decade.
- One of the leaders and strategist in the original capacity building program for water cycle management and Water Sensitive Urban Design in the Hunter Region of New South Wales. This was essentially a change program to move the water and planning industries from traditional approaches to a more diverse range of solutions and to augment the capacity of those professions. Importantly, this original program has been replicated throughout Australia in a range of similar strategies such as Clearwater in Melbourne and WSUD in Sydney.

- A contribution over a period of more than twenty years as a forensic and systems analyst to find solutions to significant problems throughout the Australian and international water industry. This has involved the resolution of a wide range of challenges from country towns, regional flooding and metropolitan water resources. This contribution has also included key roles in many major projects.
- Founding and Managing Director of Urban Water Cycle Solutions and Bonacci Water. Both companies have been dedicated to development of systems and forensic analysis leading to transparent policy and project advice to industry and government. Both companies have achieved financial success from start up (Bonacci Water ultimately achieved an annual value of about \$2 million) in a difficult business environment already dominated by existing consultancies with established relationships with bureaucracy.
- Contribution to and leadership in many policy processes including The Living Victoria Living Melbourne water policy reform process, the Sydney Water Alternative Water Strategy, The Water Advisory Group of the Prime Minister's Science Engineering and Innovation Council and Urban Water Advisory Group of the National Water Commission.
- Initiated and guided the creation of Bluescope Water as a subsidiary company of Bluescope Steel to provide an alternative water solutions throughout Australia
- Provided advice to the Canadian national government that contributed to policies for wastewater reuse, stormwater and rainwater harvesting.
- Leader of a program to restore the Al Asfar Lake system at Al Hasa in Saudi Arabia. This role included liaison with all levels of the government and coordination of efforts to change attitudes and policies relating to the water cycle.

Recent experience

Chief Scientist, Office of Living Victoria

Appointed as Victoria's Chief Water Scientist in 2012 located at the Office of Living Victoria. Contributed to guiding the development of the Melbourne's Water Future strategy for submission to Cabinet, the Living Ballarat project and the Business Plan for the Office of Living Victoria

Melbourne, Vic

LIVING MELBOURNE, LIVING VICTORIA, Expert Advisor and Author

An alternative vision of what is possible for Greater Melbourne's water future, part of the Victorian State Government's Living Melbourne, Living Victoria policy. A forensic analysis of the region's underlying biophysical systems and the division of Greater Melbourne into many spatial zones. This allowed comparison of alternatives (including 'business as usual') and the identification of different opportunities across zones.

Melbourne, VIC

North East Victoria Adapting To A Low Water Future – Project director

An integrated systems investigation of the entire water cycle in the North East of Victoria, including consideration of potential alternatives to the traditional provision of water cycle services and innovative solutions for sewage and sullage in small towns. The project included analysis of the entire region, with specific case studies used to highlight the various challenges and opportunities across the region and recommendations for new policies.

North East Victoria

SYDNEY WATER ALTERNATIVE WATER FUTURE, Project Director

Developing an understanding of how Greater Sydney's water systems will respond to the implementation of alternative water cycle management strategies and examining Sydney Water's role in this process. Subsequently assisting Sydney Water in developing a strategic and sustainable vision for the city's water services.

Sydney, NSW

GREATER SPRINGFIELD ALTERNATIVE WATER STRATEGY, Project Director

Developing an alternative water strategy for Greater Springfield, including assessing the technical, commercial, and regulatory aspects of providing alternative water services to the town.

Springfield,
QLD

ARARAT PRISON UPGRADE, Water Discipline Lead and sub-Project Director

Delivery of an alternative water solution that is capable of servicing the expansion of Ararat prison, preventing flooding on the low lying site and not creating additional strain on the town's already stressed water supply and wastewater networks.

Ararat, VIC

SOUTH EAST QUEENSLAND ALTERNATIVE WATER STRATEGY, Project Director

Analysis of water cycle management strategies and policy development for the Sunshine Coast region; providing reliable, fit for purpose water services that are cost effective, whilst avoiding or minimising adverse environmental impacts.

Sunshine
Coast, QLD

Generic Guidelines for an Eco-efficient Approach to the Development of Water Infrastructure

Development of water cycle management strategies and policies for UNESCAP to facilitate more sustainable management of water resources throughout the Asia Pacific region.

International

EGATE, Water Discipline Lead and sub-Project Director

Analysis of water cycle management strategies and policy development for E-Gate, for the Major Projects Victoria for a high profile inner city sustainable residential precinct

North
Melbourne,
VIC

WERRIBEE EMPLOYMENT PRECINCT, Water Discipline Lead and sub-Project Director

Analysis of water cycle management strategies and policy development in Werribee, for the Department of Planning and Community Development for a high profile employment precinct

Werribee, VIC

ARMSTRONG CREEK EAST PRECINCT, Project Director

Integrated water cycle management plan and development of policy for a new growth area including a flood study and stormwater management plans for 2500 ha new growth area located in Armstrong Creek, including inputs into developer contribution plans

Geelong, VIC

DONCASTER HILL PROJECT, Water Discipline Lead and sub-Project Director

Sustainable urban water cycle management strategy for the Doncaster Hill redevelopment.

Doncaster, VIC

CENTROC, Expert Advisor and Technical Lead

Feasibility study into water supply security (regional drought proofing) for the Central NSW Regional Organisation of Councils (CENTROC).

Regional NSW

ARMSTRONG CREEK, Project Director

Analysis of water cycle management strategies and policy development in Armstrong Creek for City of Geelong

Geelong, VIC

VICTORIAN DESALINATION PROJECT, Expert Advisor

Environment, groundwater and surface water management for Wonthaggi Desalination Plant

Wonthaggi,
VIC

PARKVILLE NEUROSCIENCE BUILDING, Expert Advisor

Parkville neuroscience development - optimize the project to meet requirements for EMI-5 Greenstar criteria.

Melbourne,
VIC

SUSTAINABLE DEVELOPMENT AT GIDGEGANNUP, Project Director

Integrated systems analysis to examine the water cycle management options for the Gidgegannup townsite including procurement of MBR wastewater treatment plant and implementation of an alternative water management scheme and business model

Gidgegannup,
WA

MAB DOCKLANDS DEVELOPMENT, Water Discipline Lead

MAB Docklands – Design of stormwater management and water conservation strategy for New Quay precinct

Docklands,
VIC

DECENTRALISED WATER SERVICES FOR GREATER MELBOURNE, Project Director and Author

Analysis of the impact of decentralised water management solutions on the performance of headworks, stormwater catchment management and trunk infrastructure supplying Melbourne

Melbourne,
VIC

FYANSFORD GREEN, Project Director

Integrated Water Cycle Management and WSUD for Fyansford Green Development. Incorporating hydraulic analysis of both Moorabool and Barwon rivers.

Geelong, VIC

IWCM FOR THE TOWN OF HILL END, Project Director

Development of an Integrated Water Management Strategy for the town of Hill End for the NSW Government

Hill End, NSW

REGIONAL PLANNING FOR STORMWATER MANAGEMENT AND WSUD DEVELOPMENT, Project Director

Development of a stormwater management plan (including analysis of flood risk, provision of infrastructure and WSUD strategy in the Fern Bay development for Winton Property Group)

Port Stephens,
NSW

SUSTAINABLE DEVELOPMENT AT HOPETOUN, advisor

Hopetoun alternative sustainable infrastructure study for LandCorp in Western Australia

WA
Government

SUSTAINABLE DEVELOPMENT IN SE QLD, project director

Integrated water cycle management concept planning, modeling and analysis for the Yarrabilba town in SE Queensland for Delfin Lendlease.

Developer

WSUD DEVELOPMENT AT MERNDA, designer

Development of a stormwater management plan and WSUD strategy in The Groves (now called Renascent Rise) project for Eldersie Property Group

Developer/Loc
al Government

PROBLEM SOLVING AT HILL END, advisor and designer

Development of an Integrated Water Management Strategy for the town of Hill End for the NSW Government. This includes resolving management of water resources and sewage contamination in the area.

NSW
Government

GOVERNMENT POLICY, advisor

Provision of strategic, policy and technical advice on rainwater harvesting and wastewater reuse for the Canadian Ministry of Mortgages and Housing

Canadian
Government

GOVERNMENT POLICY, advisor and analyst

Analysis of the impacts of alternative water strategies on management of regional water supply systems across NSW for Department of Utilities, Energy and Sustainability

NSW
Government

ASSET MANAGEMENT, project leader

Analysis of the impact of deteriorating stormwater infrastructure assets on levels of service provided to the community and economic considerations for local government. Completed for Newcastle City Council as a research project

Local
Government

STRATEGIC PLANNING, project leader

Impact of water efficient appliances, rainwater tanks and desalination on the security of regional water resources at the NSW Central Coast for CCEN.

Environmental
group

WSUD DEVELOPMENT, designer

Development of stormwater management plan, WSUD strategy and analysis of flood risks at the Cameron Park Project for Yarraman Developments

Developer/Loc
al Government

DEVELOPMENT OF POLICY, advisor

Evaluation of the costs and benefits of demand management solutions in the Greater Sydney region for the PENGOS on the 4th Sydney Water project

Environmental
group

SYSTEMS ANALYSIS OF REGIONAL WATER RESOURCES, analysis

Analysis of the impacts of combining the Central Coast and Hunter regional water supply schemes for the Gosford Wyong joint water authority

Local
Government

REGIONAL WATER STRATEGY, analyst

Strategic stormwater management planning study for the Pimpama – Coomera Water Futures Masterplan for WBM and Gold Coast Water

Local
Government

WSUD POLICY AND CAPACITY BUILDING, project leader

Analysis of Stormwater management issues and design of the “Water Smart Model Planning Provisions” with Ian Donovan for Hunter Councils. Leader and co-developer of the regional capacity building program.

Local
Government

ANALYSIS OF WATER DEMANDS IN THE SYDNEY REGION, analyst

Creation of a spatially disaggregated monthly demand model for the Greater Sydney for the Sydney Catchment Authority

NSW
Government