GOVERNING WATER IN SOUTH EAST QUEENSLAND

Report on a seminar hosted by
The Brisbane Institute
18 October 2005

Water is a precious commodity. In South East Queensland a combination of rapid population growth and climate variability is placing our water supply at significant risk. This Brisbane Institute seminar brought together speakers from a range of perspectives to provide responses to the question:

What must we do to establish a secure supply of good quality water?

Jennifer Marohasy chaired the seminar and remarked that we might well draw upon Mark Twain for an assessment of the current situation: "Whiskey is for drinking, water is for fighting over". Indeed the way of life we have become accustomed to, with water freely and plentifully available, is coming to an end. The increasing scarcity of the resource is bringing to the surface nascent tensions between the multiple users and managers of our water supply. Water is now in the media headlines on a daily basis. Water restrictions are becoming tougher and people are being encouraged to police these restrictions in their own neighbourhoods. There are heated debates about developing alternative sources of water supply, ranging from recycled wastewater to desalination plants. Reports on the health of our waterways reveal that we are continuing to struggle with environmental risks. The rising price of water in the agricultural sector is threatening to flow through to the supermarket shelves. And fluoridation has again become an issue.

In short, the question of water is set to remain a difficult and contentious one for the foreseeable future. Even if the upcoming summer months provide us with good rainfall, the underlying issues will not disappear. Major decisions need to be made now that will cater for the water needs of a rapidly growing region with unpredictable weather patterns over the coming decades. Within this context, the seminar addressed three central dimensions of the water issue:

- **The role of the community**
  As the scarcity of water becomes more pronounced, community expectations and behaviour will need to change. How can these changes be managed most effectively?

- **Regulatory arrangements**
  Water policies that respond adequately to long-term needs presume coherent and consistent regulatory arrangements. What adjustments need to be made to deliver an appropriate regulatory environment?

- **Water pricing**
  It is well-known that water is not priced according to the cost of providing it, particularly for urban use. What kinds of changes to water pricing will be required to address concerns of scarcity, efficiency and equity?

This report is intended as a general summary of the main points made in response to these questions by the five speakers at the seminar.

Reusing Wastewater: Understanding Community Decision Making

Blair Nancarrow
Australian Research Centre for Water in Society
CSIRO Land and Water

Blair Nancarrow has extensive experience in studying community input into policy making in all aspects of water resources management and water services provision. In this seminar, she reported on a worldwide breakthrough in research about predicting behaviour in relation to the reuse of wastewater. Blair's research has major implications for how governments relate to communities when attempting to introduce significant change.

The key points of Blair's presentation were:

- There is no 'one solution' to the water crisis. Only a thoughtful range of strategies and approaches will solve the problems in a way that addresses the concerns of safety, efficiency, equity and environmental protection.

- Governments need to engage rather than persuade the community. A genuine partnership with the community needs to be developed over time if changes in expectations and behaviour are to be brought about consensually.

Blair noted that the reuse of wastewater presents one logical approach to enhancing the security of our water supply. Scientific research demonstrates that reuse schemes are safe and reliable, and they are already being promoted in a number of places across Australia. However, it is well-documented that these schemes frequently fail, throughout the world. Communities often support the 'concept' of reuse, but they often lose confidence when faced with the practical implementation of these schemes. People are finally moved against accepting reuse due to the 'yuck' factor.

It is now generally accepted that social marketing and persuasion are ineffective tools in the face of the 'yuck' factor. The research project was motivated by the absence of systematic social research into the various factors that might influence public perceptions and mediate decision-making. Importantly, the research needed to confront community participants with 'real' situations, since we already know that, in theory, the community is supportive. The research sought to find out exactly what it is

that changes, when people are confronted with the actual behaviour of consuming water that is reused.

Detailed data were obtained by presenting two reuse scenarios as real and immediate projects:

1. Indirect Potable, Perth (Managed Aquifer Recharge, MAR)
2. Horticultural Irrigation, Melbourne (Werribee)

A random sample of 400 participants was selected in each case. The following represents some of the key results of the study.

- For both scenarios, when people were asked whether they would be happy to consume the water reused in the schemes, the 'not sure' group was the most populous. This finding indicates that it is a large group of 'swinging voters' who have to be convinced if the projects are to be publicly acceptable.

- In both cases, over 2/3 of respondents felt there was a possibility of something going wrong with the projects.

- A majority of people felt that their cities would benefit greatly from the schemes, 57% in the case of Melbourne and 61% for Perth.

- The case studies differed significantly in terms of how respondents felt about whether the experts had a high level of knowledge about safety, 55% for Melbourne horticulture, 38% in the case of Perth indirect potable.

- In terms of trust, respondents indicated they had most trust in science and technology, including the institutions responsible for developing them such as universities and CSIRO. Government departments had quite a high level of trust. The most notable drop in trust was for private companies. This finding indicates that the involvement of the profit motive causes trust levels to drop significantly.

- Price was found to have a relatively small effect on levels of acceptability. For Melbourne, 41% said price would make a difference, for Perth only 17%; 46% in Melbourne said price would not make a difference, the figure being 73% in Perth.

- The study found there is considerably more support for indirect potable reuse, as indicated in the different responses to the following two questions:

  Would you consider drinking treated recycled wastewater in a scheme that did ***not pump into the underground aquifer first***?

Yes	13%
Not sure	43%
No	44%

  Compared with drinking recycled wastewater through the MAR scheme:

Yes	31%
Not sure	51%
No	18%

- One of the most significant findings of the research concerned the role of knowledge in the acceptance of reuse schemes. Information and education were found to have no effect on people's behaviour as variables in themselves, as shown in the structural equation modelling of people's decision making. The most important finding, once again, is that the community's concerns need to be seriously addressed. It is counterproductive to try to persuade the community. Time needs to be taken to develop a real partnership.

The major result of Blair's research is that we now have a tool to understand the community's behavioural decisions for proposed reuse schemes. The following steps need to be followed:

- Identify the variables that will govern behaviour through application of the measurement model;
- Investigate the nature of those variables;
- Structure community engagement around these issues: genuinely address the concerns without trying to persuade;
- Re-measure at key stages in the program and revise community engagement to respond to any changes.

The future demands the patient development of a partnership with the community. There may never be an answer to the 'yuck factor'. So even though indirect potable might be the easiest form of reuse, it will be the most difficult to implement, especially where people consider there are alternative supplies or supply systems.

Once again, Blair emphasised that there is no 'one solution' to the water problem. We will need to better manage and use the water that is available by employing a range of strategies. If we think we can rely on only one approach, whether that approach is desalination, recycling or pricing, we are sure to mismanage the water problem. The present water crisis presents a 'whole of community' challenge, so the community needs to be engaged in the process. This challenge is more than simply 'bringing the community along'.

The full report of Blair's research can be found at http://www.clw.csiro.au/publications/consultancy

Possibilities for Improved Regulation and Institutional Arrangements for Water in South East Queensland

Shaun Cox
Director, Gold Coast Water

Shaun Cox has been Director of Gold Coast Water since its formation in June 1995, and his current career and organisational objectives relate specifically to managing the city's sustainable future water supply and implementing successful water conservation measures. In his talk, Shaun reflected on the total urban water cycle in South East Queensland, with an eye to the options for meeting future challenges and objectives over the next 5 to 10 years. The key points of his presentation were:

- ❖ We are on the brink of a new paradigm of valuing and managing water. The limits of the current system require significant changes to the regulatory regime to cope with future needs.

- ❖ Decision-making by committee – where a variety of different agencies and entities have overlapping and confused roles – is inappropriate. We need to rationalise the institutional arrangements associated with the provision of water in South East Queensland, both in terms of the regulation and the service provision.

Shaun emphasised that we have evolved a lifestyle that depends upon very demanding levels of water service. High expectations about water are built into our daily lives and our economy. However, population growth means we are reaching the limits of existing infrastructure capacity. In addition, we are threatened with a series of risks to our water supply that cannot be managed adequately within existing regulatory arrangements:

- Climate variability
- Water quality threats
- Terrorism
- Energy threats

We are, therefore, on the brink of a new paradigm. Shaun noted that the current water industry and the associated regulatory arrangements arose from the health crises of the 1800s. That is, the primary focus of the industry has been upon public health, separating water for consumption from water sources that pose contamination risks. The scarcity of water is forcing us to look at different options, and proposals such as recycling mean we are considering reversing some of those traditional separations.

In forging a new set of arrangements, we should keep in mind the following regulatory and institutional objectives for water:

- Improve water security and reliability;
- Maximise water use efficiency;
- Improve risk management capability;
- Improve resource allocation and efficiency;
- Integrate solutions across the water cycle;
- Ensure balanced (economic/social/environmental) outcomes.

At present, there is too much regulatory complexity. At the State level, there are five to six Departments involved in different aspects of the water industry. The roles of different people and agencies are confused because there is a mix of regulation, water resource planning, funding, infrastructure planning and facilitating sustainable outcomes.

Service delivery is also too complex, involving a mix of local governments, and local and state owned corporations. There is primarily vertical separation between bulk and retail services with some exceptions. The total water cycle is disaggregated at the retail end, with environmental water being separate from water supply and

wastewater. Urban water and wastewater retail services are geographically disaggregated across 18 local authorities, serving a total of 2.5 million people.

A positive is that there is a good linkage between water service provision and land use planning and controls, given this is all in the hands of local government.

There are presently movements in the right direction. The SEQ Regional Plan advocates total water cycle management and water use efficiency. The State Government has initiated a review of institutional arrangements around bulk water supply. And some integration of the water cycle is starting to occur, as evident in the Brisbane City Council and the Gold Coast City Council. The Sustainable Industries Division of the EPA is doing good work, while there are numerous projects at the State and Local government levels focused on integrated urban water management.

To meet future needs, a number of further initiatives need to be undertaken in the following areas:

The State's role

- Define and assign clear responsibilities to the State in terms of its role in the water cycle;
- Ensure one agency has strategic oversight of all State water related activities to facilitate coordination and avoid conflicting outcomes;
- State responsible for standardisation of certain outcomes such as defining regional water usage regimes and standardising rebate schemes.

Bulk water supply

- Regionalise bulk water supply;
- Bulk assets would include water sources (dams/desalination plants etc), treatment facilities and interconnecting trunk mains;
- Recycled water could be purchased from retailers for bulk supply options such as indirect potable reuse power station cooling.

Retailing

- Rationalise the number of retailers. (Current economies of scale suggest one company per million customers – the region is to grow from 2.4 to 4.7 million people over the next 50 years);
- Local Government ownership of retail companies;
- Retailers to retain wastewater treatment plants and recycled water management;
- Retailers required to deliver upon robust water consumption and recycling targets.

Total water cycle

- Integrate the Total Water Cycle under the retail companies (excluding the water supply catchments which reside with the bulk water companies);
- Strengthen the powers of water companies to control impacts on water quality;
- Retain links with local government in respect of land use planning and control.

Shaun concluded with a series of comments on how we can deliver on improved water management:

- A single bulk water entity would improve water reliability and management of strategic risks;
- Strengthening water company powers in the catchments would improve water quality outcomes;
- Rationalising the retail companies improves efficiency and capacity to deliver upon strategic outcomes;
- Several retailers allows "competition by comparison", driving operational efficiencies and improvements in service delivery;
- Integrating responsibility for the Total Water Cycle with the retailer drives more holistic thinking, overcoming traditional barriers to future possibilities.

Water Reform in South East Queensland

Greg Claydon
General Manager, Water Planning
Department of Natural Resources and Mines

Greg Claydon has been General Manager, Water Planning with the Queensland Department of Natural Resources and Mines since April 2002. For the five years prior to that, Greg was the Department's Regional Services Director, South West Region, based in Toowoomba. His involvement with the water industry dates back more than 30 years and he has completed assignments at regional, state, national and international levels. Greg provided an overview of national, state and local regulatory initiatives being developed in response to the water situation.

The first part of Greg's talk focused on four central elements of the context of water reform in South East Queensland.

1. **1994 COAG Agreement**

   The central aim of the 1994 COAG Water Reform Agreement was to establish 'A framework to achieve an efficient and sustainable water industry' and contained the following main elements:
   - Water pricing reform;
   - Secure water entitlements;
   - Trading of water separate to land;
   - Separation of the regulator and water service provider roles of Government;
   - Commitment to public education and consultation;
   - Recognition of the environment as a water user;
   - An integrated catchment management approach to water resource management.

2. ***The Water Act 2000***

   This Act provides for:
   - the sustainable management of water and other resources;
   - a regulatory framework for providing water and sewerage services; and
   - the establishment and operation of water authorities.

3. **National Water Initiative**

The 2004 National Water Initiative focuses upon:

- Water Access Entitlements and Planning Framework;
- Water Markets and Trading;
- Best Practice Water Pricing;
- Integrated Management of Water for Environmental and Other Public Benefit Outcomes;
- Water Resource Accounting;
- Urban Water Reform;
- Knowledge and Capacity Building; and
- Community Partnerships and Adjustment.

4. **Queensland Water Plan 2005 – 2010**

The Queensland Water Plan 2005-2010 is centred around seven strategies:

- Securing water for the environment and users;
- Planning for future water needs;
- Smarter use of existing supplies;
- Pricing water for sustainability;
- Protecting water quality;
- Compliance to protect users and the environment;
- Investing in science and technology.

The second part of Greg's talk discussed issues specific to the South East Queensland region, which is a) currently experiencing one of the worst droughts in recorded history; has b) population growth creating increasing demands on the water supply; and has c) storage levels in dams at historic lows.

The main responses to this situation are contained in:

- **South-East Queensland Regional Plan**
- **South-East Queensland Infrastructure Plan and Program**

These two plans have five strategic priorities:

1. Ensuring more efficient management and use of water;
2. Increasing the supply of water to accommodate growth in the region;
3. Diversifying water supplies to address climate variability, climate change and other supply risks;
4. Providing policy frameworks and subsidies to support more sustainable and integrated water cycle management systems; and
5. Reviewing institutional arrangements to ensure efficient, sustainable and equitable coordinated regional water planning and the delivery of bulk water supply and treatment services.

- **South-East Queensland Regional Water Supply Strategy**

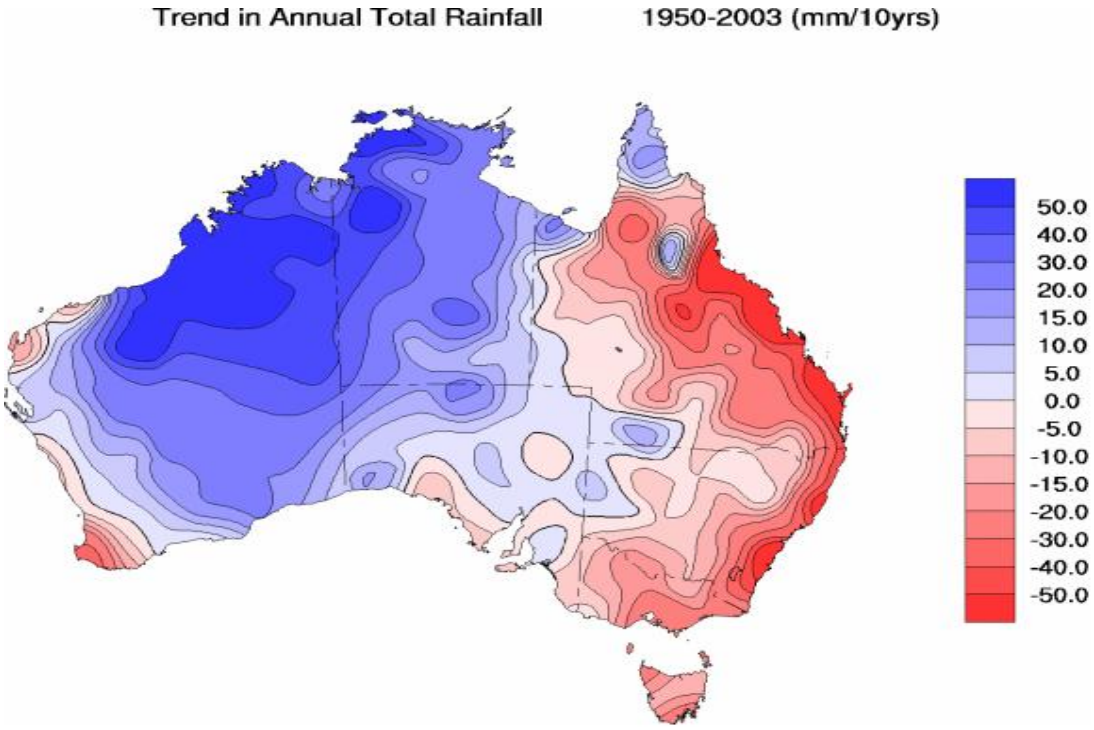
  The need, timing and sequencing of projects and related water supply infrastructure are to be finalised as part of the South-East Queensland Regional Water Supply Strategy. This strategy has three main objectives:

  1. Assess future needs for the safe and reliable supply of water in SEQ;
  2. Establish the processes and mechanisms required to meet those needs;
  3. Obtain agreement for an implementation framework for the strategy that achieves optimum outcomes in social, environmental and economic terms.

- **South-East Queensland Regional Drought Strategy**

Greg also touched upon some examples of urban water policy and program initiatives relevant to smarter use of existing supplies:

- Sustainable Housing Policy
- Grey Water Legislation
- System Leakage Management Plans
- Registration of Drought Management Plans
- Regulatory Framework for Recycled Water
- Framework for Water Sensitive Urban Design and Integrated Urban Water Management
- Eco Biz and Water Wise Programs Expansions
- Local Governing Bodies Capital Works Subsidy Scheme Expansion



Source: BoM and DPI&F

Pricing Water More Effectively

Euan Morton
Principal, Synergies Economic Consulting

Euan Morton is an experienced lawyer and economist specialising in regulatory and competition issues. He consults extensively in the infrastructure sector, most particularly on costing and pricing work in the energy, transport and water industries.

The key points of Euan's presentation were that:

- ❖ Water should be treated as a commodity.
- ❖ Pricing policies should replace water restrictions over the long-term as a rational and efficient way of addressing the issue of water scarcity.

Euan observed that the water industry has lagged behind the substantial reform of the utilities sector over the last 15 years. It has done so largely because it presents a series of unique issues, due to the nature of the commodity, the limited opportunities for competition and the higher degree of vertical integration in comparison to other sectors. The need for reform is emerging at a time of great pressure on the resource, from climate change, population growth and the need for more coordinated regional planning.

Pricing

Water has been grossly underpriced: it is not even recovering the infrastructure costs of provision, let alone addressing the issue of scarcity. We typically spend less than 1% of average weekly expenditure on water.

Pricing water serves several purposes, it rations demand, signals the value of new water supply, and resources are directed to where they are most valuable. Prices should signal the cost of the next unit of a resource and should include full environmental costs (for example, the pollution effects of a desalination plant).

Basic water demand is price inelastic, in comparison to uses such as in the garden. Consumption levels are also highly dependent on income:

- The top 40% of income earners are responsible for over 50% of water consumption;
- The bottom 40% of income earners are responsible for around 25% of water consumption.

Pricing reform requires consideration of equity as well as efficiency, however equity issues can be addressed quite easily through a rebate scheme.

The rising block tariffs applied in Sydney and Melbourne, while better than permanent use restrictions, have significant limitations. Two-part pricing approaches are better. The scarcity value of water is reflected in the second block, where most users should face higher charges for some of their consumption.

Restrictions
Water restrictions are inconsistent with efficiency. Euan drew an analogy with petrol: would we accept the idea of driving our cars only on certain days or within specific hours as a rational and efficient way of regulating the resource? Permanent use restrictions are inconsistent with efficient water pricing. Restrictions should form part of water sharing arrangements, but permanent restrictions impose costs on the community and prevent individuals meeting constraints in the least costly way.

In conclusion, Euan observed that the future would require a greater diversity of water sources. Thus, we will be relying upon what are presently seen as non-traditional sources that are more expensive. The current water restrictions will at least help overcome our cultural indifference to water efficiency, but can only be a relatively small part of a long-term approach to managing water consumption. Better pricing is a critical component of any solution.

Competing Demands for Water in South East Queensland: Planning, Prices and Trade

John Quiggin
ARC Federation Fellow, University of Queensland

John Quiggin is an Australian Research Council Federation Fellow in Economics and Political Science at the University of Queensland. He is prominent both as a research economist and as a commentator on Australian economic policy. Professor Quiggin concurred with the main points developed by Euan Morton. In particular, he argued:

- While water restrictions produce a rapid response in the short-term, their effectiveness tends to decline over time. As with similar attempts in other parts of the economy, people find a way around restrictions.

- A pricing approach to regulate water consumption is more effective over time as people adjust their behaviour. There are not major equity concerns in relation to water since gardens, which use up most excess water consumption, are mainly linked to high-income households.

John observed that there are quite different answers to the question: 'How much water do we have in Australia?', depending upon the measurements used. If rainfall per hectare is the measure, Australia is close to being the world's driest continent. But if rainfall per person is used, Australia is probably the world's wettest continent. The key problem we have in this country is getting water to where it is needed.

After remarking on aspects of the contemporary situation in South East Queensland, John moved on to discuss one of the big issues in the present debate: trade in water. There are arguments both for and against trade in water:

Arguments for trade
- Standard economic gains from trade;
- Allocate water to highest value use;
- Seek most cost-effective options for improved efficiency.

Arguments against expanded trade

- Social importance of water in rural catchments;
- Problems with past reform measures;
- Stranded assets;
- Largely a problem of adjustment.

In terms of the capacity for trade in South East Queensland:

- Potential trade between urban catchments, particularly Brisbane and Gold Coast;
- Limited options for urban-rural trade;
- SEQ Water looking at irrigation supply in periods of high flow.

On the issue of environmental flows:

- Existing use is unsustainable (Murray-Darling, Queensland and the Cap);
- More environmental flows intensify competition in extractive uses;
- Purchase of water for environmental flows may set a precedent.

There are sensitive and complex issues involved, particularly where trade between rural and urban areas is concerned. However, in the long run, John argued that the allocation of water to its highest value use should be encouraged and will almost certainly involve market-based transfers between environmental, irrigation and residential users.

At the moment, we have an inconsistent policy: there is a market for water irrigation, while urban water is controlled through restrictions. A consistent approach would be more efficient and effective.

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