

Introduction: The water services problem

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Despite the urgency with which Australian cities now face the problem of inadequate water supplies, and despite the impact of recent patterns of changes in climate on those supplies, the roots of the water problem are deeply historical and can only be addressed by accounting for intersecting technological, cultural, economic and political factors. Together these factors have entrenched a path dependency in the way water services are supplied and attitudes towards them that must be thoroughly questioned if the current crisis is to be understood and addressed. This book summarises these intersections as a preliminary to the consideration of alternative methods of ensuring a sustainable and appropriate mix of the supply of water services for Australian cities in the future.

In Chapter 1, Tony Dingle points out that from the standpoint of today, urban water supply and sewerage systems in Australia appear to have changed little in their technological essentials for extended periods of time. A water-supply authority harvests rainwater or stream flow, stores it, treats it (if required) so that it is potable, and then reticulates it into homes and businesses. The liquid and solid wastes generated there are piped out again, treated to some degree, before being emptied into the ocean.

This has usually been explained as an example of path dependence. The technology is expensive and disruptive to install. Once in place it limits future development paths so that it is less costly to expand an existing system as the number of consumers and per-capita requirements grow, rather than replace it with something different. Consumers also are not required to change their usage habits. This generates a set of obstacles both in supply and usage to the adoption of new technologies that differ significantly from what is currently in place.

There have, however, been major transitions in the past where cities have replaced existing methods of supply with new and different technologies. The most obvious of these have been the shifts from water delivery by water cart or on-site rainfall collection to reticulation; and from nightsoil collection to piped, water-borne collection by means of flush toilets. These transitions were made by most cities in the developing world between the mid nineteenth and the mid twentieth century. Typically, they were climactic events provoked by widespread concerns, usually about threats to public health. They usually involved an assessment of the alternative technologies available at the time.

In examining these transitions, their timing and the factors which provoked them, Dingle raises questions about what might constitute necessary conditions for radical change in today's networked cities. In the light of previous transitions, are they now approaching the critical conditions in relation to water supply and sewerage provision that could push them onto different trajectories in relation to present and future sources of water as well as patterns of water usage?

In Chapter 2, Peter Spearritt provides illustrations of the way the rigidities in approaches to the provision of water services and short-term political considerations have influenced the investment in water-services infrastructure in Southeast Queensland (SEQ). He discusses how the Queensland Government reacted to the recent drought and argues that the explanation of the crisis in SEQ lies in an analysis of infrastructure quick-fixes popular with engineers, a remarkable lack of accountability in the water bureaucracies and untold arrogance in the electricity authorities. Spearritt claims that successive bureaucrats and Ministers ignored the warning signs, sounded as early as 1997 by experts in the Department for Natural Resources and Mines. The Government embarked instead on a series of 'supply side' projects although the creation of the Queensland Water Commission in 2006 was followed by the introduction of regulations which demanded severe reductions in domestic water consumption.

In Chapter 3, Graeme Davison explores the social history of our changing water-consumption habits and behaviour. He argues that the increase in consumption was brought about by the twin concerns of health and morality, reminding us of the strong link between Protestant morality and modern habits of cleanliness. Davison explores further the connection between the views expressed by the reformer Chadwick and the development of the sewerage systems in Australian cities as outlined by Dingle in Chapter 1.

He discusses the importance of fashion and technological developments in bathing and personal cleanliness and in washing, as well as in the factors behind the great increase in water consumption outside the house, in the garden and recreation facilities such as swimming pools.

In Chapter 4, Lesley Head argues that although the availability or otherwise of water has always underpinned the human settlement of Australia, the fundamental nature of our relationship with water cycles in and out of public consciousness. Recent drought has returned the issue to the top of public agendas. In debates over dam expansion, recycling sewage, desalination, watering lawns and washing cars, a key motif that swirls around is that Australians need a 'culture change' in relation to water. It is said that we need to change attitudes of profligacy, developed in the well-watered ancestral lands of northwest Europe, and attune both attitude and practice to the realities of living on the driest inhabited continent on Earth.

But what would constitute such a culture change, and how would we recognise it? She takes an ethnographic approach to the question of urban water use through the lens of the backyard garden, drawing on interview material from a broader study to examine the ways in which people think about and use water. In arguing that there is a significant cultural shift occurring, she does not discuss the actual levels of water consumption but offers a complementary perspective that seeks to understand everyday practices and habits, and the processes that reinforce or change them.

Lesley's argument contrasts with and extends other studies that have emphasised the perceived separation between the modern home and the networks of production that sustain it. She argues that it is in the relationship between house and garden that people see, understand and participate in the network of water storage and distribution. Their active engagement with these processes enhances their capacity to manage and reduce consumption.

In Chapter 5, Stephen Dovers seeks to connect discussion of human behaviours around water not to taps, toilets and timing showers, or dams and desal plants, as much discussion (very usefully) does, but to the policy processes and instruments, institutional and governance systems, and household realities that shape human and organisational behaviours toward water in a modern society and economy. The focus is on urban water, but the discussion necessarily travels to rural water and issues such as energy that cannot easily be separated from water. The paper is a series of linked discussions on issues that surround more singular policy debates around water, hinged on the proposition that water policy is better constructed as being about far more than just water, and where the prospects for behavioural and institutional change become both more complicated and realistic.

In Chapter 6, Geoff Symes argues that although there is now a substantial literature defining and encouraging sustainable urban water management the responses of urban water utilities to changed demand and supply options have tended to focus on technological solutions, new sources and well-worn approaches to demand management. While there is increasing interest in water-sensitive urban design, whole-of-lifecycle economic consideration and the incorporation of externalities into pricing and cost-benefit analyses, there are significant areas of sustainability that have received scant attention. These neglected areas tend to relate to the difficulty in creating, as opposed to promoting, the concept of sustainability that includes social and cultural assessment, integrated response and key institutional issues in achieving adaptive learning.

Recently, however, there have been attitude changes towards supporting stronger approaches to sustainable water-resources management. There is also a greater appreciation that holistic approaches will have to be taken as the issues

associated with metropolitan growth and climate change have become more evident.

Many in the community realise that there are important value judgments that will have to be addressed to establish whether the status quo should be maintained. Alternatively, if strategic social and cultural goals are to be achieved the community are willing to engage in examining what novel institutional structures should be seriously considered to attain them.

Research has shown that these drivers include judgments on issues of fairness in allocation, acceptable risk and uncertainty, trust in both government and its agencies, and perceived wellbeing from alternative levels of service. Emotion is also a significant driver of community decision-making. These judgments are underpinned by perceptions of professional roles and knowledge and how they are incorporated in public discussion.

Geoff discusses these issues and the prospects of, and justification for, change in decision-making in urban water management in terms of examples of community water culture in relation to alternative delivery systems and inter-regional transfer of water resources.

In Chapter 7, Janice Gray and Alex Gardner pose the question of how to provide new third-party (and usually private-sector) access to old public-sector infrastructure in order to make better use of these valuable water resources. They also explore the associated issues of how to maintain health standards and societal protections in the face of private-sector involvement in the supply of fundamental life services.

Providing for private-sector access to wastewater infrastructure and facilitating private-sector wastewater services requires sophisticated levels of science and technology. It also requires the development of an appropriate legislative framework to regulate the private-sector access and services. Regulatory wastewater regimes need to operate in tandem with the broader legal framework for water services provision, including the economic regulatory bodies, at both the State and Commonwealth levels.

They explore the opportunities that may exist for third-party access to public infrastructure and, accordingly, sketch the present institutional frameworks for water and wastewater management throughout Australia. They then review the *Water Industry Competition Act 2006* (NSW) as an example of state-based industry-specific legislation incorporating a third-party access regime. They tease out some points of interest and potential concerns associated with third-party access regimes.

In Chapter 8, Lee Godden argues that property, far from being the settled and determinate concept that people ascribe to the word, remains a contested site for defining 'rights' — and for articulating obligations. This chapter traces

the changing conceptions of property in Australian law by reference to whether property is an appropriate descriptor for defining and managing 'entitlements' to water in an urban context. Debates about the utility of property concepts and market mechanisms in achieving the goals of sustainable water use and economic efficiency have, to date, largely focused upon the rural sector. The social-justice dimensions of these approaches, initiated under the Council of Australian Government reforms to water laws and National Competition Policy reforms, is now an emerging issue. Many of the questions about the balance between private rights and the public interest that arise in this context have similar resonances in an urban setting.

In urban areas, though, the issues of defining the public interest and accountability, *vis-à-vis* the 'rights' of water consumers, take on particular dimensions in the light of the regulatory changes that have occurred in the water-supply and 'retail' sectors. The moves to deregulate urban water authorities have created semi-corporatised models of governance across these sectors. Lee examines the changes in urban water regulation, assessing whether various models embraced under public-private partnerships and de-regulated structures can promote sustainable use of urban water and provide an effective means of 'balancing' the various interests. She explores new forms of property-based measures, such as 'offsets' trading or water 'credits', and their potential to deliver sustainable, long-term urban water use.

Arguably, there is a need to reiterate and redefine the long-term responsibilities of governments, individual water users and the community as a whole in regard to urban water. Such a long-term view needs to be accompanied by an articulation of a holistic 'responsibilities' spectrum rather than creating an artificial division into public and private spheres.

In the Conclusion, Patrick Troy argues that there is a need to find a new way of encouraging residents to take more responsibility for their water services and that central to this is a reconsideration of the Chadwickian solution of the management of human body wastes. He argues that Australian cities have reached the point where there are no further 'natural' water resources available to be exploited but that by acknowledging that residents have an inalienable right to potable water and that protection of public health remains the highest priority it is feasible to develop water services that do not increase environmental stresses.