



Role of the Private Sector in the Supply of Water and Wastewater Services

**Australian Academy of Technology Sciences and
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Submission by the Australian Academy of Technological Sciences and Engineering (ATSE) to the Department of Prime Minister and Cabinet - Discussion Paper - October 2006

ATSE

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INTRODUCTION

The Australian Academy of Technological Sciences and Engineering (ATSE) is pleased to note the Department of Prime Minister and Cabinet's Discussion Paper, 'The Role of the Private Sector in the Supply of Water and Wastewater Services. ATSE considers Water Policy and Management to be one of the major issues vital to the economic and environmental sustainability of Australia. Droughts and floods are a feature of Australian life. Since diversion of the Tank Stream to supply water to the convict settlement at Sydney Cove, Australians have had to adapt to managing a highly variable water resource.

ATSE has played an important role in focusing national attention on the policy and management issues associated with Australian water resources since its establishment in 1976. Its second National Invitation Symposium in 1978 dealt with the 'Land and Water Resources of Australia'. In 1989, it focused on 'The Murray-Darling Basin: a Resource to be Managed'. In 1999, jointly with the then Institution of Engineers Australia, it prepared a report on 'Water and the Australian Economy'. Its 2003 Annual Symposium dealt with a wide range of water issues under the heading 'Water: The Australian Dilemma'. And, more recently, ATSE completed a major study on 'Water Recycling in Australia'. These publications and the views of a wide range of Fellows with experience in water matters provide the basis for this submission.

BACKGROUND

Water is a valuable resource in Australia, but in short supply. There has been a massive combined increase in demand for water sparked by a growing population and rising living standards during recent decades: food production, conservation, recreation, industry and households all use far more than in the past. In several regions the amount of water allocated to these uses now exceeds the water entering rivers from rainfall – the vast Murray-Darling Basin being the most high-profile case.

Agriculture uses some 67% of water and domestic and manufacturing accounts for some 16% of water use. At the same time the irrigation industry underpins the living standards of the urban population in the form of food, jobs and export income. In addition, Australians are the third largest consumers of water in the world after the United States and Canada.

Our household consumption of water, at 320 litres per person per day, is second highest after

that of the USA. At least one-third of all the drinking water consumed in our major cities is used to water domestic gardens, ovals and sports fields, for industry uses and to flush toilets. This situation cannot continue: large increases in the price of domestic and industry water, continued deterioration in river health and water quality, broad-scale loss of landscape, flora and wildlife, increasing scarcity of good quality recreational water and the pollution of coastal and marine environments with nutrients from effluent are all important issues that will require addressing.

SUMMARY

The Academy notes that the risks to Australia's water resources are increasing, especially in the form of reduced reliability due to long-term changes in climate, and growing demand from agriculture, mining, industrial and residential consumption. Therefore, there is urgent need to implement improved planning and management practices to meet these challenges.

The Academy's submission, while acknowledging the important role of private participation in the supply of water and wastewater services, notes that the fundamental issues for consideration should be -

Optimise the roles of both government and private enterprise in the development and management of water and wastewater management systems under regionally varying circumstances and challenges.

This requires the implementation of sound policy and decision making and well-integrated planning to deal with the challenges as well as future uncertainties.

In future, government, business and citizens alike must pay greater attention to the needs and management of whole systems -- technological, social or environmental. Rivers must be managed as whole systems if conflicting economic and lifestyle demands are to be met in ways that assure sustainable health outcomes. Water demand must be met through strategies that link resource management of multiple sources, far more realistic water pricing, wider water trading and much more aggressive efforts to recycle water, including more active exploration of opportunities for potable reuse.

This is not easy and seldom occurs, often because ministerial portfolios and public authorities are structured around particular segments or issues rather than systems as a whole. The outlook of both industry and local communities tends to reinforce this approach because it is much easier for the various stakeholders to focus on the specific or the local rather than the systemic.

Another barrier to effective planning and integrated management lies in the failure of stakeholders to recognise and then to remove institutional blockages to necessary reforms. For example in securing better catchment and water management, many outmoded regulations, processes, committees and administrative arrangements need to be removed or replaced, because they continue to block necessary and systemic change.

None of these issues could be characterised as bureaucratic or management issues that will resolve themselves over time but rather they are major challenges that must be actively met if a growing population is to be successfully accommodated in an advanced and prosperous nation.

Governments must face the difficulties and long-standing problems and take the hard decisions. All concerned need to remember that there are very few win-win opportunities left in the

provision of water infrastructure or more broadly in water management.

Q1 - What are likely to be the most important issues that urban water utilities will need to address to meet future demands?

Water resource systems are greater than the sum of their parts

In a variable water regime, such as Australia's, the application of principles that focus on water resources systems, planning and management is fundamental to supply and security for urban and regional purposes.

Water service provision is not only seasonally and climatically dependent but is much more intimately bound with cultural and environmental expectations and values. These are also strongly linked with laws and perceptions of public and private rights, both individual and regional. Not insignificantly, urban water and wastewater services are an essential part of the public health system. Water, in the main has limited flexibility for re-routing and long distance transmission.

The balance between security and scale of supply is the kernel of current issues of public concern. In this respect the bulk of water sources are heavily influenced by climate variability and, now also, by climate change. This is an intricate multi-decadal time scale issue of risk management. The primary risk management issues are those of matching and using available resources to sustain water resource health and water quality while giving robust service under conditions of hydro-climatic risk. These are basic to both cost and utility and need up-front recognition. However, the discussion paper addresses risk management only in terms of the secondary issues of reducing commercial risks for private participation.

If water resources are planned and managed, over long time-scales, as systems which exploit diverse supply characteristics then the "whole will be much greater than the sum of the parts". The resultant service can be tuned to maximise drought security and supply without the degree of supply trade-off which would be required if treated as a collection of individual sources. This is referred to herein as the "conjunctive-use strategy".

Perth is one of the more extreme examples of such system benefits. More than 35 different sources contribute to the Integrated Water System and these sources are very diverse in seasonal characteristics and drought resilience. The Perth system is 'optimised', as a whole, for performance over decadal time-scales of source behaviour under variable and changing climate. Some sources (such as deep groundwater) may be rested from extraction for years-on-end because of their ability to store their resource. These sources then may be drawn on heavily in times of drought or other supply crisis.

More and less extreme examples of this conjunctive use opportunity and development can be cited throughout Australia depending greatly on the hydro-climate and hydrogeology of the region. Very different optimisations of water systems are consequently necessary for every region. However, for larger systems in particular, the opportunity to be exploited is the strategic planning and management of the water resources systems so that the whole is greater than the sum of the parts.

This opportunity to achieve benefits from water resources systems implies the creation of natural monopolies (for planning and management purposes) at regional scale, the goals and

actions of which are intimately bound to regional health, culture, sustainability and the environment, hydro-climate and riparian attitudes as well as the regional economy and development. Separation of various elements of these systems such as individual head-works may impede the ability to optimise total water resources management and utilisation and may prejudice the attainment of systems benefits in magnitude of supply, security and cost.

For Australia, at least in southern regions, climate change as a challenge to security and scale of established as well as new supply is now a primary and driving issue for risk management. Water systems in these southern regions will require augmentation simply to maintain service and not just to meet demand growth. In some circumstances this issue transcends all others. (Perth, in the last decade, has expended, through the State corporatised water body, in the order of \$1Billion simply to offset the effect of climate change.) The stakes are high and, given community attitudes and associations with water, governments will remain as the centre of public expectation and accountability.

In respect to new technologies and measures, the prime challenge for regional water strategies is not simply to foster their introduction but to introduce them so as best to match regional circumstances and opportunities which meet the primary demands on the system. The opportunities will vary with location and circumstance. For example the introduction of wastewater into the potable stream (the prime demand area) may be a feasible and healthy augmentation in a groundwater based regime such as Perth but may be less feasible and/or less competitive in the absence of appropriate pricing regimes in other regional environments. Furthermore, the effective implementation of wastewater reuse strategies in the Perth example involves important issues of optimisation within the total resources system and potentially critical rights issues in the absence of system-wide authority such as exists in a monopoly head-works system.

This submission, while acknowledging the important role of private participation, notes that the fundamental issue for consideration should be,

To optimise the roles of both government and private enterprise in the development and management of water and wastewater management systems under regionally varying circumstances and challenges.

A very strong corollary to this objective statement is to test proposed or related reforms in terms of whether they will encourage or inhibit the benefits to be gained from a conjunctive-use strategy.

By and large the major urban public water industry has a good understanding of future demands and priorities. They have experience in funding, building, project managing contracts, public-private partnerships and in supervising build-own and build-own-operate facilities. They can and do take account of social, environmental and economic factors in assessing community, regional and system needs. That said, there are situations where they are locked into existing massive water and sewer infrastructure and as a consequence may fail to support desirable local or regional innovations, which might by-pass the established 'system'. More generally, they have a history of being conservative in thought and action and slow to change direction.

There are other situations where these utilities might well take innovative steps but government of the day obstructs rather than leads in the consideration of such change (for example, potable recycling). Accordingly, opportunities exist to build on the existing infrastructure and expertise base and to address those areas where Commonwealth Government impetus might help or add

value in overcoming institutional or political inertia, in devising better ways of packaging major funding, and in supporting pilot schemes to trial new, innovative approaches.

The Discussion Paper does not adequately deal with the issue of water and wastewater services in regional areas, particularly in smaller, isolated towns. These customers are generally subsidised to prevent them paying the very high real costs of small and/or remote water systems. This situation requires consideration in the context of regional development strategies and may make privatisation or third party access generally unattractive.

Q2 - What are likely to be the most important issues that rural water utilities will need to address to meet future demands?

See the general responses provided to Question 1.

While acknowledging the state of planning for major urban public water industry, the rural and regional scene is a different matter. There are some regions and some councils where authorities responsible for water have reasonable economic, planning and technical credentials and track records - and there are others that do not. There are many situations in regional Australia where past publicly funded infrastructure can no longer be kept up to date by public authorities - nor for that matter by private users. There are intense debates about the costs and benefits of public and private investment in the cotton industry, for example, versus the long term social and environmental costs for land and rivers.

In future, we must focus not just on size and management competence in regional surrounds but also on competence in planning and assessing the future impacts of major regional water infrastructure proposals. Australia cannot move forward by adhering to 'more of the same' - whether that relates to rural industries or regional infrastructure.

Q3 - To what extent should the private sector play a greater role in urban water and wastewater infrastructure and services?

Private involvement and contribution to water supply in Australia has grown steadily and beneficially in recent decades and through a variety of forms. It is a large, essential and, most likely, a growing contributor in expertise, service, development, innovation and as a channel of expenditure and participant in wealth sharing. Degree and nature of involvement varies from region to region, often with quite strong circumstantial reasons. Different case-studies in Australia as well as elsewhere provide fertile ground for others to assess and use as guidance according to their dominant regional issues and circumstance. However, particular caution is needed in considering arrangements which break down system-wide authority and responsibility and efforts to secure integrated management which is very much needed to achieve water system goals as discussed above.

In-so-far that governments choose to investigate potential benefits from changing forms and degree of private participation, the primary need for regional water governance is -

To create conditions which can ensure robust, effective, innovative and community sanctioned development of conjunctively managed, water resource systems which employ measures best matched to regional habitat, system sustainability, economy, hydro-climate and social structure.

In any regional circumstance this primary objective may, or may not, be enhanced by

increasing the prevailing regional involvement of private enterprise. It would be unfortunate if this was pursued as an end in itself.

The lesson from history of private investment in water supply projects, is that careful analysis and risk assessment needs to precede any private water infrastructure proposal, followed by clear specification of project requirements and outcomes, effective oversight, good feedback and strong commitment to corrective action where needed. These conditions are more likely to be achieved within a large water utility than as a consequence of government guidelines or action.

Q4 - To what extent should the private sector play a greater role in rural water and wastewater infrastructure and services?

See the general responses provided to Question 3.

In rural and regional situations there is considerable scope for improvement of private investment in water supply projects. However, there are fundamental questions about what sorts of projects should be brought forward through greater recourse to private investment, what oversight and sanctions should apply - and who would ensure that the benefits exceed any clearly identified and significant social and environmental consequences. Even then the regime introduced needs to foster moves towards higher value-added uses.

As mentioned in the Discussion Paper, private sector involvement may be less in the smaller regional and rural water utilities, although it is likely that design, construction and equipment penetration could be approaching the same 80% as for larger utilities. Operation and maintenance outsourcing would be low, however.

Further regional reform is needed nationwide. In Victoria reforms in the 1990s where the responsibilities of many local water authorities were taken on by large regional authorities appear to have achieved good results. There are similar challenges to be met in NSW and Queensland where there remain approximately 240 separate utilities run by local government. A similar approach could be considered in these states or in the case of NSW, the current Catchment Management Authority could be given wider authority and responsibilities. These steps are important in gaining more robust system wide focus and management and would improve water use efficiency, as well as facilitating greater penetration by the private sector.

It is obvious that the efficiency of much irrigation infrastructure must be upgraded to free up water for other high value-added uses, for urban use and for environmental flows. Given appropriate trading arrangements (with operating conditions that, inter alia, reflect catchment and water resource management as well as commercial needs), regimes will emerge where water will become available for trading and capital investment and private interest may follow. This is already underway in Western Australia where the Water Corporation will acquire water for urban use. Such regimes need close monitoring to ensure that the community's social as well as economic objectives are achieved.

Q9 - Are there any water quality issues that need to be addressed in relation to increased private sector involvement?

If private sector involvement is to be effective in advancing water resource reform, clear catchment and river health management regimes, controls and objectives need to be in place. That is essential if the water resource base is to be maintained in a sustainable condition and if

public health risks and adverse environmental impacts are to be avoided. As a sub-set there are situations where water quality, river flow and other guiding parameters need to be established to guide both public and private operators.

Where a public utility has over-riding responsibility for public health and environmental risk, the question of how that risk is to be managed and accountability secured if it is proposed that a private sector operator take on the responsibility of providing direct water or wastewater treatment services to the public. Experience in Australia and elsewhere shows that even though a private sector contract may include serious penalties, the risk usually remains wholly or in part with the utility/ licence holder and this is where responsibility is seen to lie by the community.

The Department of Prime Minister and Cabinet Discussion Paper on the Role of the Private Sector in the Supply of Water and Wastewater Services is located [here](#).