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# **The Five-Year Water Price Path for the ACT**

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## The Five-Year Water Price Path for the ACT

*'If we had a well functioning market in water, all users would pay a price that reflected not only the amortised cost of water storage and infrastructure, but also its scarcity value'* Ken Henry, Treasury Secretary, 4 March 2008

### Introduction

It seems that everyone is into water pricing these days. And everyone seems to know how to do it. Or at least that is what they will tell you.

But in most jurisdictions in Australia, it is the independent pricing regulators who are left with the task of actually determining the price, or at least setting the principles that might be applied in making a decision on what the price should be for water.

Treasury Secretary Henry in his recently well-publicised Little Memorial Lecture has quite correctly identified the problem with the simplistic statement to 'let the market determine the price'. The fact is, as Secretary Henry has stated, *'we don't have well functioning water markets'*.

What I want to do today is to address some of the practical realities that the prices regulator faces when determining the price for water in a less than ideal market environment, and then comment on some aspects of what needs to be done to address the issue of establishing a well functioning market. I am drawing upon not only my experience in the ACT where I have been the independent prices regulator now for over 13 years, but also on my experience in advising on public utility pricing issues across a number of jurisdictions in Australia and also in Asia and the Pacific.

### Establishing the Base Price

One of the first points that needs to be made in any discussion on pricing for water is that, in terms of urban water in particular, the regulator is usually called upon not to determine the value of the water *per se*, but rather to set the price needed to recover the (efficient and prudent) costs of the water treatment and reticulation utility. These costs may include the costs of the capture and storage of the water, but they do not usually include any allowance for the intrinsic economic or scarcity value

It is important that this point is understood, because it is often argued that the prices that are set by regulators should reflect some underlying value of the water, and that the prices should, for example, include an allowance for the scarcity value of the water itself. Commentators on water pricing can confuse the role and powers of the prices regulators on this matter, as they often want them to equate the prices that are set to an economic price that includes not only the scarcity value of the water but also the intangible and external costs (including the environmental costs) that arise from the abstraction of water from streams and waterways for consumptive purposes.

The responsibility of the prices regulator is usually to assess the efficient costs of the water utility, and determine a price path or revenue cap that will allow that utility to recover these costs (including an appropriate return on the investment involved) from the prices that are charged over the regulatory period. Thus, the prices regulator naturally considers in some detail the costs that are incurred in this process (including the capital investment costs), forms a view as to whether the expenditure involved is prudent and efficient, and then establishes an appropriate form of regulation that will allow the recovery of these costs in the revenues collected by the utility over the regulatory period.

In this process, the regulator will want to consider in some detail issues such as the need for the capital investment being proposed, the extent of any efficiency savings that have been made and how these savings should appropriately be shared between the utility and customers, the likely level of demand over the relevant regulatory period so that some assumptions can be made regarding the recovery of costs through the prices that are set, and the appropriate amortisation and handling of intergenerational costs, be they capital equipment costs or investments in skills and expertise that will have benefits that extend beyond the regulatory period.

In assessing the prudent and efficient nature of the costs that the utility is seeking to recover in the price, one of the issues that has increasingly arisen for regulators is ‘inter related company charges’. With the emergence of significant multi-service players in the electrify/gas/water sectors, there is a tendency to find that many of the operational tasks that are required by these businesses are contracted out, often to related firms. Certainly this is the case in the ACT, where ACTEW Corporation, the water and wastewater service provider contracts all its operational and capital investment management tasks to its related company, ActewAGL. All State regulators have needed to address similar issues in recent years, and in Victoria in particular it has become a matter that could result in protracted appeals regarding the process that the regulator has adopted to try to untangle these inter-company arrangements.

From a regulatory perspective, it is not a concern for regulators as to whether or not services are purchased from inter-related entities. Indeed, there are sound arguments in favour of purchasing expertise from a related entity. However, from a regulatory perspective, the issue is ‘what is the appropriate efficient price for these services?’ It is too easy for transaction prices between related entities to be structured in a way that are less than arms length and efficient. The problem for the regulator is how to differentiate between efficient prices and prices that are effectively a transfer of unrelated costs from the unregulated entity to the regulated entity. The powers of the regulators under the various codes and laws that apply to electricity and gas price regulation, are possibly limited in terms of how far the regulator can track the costs back through the charges being made by a related entity that subcontracts to a regulated entity. Thus, without some form of arms length contestable market price being available for comparison purposes, the regulator is left with the task of forming a view as to the appropriate costs to allow in the regulated revenue requirements of the regulated entity.

In the ACT, the Commission has had to address this problem on the basis of some disaggregated information that is provided by ActewAGL as contractor to ACTEW. However, it is argued that ActewAGL should be able to recover a ‘margin’ on its direct costs of providing the relevant services, this margin reflecting the margin that an arms

length contractor would be willing to charge for the service and also to reflect some of the transfer of risk that goes to ActewAGL in its role as administrator and operator of the ACTEW assets. The task that the regulator is then called upon to perform is to make a judgement as to the acceptability of the concept of a 'margin' in this sense, and if so, just what should this margin be. In other words, the regulator is left with the task of trying to calculate what would be an efficient price for the service in question, a price that reflects the arms length price that a contractor would negotiate to provide this service in a competitive market.

In the ACT context, this debate is exacerbated by ACTEW's characterisation of the rationale for this margin as the shifting of risk from ACTEW to ActewAGL. This leaves the regulator with the difficult task to assess just to what extent this is risk that had already been in existence (and therefore should have been compensated for in some other way), or whether it is additional risk that has been created by the existence of the subcontracting arrangement, whereupon the regulator must ask whether or not the subcontracting of the work is in reality the most efficient way to manage and operate the water and wastewater services of ACTEW.

### **Rate of Return and the Regulated Asset Base**

In the early days of independent price regulation in Australia, regulators, the regulated, and their respective advisors and consultants spent much time debating the issue of the correct rate of return. Over a period of time there gradually evolved an acceptance of the use of the Capital Asset Pricing Model (CAPM) as the way to calculate a Weighted Average Cost of Capital (WACC). There have been some differences between regulators in terms of how they have calculated some of the elements of the CAPM model, but in general the level of consensus was at a stage where the only real issue of difference was whether to use a pre tax or post tax model. With the gradual replacement of the jurisdictional regulators by the Australian Energy Regulator (AER), at least in terms of gas and electricity price regulation, the standard approach will become the post tax rate of return method, with the tax position of the regulated entity separately modelled and incorporated in the financial building blocks model used to derive the required revenue stream.

More recently there has been a revival of interest in aspects of the way in which the CAPM is calculated, and in particular whether or not there is systemic bias in the estimates used for the risk free interest rate. There is an argument that has been advanced that the real risk free rate that regulators have been using for the CAPM has been underestimating the true risk free rate. Without going into the details, when applying a rate of return to an asset base of \$1 billion, it can be readily seen that when for every increase of 10 basis points in the WACC that the regulated entity can achieve its revenue is increased by \$1 million per annum, the argument is well worth having!

Each of the regulators have looked at this issue and responded in a slightly different way. For Victoria, they have taken an approach that has attempted to overcome the difficulty by estimating the rate of inflation rather than using the implied rate of inflation as derived from the markets valuing of the real risk free rate. The AER has used a variant of the same approach. In the ACT we have been a little more conservative in the sense that we believe that the evidence is not yet clear whether the argument for a systemic undervaluing of the risk free rate is correct, and thus have

remained with the previous methods of determining the implied rate of inflation using the market projections of the real risk free rate. At a national level, the National Regulators Forum has commissioned some further work on this matter, and will be looking with some interests at the results from this analysis.

Notwithstanding this issue, it is also clear that there has been some developments in the financial market in the area of the market risk premium that is applied to the risk free rate when calculating the WACC. Again, we appear to be in a period of some change in the markets, and while the final evidence is not clear, some movement in this element of the WACC calculation would appear to be warranted. In the ACT, to be consistent with the view that we will stay with the current market estimates of the real risk free rate and the derived projected inflation rate, so we will also abide by the movements in other market derived items for use in the WACC calculation. Thus the Commission has been prepared to take on the recent significant increases in the market risk premium that is being applied to corporate bonds and use this estimate in the WACC calculation for water pricing.

In its consideration of the appropriate WACC to apply in the ACT, the Commission has to consider the issue of what is the appropriate risk profile for a business that is wholly owned by the ACT Government and that arranges its borrowings through the ACT Treasury. Should such a business be given a credit raising risk profile commensurate with private water operators, or should its risk profile reflect more the fact that it is wholly government owned. The Commission has previously taken the view that it will treat ACTEW as a stand-alone water business with a risk profile that reflects what one would expect of a stand-alone private sector operator. But the problem with this approach becomes more obvious when there is a tendency for the relevant government to use the business as the means of funding activities that one might otherwise expect to be funded directly by government as part of its wider public policy role, and the entity itself arranges its borrowings through government borrowing channels and at government concessional rates. These are not easy issues to resolve, and while there is a tendency for some to argue that 'prices for water need to be increased to encourage conservation of this resource so it doesn't matter', the fact remains that the COAG reforms and competition principles were designed to remove these hidden forms of cross subsidies and taxes that had previously proliferated through state owned public utilities (and some would argue are still very much present in the handling of water charging around Australia).

A further area of continuing contention in the determination of water prices in the ACT is the determination of the regulated asset base (RAB). In submissions made to the Commission, ACTEW is seeking to have the asset base revalued using a Optimised Depreciated Replacement Cost (ODRC) approach. The overall effect of this change could notionally results in the RAB for ACTEW being doubled, with a significant impact on the profit return to the business as well as the prices paid by ACT consumers.<sup>1</sup> In the ACT, the Commission determined an initial RAB for ACTEW in 1999 when it commenced a more formal price determination process.<sup>2</sup> At that time, the

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<sup>1</sup> ACT consumers already have the highest priced urban water for a major city in Australia, with prices more than double the rate in some other State capitals

<sup>2</sup> Previously the Commission had set prices on a short term annual basis, but after the introduction of relevant legislation, the Commission moved to the more standard form of multi year price path determinations

Commission used a Return on Assets Test (RAT) approach to determine the Optimised Deprival Value (ODV) of the assets, being the greater of the economic value based on the discounted projected income stream from the business assuming no further new investment, and the scrap value of the assets. The Commission recognised at that time that the appropriate asset value was somewhere between the ODRC and the historical written down book value. By adopting what was effectively the economic value, the Commission adopted this value as a 'line in the sand' for an asset that had been funded by the Commonwealth Government over many years and had been passed across to the ACT Government and ultimately to ACTEW at a relatively low price. Indeed, the Commission could have taken the position that all previous investment was effectively a 'sunk cost' and started from a nil RAB, but this was not consistent with the desire to set prices for the reticulation and water treatment services provided by ACTEW that reflected their economic costs. Each year the RAB is indexed for inflation and net new investment is added to the RAB, thereby ensuring that the business is earning a return on effectively what will become the indexed and depreciated replacement cost of the assets.

The issue of the asset base is of some contention nationally. In the reform process applied to gas and electricity, there was a brief period when the regulation of electricity transmission wires passed from the jurisdictional regulators to the ACCC and at that time there was provision for the review and resetting of the asset base. But in general regulators have not looked favourably upon proposals to change the basis upon which the RAB has been set, and in particular to adopt a significant change in the asset value of the type being proposed by ACTEW. The dangers of making these changes are only too obvious. Already there is a strong body of opinion that state government have effectively used their various water and wastewater utilities as 'cash cows' which can be milked by adjusting the prices of water and flowing the benefits back to state treasuries by way of dividend payments. Current attempts to develop an agreed national code for the determination of urban water prices is likely to founder on this point as it did in the mid 1990s when attempts to develop a standard pricing code similar to that for electricity and gas failed to materialise.

### **Funding of New Investment**

A fundamental input to the determination of the RAB for the next regulatory period is the level of net new investment to be added to the indexed RAB at the end of the previous period. The approach that the Commission has adopted has been one of reviewing the proposed new investment projected for the next period, assessing whether or not it can be considered to be prudent, considering whether the values reflect efficient costs (in as much as they can be determined in advance) and then rolling the value of the new investment (less any allowance for depreciation on existing equipment) into the RAB.

The Commission would normally undertake a post event evaluation of the actual investment that has been undertaken over the previous period. In effect this means that if the regulated entity has needed to spend more than was originally allowed in the price path for the previous period, provided the expenditure was regarded as being prudent

and efficient, the additional amount would be added to the RAB going forward.<sup>3</sup> The AER and some of the other jurisdictional regulators have now adopted a slightly revised process of rolling in new investments. Effectively what they have done is to agree a value for new investment for inclusion in the RAB in advance, and to the extent that they are able to reach a decision that the proposed investment is prudent and efficient, then that amount is rolled into the RAB with no post event review undertaken to assess whether or not that investment occurred or what actual cost was incurred by the entity. Thus, it is argued that the entity has an incentive to be as efficient as possible with its expenditure, and is able to retain for itself any benefit it achieves in this process. If the entity is able to reorganise its investment profile, replace a new investment with better maintenance or use of an existing asset, or in some way better manage its activities to avoid undertaking the new investment at this time, then they benefit. At the same time, they would not have the same project approved for a subsequent year, as this would effectively be a double count of the project. Provided the regulator is convinced that the service, health and safety standards are being met, then the business is left to make its own decision on how to spend the funds that have been provided in the price path.

Assessment in advance of whether a new investment is prudent and cost efficient raises many practical problems for the regulator. Technical assistance from engineers is usually sought during this stage, although the regulator may not accept the advice that the engineers provide. The regulator usually faces two critical issues, namely:

- Is the project really necessary to meet the stated objectives or can other solutions resolve the problem that is being addressed; and
- Is the regulated entity able to manage and undertake an investment/capital expenditure budget of the size being proposed.

In the ACT, like many other jurisdictions, the effect of the drought has had a significant impact upon the thinking of the water entity, the ACT Government and the public in general. Essentially the public is looking for some degree of certainty for its water supplies while at the same time accepting that some level of reduction in the use of water is required in the changed climatic conditions currently facing Australia. The Government has set a number of targets for reduced water consumption<sup>4</sup> and has also set targets for the reuse of water in the ACT. Unlike some of the coastal cities and urban areas, the ACT does not have ready access to a desalination option when seeking additional water supplies. As a result, ACTEW has advanced a significant new capital works program for the next five years (approximately four times as large as in any previous period) and also has a number of additional options that it is considering, one of which is a major water reuse treatment works which would take water from the bottom end of the Territory's wastewater treatment works and return it to one of the Territory's storage dams. This is an extremely costly process, not only in terms of its construction, but also in terms of its ongoing operation.

Some of these proposals, including the water reuse option, are controversial and are not favoured by some in the community. At the same time, these options at least need to be explored as ways of ensuring access to the water needed to meet the ongoing

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<sup>3</sup> Similarly, if the entity did not spend all the funds that had been provided in the previous regulatory period, the amount that the regulator would add into the RAB as the starting point for the new regulatory period would reflect what was actually expended, not what was projected and not spent

<sup>4</sup> Many of the short term objectives have now been met, well in advance of the original target dates

requirements of the Territory. But without the completion of all the investigations and cost/benefit assessments of these projects let alone the costing of the projects themselves, the Commission is not in a position where it can readily include the projects in the forward capital works budget. In these circumstances, the Commission has had to consider what forms of on ramps and off ramps it might apply so that as debate and analysis on these types of projects proceeds over the five year period of the next price path, to the extent that there is a need to commence work on these projects, some arrangement can be in place which will allow the inclusion of expenditure that is prudent and efficient. In setting up these off and on ramps, the Commission has to guard against the possibility that the 'incentive' nature of the form of price regulation used in Australia is not lost simply by allowing the regulated entity to make changes to forward opex and capex when and how it likes.

An area of 'new investment' that can create some difficulties for regulators is investment in research and development. It is generally acknowledged that funding of research can be an important component of the activities of a water reticulation entity, particularly when that research is addressing issues that are particular to the location in which the entity operates. Thus for example, R & D into areas such as fresh water ecology, the treatment of water from different catchment environments, the treatment of giardia and other potential health risks, and even the options that exist for developing and operating water reuse facilities, all have a place in the pantheon of matters that a water entity must consider as part of its meeting of health, safety and operating service standards. The difficulty for the regulator is how to place a value on the outcomes from this research, particularly when the entity may not be the sole (or even one of the) beneficiaries of the commercialisation of any research results. It is argued that the advantage to the water industry even if it does not have commercialisation rights to, for example, research being conducted through a Cooperative Research Centre (CRC) or some similar joint research body, is that the water entity will have ready access to these research results and be able to apply those results within its own operations.

Investment in R & D of this nature can be a significant part of the overall operating costs of the entity, and have the potential to be open ended if the regulator is simply willing to allow any or all R&D spend to be built into the cost base of the business. It is usual therefore for the regulator to have regard to some form of benchmark using the R&D expenditure patterns of other water businesses. But this can be a little circular, and cannot be relied upon as being a reasonable basis upon which to set a cap on how much should be allowed for R&D expenditure.

In addition, there has been a tendency in some jurisdictions for the governments concerned to 'require' the water entity to undertake more and more work on water access and availability studies of a type that might be considered to be more akin to policy analysis of the type that government should fund from its general revenue and taxes. The community as a whole are the beneficiaries of these studies and it must be questioned whether the governments concerned are not taking advantage of the opportunity to transfer the cost to the water entity on the belief that the regulator will pass these costs on to the water consumer. It is not always easy for the regulator to set a clear demarcation line on these matters to avoid any suggestion of transferring the cost on to water consumers and away from the general public. But although there may be no clear demarcation point, the regulator must consider if and to what extent this form of cost shifting is occurring and be prepared to take decisive action to avoid any suggestion

that the government concerned is using its often wholly government owned entity as a pseudo tax gathering agency.

### **Environmental Costs**

The discussion to this point has primarily focussed upon costs that are incurred by the water entity. However, some costs are not directly incurred by the entity, or if they are, they do not embrace all the costs that the taking of water for consumptive purposes creates for the environment and for society as a whole. The most obvious example are environmental costs.

Some environmental costs are captured in the costs that the water entity incurs. These are usually costs associated with the disturbance of the environment for the installation of pipes, treatment works, pump stations and the like. These costs would normally be captured in the price that consumers will pay.

However, it is unlikely that the environmental costs associated with the impact of the off take of water for consumptive purposes has on down stream river conditions has been factored into water prices for most urban areas. Management of waterways to allow certain minimum amounts of flow to meet environmental requirements is not a response to accounting for this cost and including it in the costs that users pay for water. Rather, to the extent that governments and various bodies such as the Murray Darling Basin Commission seek to resolve issues such as the silting of rivers, high salt problems, and the impact on flora and fauna dependent on the flow of water from rivers that are dammed for catchment and water supply purposes, is not included in the costs that the water utility is normally required to pay.

From a pricing regulator's perspective, unless these costs are identified and incurred by the regulated entity, they are unlikely to favour the inclusion of some allowance for these costs in the prices that the regulated entity is allowed to charge. Simply increasing the cost to consumers, while potentially attractive from the perspective of sending a pricing signal regarding the use of water will simply result in an increase in the revenue collected by the regulated entity. Without a corresponding expense, this will then flow directly into the profits of the business or possibly encourage less efficient expenditure elsewhere.

In the ACT, the Government has attempted to address this issue by the use of a Water Abstraction Charge (WAC). When the Commission was asked to advise on the composition of this charge in 2003, it recommended that included in the charge would be costs that the government was meeting for various water management purposes not recovered from other sources, an allowance for the scarcity value of water (based on the traded price for water on the Murrumbidgee River) and the environmental costs that were not being met by ACTEW and indeed, were possibly occurring further downstream and outside of the ACT. The logic behind this approach was that the Government would collect this charge from ACTEW (rather than leave it with ACTEW to include in its profits) and the moneys raised could be used to address some of these issues.

More recently the Government has acted to increase the charge significantly from 25 cents per kilolitre to 55 cents per kilolitre. The first 25 cents per kilolitre are used to

offset costs incurred by the ACT Government related to catchment management, the scarcity value of water and environmental costs. The revenue received from the remaining 30 cents per kilolitre, in the words of the Chief Minister, 'provides a return on a valuable resource and assists in managing demand'.<sup>5</sup>

The potential for the use of some form of Water Abstraction Charge by other jurisdictions has been considered in other States, but not adopted. From a regulator's perspective, the setting of a charge for otherwise non-accounted-for costs (such as environmental costs) has some merit as it retains the integrity of the price that is charged by the water utility for the water treatment and reticulation services that it provides, while still incorporating some notional value for the environmental impact of taking the water for consumptive use. The difficulty with the approach however is that, in the ACT at least, the use of the WAC has gone beyond the simple concept of recovery of costs that the Commission originally envisaged, and has now become a price that has been placed by government upon access to the water. Thus, there is no attempt to link the WAC back to the cost of the environmental impact that the taking of water for consumptive purposes has had,<sup>6</sup> or to take account of any other 'cost' that may not be reflected in the actual costs incurred by the water utility.

Currently there is no generally accepted method for addressing 'hidden' and unaccounted for costs such as environmental costs. A move towards a carbon tax will address this issue to the extent that it applies to the generation of electricity and this electricity is used in the treatment or even creation of potable water. Thus for example, the current rush into desalination plants with their high-energy input will incur the cost that will come from a carbon tax arrangement, and then this will be reflected in the price for the potable water that is created using this technology. Similarly, the adoption of technologies that will take wastewater and convert this back to potable water (or secondary use water), to the extent that energy intensive technologies are involved, will incur a price impact following the adoption of a carbon tax system.

However, for riverine environmental costs, there is currently no agreed mechanism whereby this cost is identified, valued and then included as part of the cost of supplying water. This is not a problem that can be readily resolved at an individual State or Territory level, but requires joint action as part of the National Water Initiative. The ACT experience has demonstrated that it is possible to incorporate an allowance for these types of costs in a charge that is recovered from water consumers. Thus, from a practical perspective it is possible to put in place a cost recovery arrangement that will address the issue of hidden costs such as environmental costs.<sup>7</sup> However, this also raises issues about how these 'recovered costs' are actually spent, and whether or not they will simply be treated as another form of revenue raising by governments without having any real regard for the restitution of the environmental damage that can and has been caused to our nation's waterways.

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<sup>5</sup> ACT Treasurer's response to Question on Notice number 60 during the 2006 Select Committee on Estimates, ACT Legislative Assembly

<sup>6</sup> Previously in the ACT, the Commission had advised on the setting of the environmental cost based on estimates of the cost to the environment of the abstraction of water from the Murray Darling Basin on a per gigolitre basis

<sup>7</sup> It is noted that there is currently a legal challenge to the WAC charge as it applies to Queanbeyan, the city across the border from Canberra but supplied with water by ACTEW. The Commission has elsewhere highlighted the potential for a legal challenge to this form of charge, and has recommended that a national approach be adopted to avoid legal challenges of this type.

## **Form of Price Regulation**

Having established the revenue requirements of the regulated entity using the building block approach broadly described above, the regulator must decide what form of regulation to apply in the sense that should a price cap or a revenue cap or some variation of the two be applied. This also takes us into the complex area of consideration of the social and welfare impacts of the pricing of water, an area that usually attracts most of the comments from the community who often do not understand the process of how we get to the revenue requirements and are more concerned about *'what does it mean to us in terms of what we will pay'*.

Most regulators have a legislated requirement to consider the social and welfare impacts of their decisions. Even if this requirement was not embodied in the enabling legislation that has been used to establish these regulators, invariably the governments concerned include a particular reference to this requirement in the terms of reference that are issued for inquiries into public utility pricing.

The task for the regulator is to find some mechanism which allows the regulated entity to recover the required revenue (with an appropriate sharing of risk with consumers), sends appropriate pricing signals in terms of the use of this scarce resource, and allows the community to meet the basic hygiene and health requirements of 'washing the kids, washing the spuds, and flushing the loo'.

The tariff structure that is adopted is usually based on the volume of water consumed. From a purely economic efficiency perspective, the adoption of a price which reflects the marginal cost of providing that water should be the approach that is adopted. In recognition that there are a number of costs which are primarily fixed regardless of the volume of water used, it is usual also to have some form of fixed connection charge which is designed to recover these fixed costs. But from a pure economic efficiency perspective, a standard single rate per kilolitre of water consumed would be the appropriate form of price regulation to apply. To the extent that this raises welfare and social equity concerns, the pure theoretical approach would be for the government to provide some form of welfare payment to compensate those consumers who have financial difficulties in terms of being able to purchase sufficient water to meet their basic health and hygiene needs.

While in theory this is generally accepted as the correct approach to structure the tariffs, in practice the 'welfare state' system of CSOs and government welfare payments does not work as well as one might hope. In the ACT we have spent nearly three years devising a welfare payment arrangement to compensate needy families for a new tax on the pipeline and distribution wires and pipes that supply water, electricity and gas in the ACT. This issue is still not resolved despite a public commitment that appropriate welfare payments would be introduced and adopted. These are not unsolvable administrative matters, but they are administrative arrangements which seem to be always in 'catch up' mode. Thus, there has been a tendency to adopt a less than optimum approach to the form of tariff structure, namely the multi-step inclining block tariff approach.

Effectively the inclining block tariff approach seeks to provide a certain minimum level of water at a price below the marginal cost, and then as consumption passes predetermined levels on an annual basis, the rate per kilolitre increases.<sup>8</sup> Effectively this approach fosters a cross subsidisation of users of small amounts of water by those who consume larger quantities. The justification used is that this assists those facing financial difficulties and ensures that everyone has sufficient water to ‘wash the kids’ wash the spuds, and flush the loo’. However, it is acknowledged that this is a ‘blunt’ instrument to achieve this social welfare objective, especially as we see more DINKS and SPUDS who tend to live in apartments and inner city town houses, making up the population and being able to benefit from these lower tariffs given their lower water consumption patterns. Simply put, regulators (and water utilities) are not able to direct the intended social welfare benefits to those in need given the types of water meters and the information on household composition and location we currently have available.

Returning to the issue of the form of regulation, the regulator faces a difficult choice in the current period of uncertainty regarding available water supplies. In previous years it has been relatively simple to determine a revenue cap or a price cap built around generally accepted assumptions regarding the volume of water that will be available and consumed over the regulatory period. However, with a prolonged period of drought and signs of a significant shift in climate behaviour affecting longer-term water availability, all parts of Australia are looking at a paradigm shift in their water supply and usage patterns. This impacts on the ability of the regulator to determine the volume of water that can be applied to the revenue requirement and thus set the tariffs that are to be applied.

Some regulators have opted for a form of regulation which effectively sets the price for water for the regulatory period (up to 10 years in WA!). The price path is usually of a CPI+/-X type, with the possibility for off and on ramps to take into account extraordinary events that could not have been foreseen at the time the price path was set. Subject to the nature of the off and on ramps, this form of price cap effectively transfers much of the risk of changes in the availability of water to the water utility. That is, if the projected available supply upon which the tariff has been predetermined, is not realised, the utility will possibly not recover all its revenue. Alternatively if the available supply of water is sufficient to allow increased sales of water, the utility may be able to recover more than the revenue requirement determined under the building block approach.

Provision can exist under this arrangement for some form of catch up at the end of the period. If this allows for a full catch up, the price capping arrangements effectively becomes a revenue cap, that is the regulator is guaranteeing the entity the revenue that has been determined as being required under the building block approach. However, this may be counter productive in the sense that the incentive on the entity to ensure service delivery objectives and security of water supply are met are no longer present

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<sup>8</sup> In the ACT from 1 July 2008, we will move to a ‘daily pricing’ arrangement, which effectively apportions the use of water on an average daily basis, and applies the different block tariff rates on a daily basis rather than having the block tariffs move up to higher levels as the year progresses. The potential advantage of this arrangement is that it averages out the cost of water to consumers over the year rather than having prices increase in the latter quarters even though on a quarter-by-quarter basis consumption may not have risen.

(other than some moral obligation that the entity may feel). The entity is guaranteed its required revenue whatever the outcome.

Setting this form of price cap will require projections of likely water supply/demand for the period of the determination. Given the uncertainty regarding the availability of water and the changing climate patterns, this can present a problem for the regulator. The regulated entity will want to have this projection set as low as possible as this effectively increases the price per kilolitre and if there is a greater supply of water than projected, the entity has the opportunity to generate revenues above that level determined as required to recover costs using the building block methodology.

The regulator will also want to ensure that all the risk of water security is not passed through to the consumer. The regulated entity needs to be carrying its fair share of the risk. This will be particularly the situation where, as in the ACT, there is a significant increase in new capital works proposed designed to improve the security of the water supply. If consumers are being asked to fund this additional infrastructure to help to improve water security, then they should not also have to carry the additional risk of prices rising above that required to recover the cost reflective revenue simply because these water security measures have not delivered the extra security envisaged.

Clearly the water utility does not have the ability to determine whether or not it will rain, particularly in a period of unprecedented drought and a possible significant shift in our rainfall patterns going forward. However, regulators have come more to the view that the water utility, if it is to have any incentive to take every reasonable step to ensure reliable water supplies are available for urban areas, has to have a financial incentive to deliver on these water requirements. In the same way as service standards apply for the repair of broken water mains and the quality of the water delivered, so there needs to be enforceable service standards in terms of the reliability of supplies. Consumers should not expect to have to pay for infrastructure works that are designed to improve the reliability of supply, and then still carry the extra costs of paying higher prices for water simply so that the water utility can recover all its revenue requirements (and at the same time, incurring all the hidden costs of dealing with water restrictions, the costs of which are never factored into the debate on pricing arrangements for water utilities).

The other alternative is to set the expected volumes of supply/demand on an annual basis, and calculate the tariffs for the coming year from these estimates. It is argued that this has the benefit of allowing the most up to date information on climatic conditions, dam levels and current usage to be taken into account for purposes of setting the price. While at first glance this can be seen to be a price cap, to the extent any form of 'catch up' is allowed, it effectively becomes a revenue cap.

In the ACT we have used this approach over the last four years. However, it has been difficult to administer. Annual projections are often no easier to determine than five year projections, and despite the availability of the 'latest data', it is not clear that this provides a better base from which to calculate the next year's available supplies or likely demand. The inclusion of a catch up arrangement also adds confusion to the price signals that are sent to consumers who find it difficult to understand that, having made the effort to restrict their water consumption under the water restriction rules and voluntary arrangements in place, they are still required to pay more as part of a catch up of the revenue requirements of the water utility.

To avoid the possible need for a catch up, while at the same time providing greater certainty to the water utility in terms of the recovery of the building block determined revenue requirements, it has been suggested in the ACT that some form of ‘drought pricing’ arrangement be adopted. Essentially this works on the basis that as stored dam levels fall (or rise) beyond certain trigger points (usually determined on the basis of megalitres per head of population), prices will be adjusted up (or down). This will act as an incentive to reduce demand in a period of falling reserves and will ensure that the water utility recovers required revenue notwithstanding the reduction in the supply of water it is able to provide.

There is a degree of attraction to this proposal. It is generally thought that water prices are too low (although this discussion usually confuses the pricing of the service of water treatment and reticulation with the actual intrinsic value of the water itself) and a mechanism that self adjusts with available supply might help to alleviate the need to use the less efficient form of rationing, namely water restrictions. However, it is not clear that the proposal will actually achieve either of these aims. Studies undertaken in the ACT as part of the current water pricing inquiry, where we have tripled the price of water over the last five years such that we now have by far the highest priced urban water in Australia, do not suggest a strong link between the increase in water prices and demand. Rather, the impact of restrictions and voluntary restraint in times of deepening drought has been shown to be the reason for the reductions in demand across the Territory. There is little likelihood that these price adjustments linked to storage levels will act to discourage consumption such that water restrictions are no longer required. Indeed, it is likely that all that will be achieved will be a guarantee to the water utility that their revenue requirements will be met. Little other benefit would seem to be derived from the drought pricing arrangement.

From an administrative perspective, it is also not a simple matter to apply this arrangement. Agreement must first be achieved as to what is the level for water use from which the adjustments can occur. Given the paradigm shift in the availability of water in the Canberra catchments at least, it is not possible simply to use the levels of average consumption that we have seen over the past decade or more. But simply to take the last couple of years when there has been high levels of water restrictions would not seem to be the appropriate base from which to make adjustments as supply is further reduced (or indeed, as stored supply increases as it has done over the last six months). And finally, when the practical difficulties and the limited (if any) ability of the drought pricing arrangements are put aside it is clear that all that will be achieved is to reduce (or probably remove) the risk that the water utility faces in terms of recovery of its revenue requirements. Effectively the risk will be passed across to consumers, and it must be queried whether this is the best way to design the form of regulation for water pricing.

### **Let the Market Decide**

Having covered very quickly the steps and decisions that the regulator must take when setting water prices, it is only natural to come to the view ‘why not let the market decide’. Clearly, if Ken Henry and other are to be believed, this will provide the best method of determining the price, sending the right pricing signals to encourage greater

water conservation, and allowing water resources to be used for the most efficient and highest economic value purpose.

The market option has a number of attractions. In the Canberra context, it has been proposed by one group that they manage a 'market' whereby households in the ACT can trade their water entitlement thereby allowing those who wish to pay for additional water to be able to 'purchase' an additional entitlement, and those who do not need all of the entitlement to be able to trade this at a market determined price. Thus, the volume of water to be made available can be held within the water restriction levels, but water can be directed to those in the community who have a greater need and are prepared to pay a premium on the price of the basic entitlement in order to meet those needs.

There are variations on this type of proposal, and without entering the debate about issues such as the potential for a monopoly fee to be extracted by the operator of this system if that operator was given exclusivity to run the market, it is worth looking at a couple of the fundamental assumptions behind this type of proposal. The first assumption is that a decision can be taken as to the base entitlement of water that should be allocated to each household. Even if one was to accept various estimates of how much water is required per person to meet the basic requirements of washing the spuds, washing the kids and flushing the loo, there is the fundamental practical problem of determining how many people actually reside in each dwelling. One cannot simply rely on ABS Census data or some other periodic survey, as people have a habit of moving or changing their living arrangements so that the number of people in a dwelling can change quite rapidly. To allocate simply on the basis of the same number of kilolitres per year per dwelling would be to severely disadvantage some households while advantaging others.

A further practical problem is the metering arrangements. Not all dwellings are individually metered. Some are metered on a group basis (for example, a group of townhouses or a block of flats). While a total water allocation could be made to the existing single meter, the ability of the residents in these dwellings to participate in the market arrangements would be severely restricted.

The 'market' arrangement would also not address the issue of the reticulation and treatment costs that are effectively the costs that are subject to regulation at the moment. Thus, while it might help to set a value on the additional water that a consumer might wish to purchase, it would not be useful in determining these transport and delivery costs.

Finally, there would be transaction costs that would need to be considered. If the market is large and active, then the transaction costs could be expected to become very small for each kilolitre of water traded. But on a per kilolitre basis, they might initially be significant and a barrier to the market becoming fully functional.

In terms of this type of proposal, none of the issues listed above are insurmountable. However, they are not readily resolvable in the short-term. Indeed, even with the 'smart metering' trial that ACTEW is proposing for Canberra over the next few years, the necessary data that would allow a market of this type to be established and operated such that the equity issues at least were resolved, would not be possible. Much more

work needs to be done before these types of proposals are viable and administratively possible to operate.

As noted at the commencement of this paper, the issue for Australia should not be that a market based solution (with appropriate safeguards) would be a better solution to the issue of water allocation, price and dealing with scarcity issues. Rather the issue should be, what do we need to do to start a process of moving towards a market-based solution. This is the issue to be resolved to day and tomorrow and next year. It is only then that one can possibly hope to say that we can put aside artificial restrictions on the availability of water and adopt a more efficient model of pricing and water allocation.

But what are the first steps? Let me suggest that what needs to occur before a market solution is even a possibility falls into three main areas:

**1. Develop and agree a design for a national market for water**

- a. It is of little use an individual State or Territory going it alone in terms of the design of the market, it must be a national initiative and national solution
- b. In the same way that the design for a national market for electricity and gas required lengthy debate and consideration of all the issues (and to some extent has not been fully resolved to date-viz the issues in NSW with the proposed partial privatisation of electricity generation and retailing), so a similar debate is required for water
- c. The design for the national market will require the separation of water capture and supply at the untreated level from the treatment and reticulation of water from the retailing of water-for a market to operate. There will need to be the potential for competition at the water capture and supply level, with alternative forms of water capture and creation being able to enter the market at the appropriate prices in much the same way as the electricity market operates
- d. Recognition of the special nature of water in the design of the market, both in terms of its health and hygiene applications, and the limited ability to create new water

**2. Develop an appropriate regulatory framework**

- a. The monopoly activities of reticulation and water treatment will need to be regulated, and depending on the design of the water creation/capture part of the market and the retail operations where some form of competition would be desirable, some form of regulation or at least licensing of these non-treatment and reticulation activities will be required
- b. There is currently work underway on the development of a national code for the determination of water reticulation and treatment prices and this work will complement a market design which will in all probability retain water reticulation and treatment as a regulated natural monopoly activity
- c. The regulatory framework will need to address the issues of health and associated standards, and will also need to address the social welfare issues with appropriate safeguards and support mechanisms to ensure that people have access to some minimum level of water for health and hygiene purposes

### **3. Operationalise the national market and regulatory arrangements**

- a. The experience with the restructuring and reform of the electricity and gas markets has been one where the ability to coordinate and bring into effect all elements of the reformed industry and regulatory structure has been hampered by the inability of the various States and Territories to agree on various practical and operational issues. Thus, the process is still underway notwithstanding that it is 15 years since the Hilmer Report and the COAG Competition Principles were agreed and the formal process of implementing these new reforms was commenced
- b. It may require a further round of federal competition policy payments to encourage the various jurisdictions to take on the challenges that faces Australia in this area. This in part may be an appropriate area for the funding provided under the National Water Indicative

The process outlined above has in mind primarily the urban water arrangements. However, the general thrust of the steps that need to be taken would be the same for rural and irrigation water, with the added complexity of the different water allocation arrangements that have been implemented across jurisdictions, and the 'rights' that have already been allocated under these arrangements. The current program of gradual opening up the irrigation market to trade under an agreed set of rules in part takes the debate a step further along in terms of moving towards a 'market allocation and pricing' system. However, there is much more that needs to be done in this area. One of the issues facing Canberra for example is its ability to purchase water entitlements from irrigators in NSW, hold the water in Tantangara Dam in the Snowy Mountains, and then be able to pump the water from the Murrumbidgee having had the water travel down along an unregulated stream from Tantangara to the ACT. The issues that are involved here are not insurmountable, but highlight the fact that a workable market even at the irrigation level where some trading is occurring, is not fully resolved and operational.

### **Concluding Comments**

We are living in a period of significant change in terms of our access to water, the security of supply that can be provided to urban and rural dwellers, the reliance upon artificial constraints on the use of water at a time of prolonged drought, and the pricing of water and its supply to us either on the farm or in our urban dwellings. The current pricing regulatory arrangements for water recirculation and treatment have evolved over the last 15 or more years to the point where there is now much greater independence in the determination of those prices. That does not mean that all the issues and points of difference between the water utilities and the regulator have been solved. Rather it is an indication that much has happened to move pricing of urban water infrastructure into a system that is more transparent and open to public scrutiny than has been the case in the past.

However, there is still a reliance on water restrictions to address issues of scarcity of supply, particularly during this period of prolonged drought. In addition, in most jurisdictions there is little evidence that the prices that are being paid for urban water reflect the scarcity value of the water or the environmental costs that the extraction of water for consumptive purposes has created.

With the current high level of public awareness and focus upon water issues, there is a tendency for the media and the general public debate to jump to what are seen as being simply solutions to our water supply and reliability problems. However, while there are clearly better options to the pricing and allocation of water than we have today, to suggest that we have the ability to jump from one system of water allocation and pricing to another overnight is clearly misleading.

A market based system for valuing water and driving efficiencies in the use of water both at the irrigator as well as the urban consumer level clearly offers some benefits to the economy and to consumers. But a move to this system is not achievable even in the short term. The process of reform that is required will take as at least as long as it has taken to get to the point where we currently are with the reform of the electricity and gas industry. And even here, it is clear that some of the States will possibly renege on their obligations to put into effect all the agreed reforms to allow a competitive market to operate. It has taken us nearly two decades to get to the present position with electricity and gas in terms of having a working market. It can only be assumed that it will take as least as long to get to this point for the water sector.

In his wide ranging Little Memorial Address, Treasury Secretary Henry sought to tell us what Treasury knows about water. And what Secretary Henry said was what you would expect of the Federal Treasury, that is 'if only we had a well functioning water market all our problems would be solved'

To some extent, this is stating the obvious. The real challenge is to do something about it. That is the challenge for governments today, so that hopefully not too far into the future, we will have some hope of having an appropriate market for water in Australia. This is where the rubber hits the road, and it will be interesting to see whether governments have the courage to take on the challenge or whether we will continue with a half hearted response and second best solutions.

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