Draft Report

Inquiry on Competition in the Water and Wastewater Services Sector

3 December 2007

Economic Regulation Authority
WESTERN AUSTRALIA

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Executive Summary

The Authority received Terms of Reference from the Treasurer on 6 July 2007 requesting it to undertake an inquiry into competition in Western Australia's water and wastewater services sector.

In an uncertain climate it is more important than ever to ensure that the water industry is structured in a way that is as innovative as possible. Given that the effect of climate change is projected to be more pronounced in South West Western Australia than elsewhere in the country, Western Australia must remain at the forefront of water source planning developments.[1] Competitive pressures can help to spur innovation and ensure that customers benefit from receiving a water service that is secure, affordable and of an appropriate quality.

The Authority is pleased to provide a set of draft recommendations to provide competitive enhancements to the provision of water and wastewater services in Western Australia.

The effect of the draft recommendations would be to increase competition by creating opportunities for private enterprise to supply both sectors and, so, potentially improve outcomes for consumers.

Acceptance of the draft recommendations would not lead to radical reforms that would dramatically alter how the sectors currently provide their services. The changes focus on introducing innovation in the supply of bulk water to Western Australia's water utilities which, in part, is consistent with the approach taken by the State's biggest supplier, the Water Corporation.

The draft recommendations are based on submissions received from 23 interested parties, reports from four consultants, presentations and discussions with the Water Corporation, and the Authority's own analysis. All submissions and consultants' reports have been placed on the Authority's web site.

The water and wastewater sectors have characteristics that mean the structure of the market will, at least in the short-term, be different to other utility industries such as gas and electricity. A key difference arises from uncertainty regarding water supplies; specifically, the amount of inflow into dams and aquifers. Whereas electricity and gas supplies may be forecast with relative certainty, there is great uncertainty over predictions of future water supplies. This is due to the difficulties in establishing how much climate change is affecting inflows and whether a drought is compounding the problem. Market-driven investment in the face of such uncertainty is possible, but any market price would be likely to include a significant 'risk premium' considering the investment needed in the face of uncertain future sales.

An implication of uncertain future inflows in the water industry is that storages have a value – an opportunity cost of usage – that can exceed the immediate cost of delivering water into the system. If water in storage is used today and is not replenished, the costs of meeting demand in the future may be increased as additional, more expensive sources are required. This factor complicates the design of a bulk water market.

While a well functioning competitive market may be able to effectively manage uncertainties by factoring in such opportunity costs, such a market would take time to develop, and would require the introduction of an access regime and retail contestability.

[1] CSIRO (2007), *Climate Change in Australia –Technical Report 2007.*

In the time taken to establish a well functioning competitive market, existing participants in the market may be able to abuse their positions and exercise market power.

In the short term, therefore, it is likely that investment needs to be coordinated by a centralised entity. The Water Corporation has proposed a procurement model that, while centralised in nature, facilitates private sector investment in the water industry by allowing the private ownership of sources. Under the proposed model, the Corporation would continue to 'prove-up' a source by securing the planning and environmental approvals. The private sector would then be free to bid for development and ownership of the source. Alternatively, the private sector could offer other source options. The Corporation has decided not to bid for ownership of future sources because of the potential conflict of interest in being both purchaser and bidder.

The Corporation's proposed procurement model, while offering greater potential for private sector involvement, suffers from several weaknesses. The decision-making framework upon which the commitment to additional sources is based may not result in the lowest expected cost of balancing supply and demand. That is, consumers may pay more than they should for the level of security of supply they receive.

The modelling used to determine when to commit to the development of an additional source, the trigger point, is biased towards 'worst case scenario' modelling. This implies that in all instances, apart from the scenario modelled, the least cost option is not developed. Furthermore, the proposed Corporation procurement model has a bias towards overly large source options, implying that significant excess capacity may be built into the system.

The result of early commitment to overly large sources is two-fold. First, consumers may pay more than is necessary. Second, the existence of large sources able to provide supply before it is required stifles the opportunity for competition to uncover innovative alternative supply options.

An alternative is to place more emphasis on an 'options' approach to planning. If a comprehensive options approach was applied at present, it is possible that the ordering of future sources would change without compromising system security. Greater weighting would be given to a range of smaller, more flexible water source options rather than larger, more inflexible, water source projects.

The advantage of an approach which draws upon a suite of possible options, as opposed to focussing on the development of a single large source, is that supply is able to be matched with demand more accurately. A more accurate match between supply capacity and demand avoids unnecessary costs being incurred because of over capacity. In addition, by avoiding constructing significant over capacity, potential alternative sources are not extinguished. For example, constructing the second desalination plant would effectively eliminate the potential for competition to develop alternative supply options for approximately 10 to 20 years, depending on inflow to dams and aquifers.

An options approach would not necessarily extinguish the need for a second desalination plant. The ability to develop another desalination plant, should the need arise, would also play a crucial role under an options framework. However, more emphasis would be placed on using the desalination plant as part of a 'readiness strategy', with much of the work currently underway proceeding. Crucially, the decision to proceed with construction of the second desalination plant, currently set for late 2008, could be postponed until uncertainty regarding future inflows is reduced.

A decision making framework that determines the options with the lowest expected cost would attach a benefit to waiting for more information about expected inflows (for example, to determine whether the last six, ten or thirty years was the most likely predictor of future inflows). Analysis of CSIRO projections indicates that while it is possible that the recent reductions in inflows may be due to an earlier than expected climate shift, it is also possible that the recent conditions have been compounded by drought.

Placing more emphasis on an options approach to planning would also allow for better information to be gathered on the sustainability of abstractions from the Gnangara Mound, the completion of regional water management plans, and the establishment of an effective water trading regime. Also, it could provide for continuing developments in desalination technology and water recycling that could lead to greater energy efficiency. Each of these developments would significantly improve the quality of decision making and reduce the risk of locking-in costs that may be greater than necessary.

The Corporation's decision to not bid in its proposed procurement process reflects its view that it has a conflict of interest as both the purchaser of water and prospective supplier. However, some concerns over conflict of interest remain in relation to protection of third party intellectual property under the Corporation's proposal, given the role of the Corporation in undertaking pre-feasibility of proposals. These concerns may discourage some private sector investment in developing ways to contribute to a smarter, more cost-effective strategy.

Overall, the Authority has examined the Corporation's proposed procurement model and considers that an alternative arrangement, using a comprehensive options framework, and involving an independent procurement entity (IPE), would be a more effective way of ensuring that the least expected cost of balancing supply and demand is achieved, subject to the constraint of maintaining security of supply under a worst-case scenario.

The main reasons why the Authority considers an IPE necessary is because it ensures the fair treatment of bidders (which is essential in creating an incentive for private investment) and it clearly separates procurement from the roles of government, the Corporation, the Department of Water and the Authority – while ensuring the IPE can balance the concerns of the respective roles, without conflict.

Importantly, the IPE would clarify the role of government in the procurement process. The Government would provide a set of system security requirements that the IPE would then apply. Independence from government provides certainty for the private sector, transparency in decision making, and consistency in approach.

The IPE proposal has the following features:

- Instead of having the Corporation determine a portfolio of source options, with input from the private sector, this function would be performed by the IPE.
- Instead of having the Corporation propose to government a source option to meet the worst case scenario, this proposal, along with the Corporation's other proposals, would go to the IPE. The IPE would assess the Corporation's proposals against alternative proposals from the private sector.
- The selection of the portfolio of options would be informed by a model, owned by the IPE, but developed in conjunction with the Corporation. The model would show the options likely to be exercised in alternative inflow states.
- The Corporation would continue to have a role in identifying the appropriate time to construct new sources. However, under the proposed procurement approach the Corporation would make its recommendations to the IPE, which would be

responsible for either approving the recommendation or making an alternative decision.

- The Corporation would continue to be responsible for identifying an appropriate annual source management strategy, which involved deciding on the sources to be dispatched over the coming year. However, the Corporation would be required to seek the IPE's endorsement of that strategy and the IPE would have the power to modify the source management strategy if required.

The IPE could also be responsible for setting demand restrictions, influencing rebate schemes, and managing other demand management options.

Water trading provides the potential for significant additional volumes of potable water. The Department of Water is in the midst of a legislative review of, among other things, water trading legislation. The water trading reforms will facilitate the development of consumptive pools and water allocations, which are prerequisites for an effective trading regime. However, there are several additional matters which must be addressed. It is necessary that individual irrigators within cooperatives be permitted to sell their water entitlements to external parties. In addition, it is appropriate that all significant users within a catchment be included in the trading regime, including, for instance, owners of pine plantations which draw considerable amounts of groundwater that could otherwise be available for potable use. Furthermore, it is a matter of urgency that consumption from the Gnangara Mound be determined as soon as possible given the potentially large volumes of water that may be available and the risk of damaging permanently the environment should the current extractions be unsustainable.

The IPE would be complemented by an access regime to allow for the private sector to develop projects outside of the formal procurement process, should it be commercial to do so. An access regime would allow the private sector to use the Corporation's network to transport its own water or sewage for commercial purposes. For example, it is conceivable that the private sector could purchase sewage, transport the sewage to a private recycling plant, and then sell the recycled water to industrial clients. Given the uncertainty about the extent to which an access regime would be utilised, the Authority considers that a simple model could be put in place along the lines of the one recently introduced in New South Wales. The model could involve negotiated access between the infrastructure owner and the access seeker on the basis of prices that are calculated as the difference between retail prices and the costs that can be avoided by providing access. There could be an independent dispute resolution and an appeals mechanism. A more comprehensive regime could be established following review at a later date.

The Authority considers that separation of the procurement and planning function is the main reform to the Corporation's South West operations that needs to be considered at this stage. The presence of an IPE would mean that it is not necessary to separate out the bulk water functions from the rest of the Corporation.

Neither is it necessary to separate out the retail functions from the rest of the Corporation. The cost of introducing the information technology and associated systems that would be necessary for households to switch suppliers is likely, at this stage, to exceed any potential benefits. However, it may be appropriate to permit large customers to choose their retailer, as a complementary reform to the introduction of an access regime.

Greater private sector involvement in rural and regional operations could be achieved by allowing Community Service Obligation (CSO) payments from government to be paid to the private sector. CSOs could be paid to all service providers in situations where government constraints on price or other service obligations adversely impact commercial viability. It is understood that the Department of Water is currently drafting legislation that

provides for CSOs to be available to private sector participants. Under the revised legislation, the Department of Treasury and Finance will be able to make CSO payments to any licensed service provider, allowing it to run competitive tenders for supply in uneconomic areas.

The Authority's consultants have advised that there could be significant cost efficiencies from combining the Corporation's operations in its rural and regional areas with Horizon Power's operations (where there is an overlap of operations). While the Authority has not had sufficient time to establish the practicality of this option, it is noted that the Northern Territory has a combined power and water utility, and that this model is evident in other countries. The Authority will explore this opportunity further between the release of the Draft and Final Reports.

The Authority invites interested parties to consider the draft recommendations in this report and present a submission to the inquiry by 1 February 2008. It should be noted that this is a draft report and as such presents the initial views of the Authority. Comments and views on the draft recommendations contained in this report will be considered in preparing the Final Report. The Authority is due to provide the Final Report to the Government by 31 March 2008.

Summary of Draft Recommendations and Findings

Bulk Water Procurement

1) There are synergies between the Corporation's bulk water operations and distribution functions which indicate it may not be appropriate at this time to separate these functions.
2) An Independent Procurement Entity should be established with responsibility for ensuring least expected cost of balancing supply and demand subject to the constraint of maintaining security of supply at a level set by government.

Water Trading

3) There are potentially considerable additional sources of bulk water available from Harvey Water, the Gnangara Mound and Wellington Dam.
4) Pricing arrangements within irrigation cooperatives should be adjusted to allow for the trade of water out of cooperative areas by individual members should they choose to do so. A recent decision by the Australian Competition and Consumer Commission provides guidance on a possible approach.
5) To facilitate an effective water trading regime, all significant users within a catchment, including pine plantations, should be taken into account when developing Statutory Water Management Plans and water allocations.
6) On the Gnangara Mound, finalisation of the Statutory Water Management Plan and Gnangara Mound Sustainability Strategy is critical. In the meantime, an effective water trading market should be developed, despite a degree of environmental uncertainty.
7) The concerns regarding water hoarding appear to be limited. However, there is the potential for a single individual or entity to obtain a significant share of water allocations and thereby be in a position to exert a degree of market power. While the Authority considers that the *Trade Practices Act 1974*, would be sufficient to deal with such potential anti-competitive behaviour, the Authority will consider the matter further.

Third Party Access

8) A State-based third party access regime should be implemented in Western Australia.
9) A State-based third party access regime should be based on the principles of the Competition Policy Agreement, including provisions for negotiated access between the infrastructure owner and the access seeker, independent dispute resolution and an appeals mechanism.
10) Further consideration should be given to prices under the State-based third party access regime being based on a 'retail minus avoidable cost' approach.
11) Any State-based third party access regime should be supported by sound and transparent regulation to ensure that access arrangements are safe, efficient and achieved at a minimum cost.

Retail

12) There are likely to be minimal gains from any disaggregation of the Corporation's Perth operations at this time.

13) Retail contestability is premature for small customers at this time. However, to facilitate third party access and the potential use of recycled water, contestability should be considered on a case-by-case basis.

14) Retail contestability should be introduced for large customers.

15) There is merit in exploring the introduction of scarcity based pricing to improve price signals for customers regarding the true cost of their consumption and producers regarding potential investment opportunities.

Regional and Remote Operations

16) There may be potential significant cost savings from the creation of a multi-utility by transferring the Corporation's water and wastewater assets to Horizon Power in its area of operation. However, further investigation prior to the release of the Final Report is required before any definitive conclusions can be made.

17) There may be potential significant cost savings from the reconfiguration of water and wastewater services in the Bunbury and Busselton areas. However, further investigation prior to the release of the Final Report is required before any definitive conclusions can be made.

18) Proposed legislative reforms being undertaken by the Department of Water will enable the payment of Community Service Obligations (CSO) to all licensed service providers. The Department of Treasury, the agency responsible for the payment of CSOs, should develop a policy perhaps similar to that in operation in Queensland to explicitly allow for the payment of CSOs to non-government entities.

1 Introduction

On 6 July 2007, the Treasurer of Western Australia gave written notice to the Economic Regulation Authority (the **Authority**) to undertake an inquiry into competition in the water and wastewater services sector. This is the Authority's Draft Report.

1.1 Terms of Reference

This inquiry has been referred to the Authority under Section 32 of the *Economic Regulation Act 2003* (**Act**), which provides for the Treasurer to refer to the Authority inquiries on matters related to regulated industries (i.e. water, gas, electricity and rail).[2]

A full text of the Terms of Reference is provided in Appendix 1.

In accordance with the Terms of Reference, the Authority is to provide advice on possible competitive enhancements for the delivery of water and wastewater services. Key areas of focus are to include:

- enhancing the efficiency of future water source procurement (and other significant capital investment) processes, including issues associated with current market structures and mechanisms, such as competitive tendering models, and determining the trigger conditions for committing to the acquisition of a new source;
- opportunities for enhanced competition by introducing third party access regimes to existing water and wastewater-related infrastructure, including identifying appropriate principles and mechanisms to implement efficient and effective regimes; and
- other reforms to the water and wastewater market which may enhance competition, including the establishment of water trading mechanisms and the benefits, costs and issues associated with them (e.g. inter-regional trades, market dominance and water hoarding) and arrangements for community service obligations paid by the State Government to service providers.

In examining the matters raised in the Terms of Reference, the Authority is required to have regard to:

- the roles and responsibilities of participants in the industry, both Government and private sector, recognising that certain services (e.g. water transmission and distribution) have strong natural monopoly characteristics;
- approaches taken in other jurisdictions;
- the costs and benefits of alternative industry structures, including transitional costs that may be incurred in changing to a new structure;
- any impacts, including service provision, operational or financial impacts, on existing asset owners and operators; and
- any impact of these reforms on the Government's social, economic and environmental policy objectives, including ensuring environmental and social criteria are taken into account in market structures, tendering processes and access regimes; commitments to the National Water Initiative and the Government's response to *A Blueprint for Water Reform in Western Australia* compiled by the Water Reform Implementation Committee.

[2] Section 38 of the Act also provides for the Treasurer to refer to the Authority inquiries on matters related to other industries (i.e. not only the regulated industries of water, gas, electricity and rail).

In undertaking the inquiry, the Authority recognises section 26 of the Act, which requires the Authority to have regard to:

- the need to promote regulatory outcomes that are in the public interest;
- the long-term interests of consumers in relation to the price, quality and reliability of goods and services provided in relevant markets;
- the legitimate business interests of investors and service providers in relevant markets;
- the need to promote competitive and fair market conduct;
- the need to prevent abuse of monopoly or market power; and
- the need to promote transparent decision making processes that involve public consultation.

1.2 Background

There have been three areas of significant change in the water and wastewater services sector over recent decades. These relate to institutional arrangements and government policy, the impact of a changing climate on existing water sources, and the introduction of alternative sources to traditional dams and bores.

1.2.1 Institutional Arrangements and Government Policy

Water and wastewater services, as well as electricity and gas services, were at one time provided by State Governments due to their essential nature and large infrastructure costs. During the 1980s and 1990s, concerns regarding the appropriate pricing of these services led to the corporatisation of many of these government owned businesses. These businesses were established on a stand-alone basis and were required to operate at arms length from government. The aim of these reforms was to expose the businesses to more rigorous commercial pressures and establish prices that more accurately reflected the cost of service provision. In the case of water, pricing reform has occurred through a shift away from a rates-based approach (an annual fixed charge for water often based on land value) to the installation of water meters and usage charging. The pricing of wastewater services has lagged behind that of water with these services still often charged on the basis of property values.

In addition to the corporatisation of many government businesses and the introduction of prices that more accurately reflect costs, governments have maintained an active policy development role at both a national and State level. The national arrangements set the broad policy framework within which water resources are managed. The two key agencies responsible for implementing national arrangements are the Department of Environment and Water Resources and the National Water Commission. These agencies are responsible for initiatives such as the $10 billion National Water Security Plan aimed at improving water efficiency and over-allocation of water in rural areas, and the National Water Initiative, which addresses matters such as urban and rural water pricing, water trading, water access entitlements, and water resource accounting.

In Western Australia, the Department of Water oversees water policy development. The Department of Water is responsible for implementing reforms which have resulted from the inquiry undertaken by the Irrigation Review Steering Committee during 2005. These reforms address matters such as water entitlement systems, water trading, and water metering. The implementation of these and other reforms will assist in meeting the

requirements of the National Water Initiative. An overview of recent legislative and institutional developments is contained in Appendix 2.

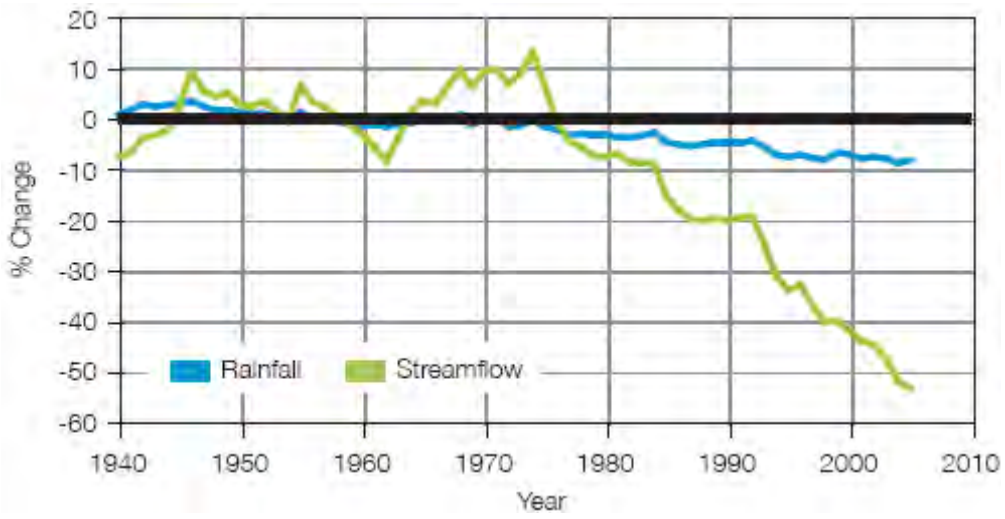
1.2.2 Changing Climate

While the existence of climate change is well accepted, its specific impact is not certain. There is uncertainty regarding the effect of climate change on variables such as rainfall, temperature and evaporation. Despite this uncertainty, it is widely acknowledged that South West Western Australia has experienced a shift in climate. It has been well documented that since the early to mid 1970s, there has been a 50 per cent reduction in average inflows to Perth's dams relative to the preceding 60 years of historical data. Moreover, inflows over the most recent eight to ten years appear to show a further 30 per cent reduction. In addition, South West Western Australia is projected to be more adversely affected by climate change than elsewhere in Australia.[3]

The reduction in inflows into Perth's dams has been greater than the reduction in rainfall.[4] That is, the reduction in rainfall has corresponded to a greater proportionate reduction in inflows into dams.

The historical relationship between rainfall and stream flows in South West Australia is shown in Figure 1.1.

Figure 1.1 Variation of Rainfall and Stream Flows in South West Australia[5]



Source: CSIRO

The disproportionate impact on inflows is likely to be the result of a range of factors.[6] For example:

- following rainfall, a minimum amount of water must be absorbed before runoff occurs. Therefore, a reduction in rainfall results in reduced runoff as the same volume of water must first be absorbed before runoff occurs;

[3] CSIRO (2007), *Climate Change in Australia –Technical Report 2007* p67 projects that South West Western Australia will experience greater reductions in rainfall than other areas of Australia.

[4] CSIRO (2007), *Climate Change in Australia – Technical Report 2007,* p21.

[5] CSIRO (2007), *Climate Change in Australia – Technical Report 2007,* Figure 2.7 p21.

[6] Based on discussions with the Corporation.

- intermittent rains mean that less runoff is produced relative to continuous rainfall given the need for re-absorption before runoff occurs;

- following a number of low rainfall years, it may take more rainfall to recharge aquifers before runoff occurs; and

- reafforested vegetated catchments absorb more runoff than mature forests, resulting in reduced runoff.

Adding to the challenges regarding future inflows are projections by CSIRO and the Bureau of Metrology of reductions in winter and spring rainfall in South West Western Australia of up to ten per cent by 2030 relative to 1990 values.[7] However, the relatively dry conditions experienced over recent years already show a reduction of between 6.3 and 9.6 per cent[8], which is likely to be a combination of climate variability and climate change. However, the extent to which the recent reductions in rainfall can be attributed to either drought or a more immediate shift in climate is uncertain. While it is possible that the recent reductions may be a relatively immediate climate shift, it is also possible that the recent conditions are a drought.

In addition to a projected reduction in rainfall, there is expected to be an increase in the number of dry days. Whereas in the east of Australia the number of dry days is likely to be counterbalanced by an expectation of increased precipitation intensity (larger volumes of rain on the days that it does rain), this is not the expectation for South West Western Australia.[9]

While research and predictions undertaken by CSIRO and the Bureau of Metrology provide useful insights into future climate conditions, it also demonstrates the uncertainty associated with the effect of climate change. The uncertainty surrounding possible inflows, acknowledging projected future decreases, is the major challenge faced by the water and wastewater services sector. In the face of such uncertainty, a range of alternative source options either have been or are in the process of being developed.

1.2.3 Alternative Source Options

The traditional approach to ensuring sufficient supply has been to construct an additional dam or sink another bore. However, the best sites for dams have now been utilised, as have the most lucrative bore sites. In addition, the uncertainty regarding future rainfall patterns mean such rainfall-dependent sources may be of limited value. In recent years rainfall-independent sources have been developed. These include the introduction of desalination plants and the increased use of recycled water. These alternatives have been possible due to technological improvements partly in response to reduced rainfall. In addition, alternative 'sources' of water such as catchment thinning, water trading, recycling, and demand management are receiving increased attention.[10]

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7 CSIRO (2007), *Climate Change in Australia – technical report 2007,* p67.

8 Based on analysis of Bureau of Meteorology data annual rainfall data. The variation is due to the time period considered. For example, relative to 1961-1990 annual rainfall levels, 1997-2006 shows a reduction of 6.7 per cent, 1998-2006 shows a reduction of 6.3 per cent, 1999-2006 shows a reduction of 7.3 per cent, and 2000-2006 shows a reduction of 9.6 per cent.

9 CSIRO (2007), *Climate Change in Australia – technical report 2007,* pp73-74.

10 Demand management refers to more than water restrictions. Rather demand management can include such measures as the installation of rainwater tanks which reduce overall demand or the installation of water efficient appliances.

The inclusion of these non-traditional sources in the water supply mix is an indication of the ways in which the water and wastewater industry is evolving to address the challenges of a changing climate. Given that the effect of climate change appears to be more pronounced in South West Western Australia than elsewhere, it is necessary that Western Australia remain at the forefront of water source planning developments.

It is within the context of revised institutional arrangements, new government policies, changing climate and the development of viable alternative sources that the Authority has received the Terms of Reference to undertake this inquiry and provide advice on the ways in which competition can provide water and wastewater services in the most efficient, effective and sustainable manner.

1.3 Why is Competition Important?

The application of competition in the provision of goods and services is usually the most effective way to deliver efficient prices and quality services to customers. Competition and competitive pressures exist in situations where there is rivalry between two or more suppliers seeking to secure the business of a customer. In order to obtain the business of any individual customer, suppliers are under pressure to offer the most attractive product in terms of price, quality and level of service. Even in situations where a market is served by a single supplier, the threat of an additional business entering the market can exert competitive pressure leading to more efficient outcomes for customers.

Competition, in whatever form, drives suppliers to continually seek more efficient methods of providing products and services through efficiency and innovation. The effect of competition and competitive pressures in delivering more efficient production and service delivery can be thought of in three ways.

First, competition for customers requires that suppliers seek continually the lowest cost way of producing products and services (productive efficiency). Consider an established supplier selling a given product. If a competing supplier can enter the market and produce and sell the same product at a lower price, the established supplier can expect to lose market share and may be forced out of business. Competition and competitive pressures guide suppliers to continually seek to reduce costs.

Second, competition for inputs among competing suppliers offering alternative products or services encourages and can direct resources to be allocated to where they are most valuable (allocative efficiency) – any supplier seeking to use resources in other ways can usually expect to be outbid by competitors seeking higher value uses. This ensures that society as a whole is better off because the limited resources of the economy are being used where they are most valued.

Third, competition compels suppliers to seek new and improved ways of doing things (dynamic efficiency). If a supplier is able to invent a new and cheaper way of manufacturing its product (or create an entirely new product), the supplier stands to benefit by attracting additional customers.

While the overall effect of competitive pressures is to drive suppliers to produce goods and services at least cost, allocate goods and services to where they are most valued, and to seek new and improved ways of serving customers, competition is not an end in itself. Rather, competitive pressure is an effective mechanism by which customers receive goods and services at levels of price and quality suited to their needs. Hence, competition delivers outcomes that are in the long term interests of consumers.

However, there are instances where the ability of competition to deliver benefits to consumers is constrained. This failure of the market to deliver benefits to consumers may be for a variety of reasons. One such example is where a single business, or monopoly, is the only provider of a good or service. In situations where the monopoly is free from government oversight and/or regulation, it has an incentive to price above the cost of production. A monopoly position can allow businesses to make excess profits or to pad out costs in ways that are beneficial to management. In either case, this leads to the under-provision of the good or service, even where there is a willingness by consumers to pay the 'efficient' cost of service delivery.

The existence of a monopoly can be for a range of reasons. Government may prescribe that only a single provider of a service exists. Alternatively (and sometimes as a trigger for government prescription), a monopoly may be the most efficient way in which to provide services if large economies of scale and/or scope exist. Economies of scale exist where average production costs for a single product fall as output increases. Economies of scope are similar to economies of scale but refer to cost savings that result from efficiencies generated by producing a range of similar products or undertaking a variety of related tasks.

Economies of scale or scope can create conditions in which a monopoly provider could, in theory, deliver services at least cost – though this possibility still needs to be weighed against the risks associated with opportunities for pricing above the cost of production and, possibly more importantly, the diminished incentives for innovation and dynamic efficiency over time. The theoretical benefits from size or scope economies could, over time, be outweighed by the loss of benefits from innovation.

While monopoly can, in a productive efficiency sense, produce products and services highly efficiently, this alone does not ensure that the products and services are those either sought by the market or allocated between consumers efficiently. Markets are capable of achieving technical, allocative and dynamic efficiencies simultaneously.

Competition of itself can in some cases fail to deliver efficient outcomes – and can sometimes prove counterproductive – where the consequences of business decisions can impact third parties, such as when environmental and public health risks are prevalent. This may sometimes count against the encouragement of competition, though more often requires attention being given to improving the institutional/regulatory environment within which competition operates.

There are also circumstances where, without regulatory or other intervention, competition simply does not work. This arises, for example, where unrestricted consumption leads to over utilisation, such as in the case of access to natural water sources. The nature of price regulation can also lead to circumstances where competitive incentives favour inefficient patterns of investment.

Economic efficiency achieved through competition requires that environmental and other related factors are appropriately brought to account to ensure sustainability.

In this inquiry, the Authority will be examining potential ways in which competition and competitive pressures can be applied to the water and wastewater industry in Western Australia. The aim is to explore the opportunities for furthering the positive influence competition and competitive pressures can play in the water and wastewater industry in order to deliver benefits to customers, while being mindful of practical constraints. The receipt of the Terms of Reference to undertake this inquiry is timely given the recent developments in the water and wastewater industry stemming from revised institutional arrangements and new government policies, changing climate, and the development of

viable alternative sources. The increased use of competition in the delivery of services is vital in order to deliver the most appropriate outcomes to consumers.

1.4 Review Process

Following receipt of the Terms of Reference on 6 July 2007, the Authority released an Issues Paper for public comment. Twenty three submissions were received. Interested parties are being provided approximately 2 months to prepare submissions on the draft recommendations and findings in this report. Submissions are due by 1 February 2008.

In accordance with the Terms of Reference, the Authority must present its Final Report to Government by 31 March 2008. The Government will then have 28 days to table the report in Parliament.

In accordance with section 45 of the Act, the Authority is acting through the Chairman and members in conducting this inquiry.

1.5 How to Make a Submission

Submissions on any matters raised in this Draft Report should be in written form and electronic form (where possible) and addressed to:

Inquiry on Competition in the Water and Wastewater Services Sector
Economic Regulation Authority
PO Box 8469
Perth Business Centre
PERTH WA 6849

Email: watercompetition@era.wa.gov.au
Fax: (08) 9213 1999

Submissions must be received by 1 February 2008.

In general, submissions from interested parties will be treated as in the public domain and placed on the Authority's web site. Where an interested party wishes to make a confidential submission, it should clearly indicate the parts of the submission that are confidential. For more information about the Authority's submissions policy, see the Authority's web site.

The receipt and publication of a submission shall not be taken as indicating that the Authority has knowledge either actual or constructive of the contents of a particular submission and, in particular, whether the submission in whole or in part contains information of a confidential nature and no duty of confidence will arise for the Authority in these circumstances.

Further information regarding this inquiry can be obtained from:

Mr Simon Farnbach
Manager Projects
Economic Regulation Authority
Ph (08) 9213 1900

Media enquiries should be directed to:

Mr Paul Byrne
Byrne & Byrne Corporate Communications
Ph (08) 9385 9941
Mb (0417) 922 452

2 Overview of the Water and Wastewater Industry

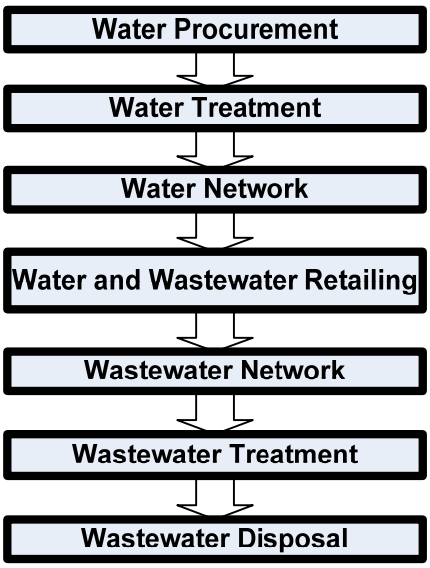
The water and wastewater industry is often described as a 'natural monopoly'. A natural monopoly exists in situations where it is cheaper for a single supplier to provide a service or range of services relative to the cost that would be incurred should more than one supplier provide the service or services. Natural monopolies are often the result of economies of scale or scope in production whereby the average cost of production falls as output increases or the range of outputs increases. This creates both a cost hurdle for new entrants and active incentives for mergers and acquisitions to exploit the size/scope economies, where more than one supplier already exists, leading towards a monopoly.

As noted in Section 1.3, the fact that a monopoly is natural does not imply that it is efficient – especially where there is on-going scope for innovation and/or scope for sustaining prices above costs of production and delivery. In these (usual) circumstances, there is a trade-off between competing sources of efficiency for customers – size/scope economies competing with dynamic efficiency and full pass through of cost reductions.

In the water and wastewater industry, size and scope economies flow from the significant cost associated with installing infrastructure such as pipe networks and the relatively low cost of serving additional customers. In such instances, it is typically considered that duplication of the network is uneconomic and that it is therefore cheaper for a single entity to provide the service. Other industries often considered to exhibit the characteristics of natural monopolies include electricity and gas networks.

Natural monopoly services have historically been provided by vertically integrated businesses often supported by legislation. That is, a single business is empowered to undertake all tasks associated with providing the service. A vertically integrated water and wastewater business is responsible for the provision of all elements of the water and wastewater services supply chain, including water procurement tasks, water treatment, water network services, water and wastewater retailing, wastewater network services, wastewater treatment, and wastewater disposal. This supply chain can be represented as shown in Figure 2.1.

Figure 2.1 Water and Wastewater Supply Chain



Economies of scope that exist due to similarities and overlaps between these segments of the supply chain can support a vertically integrated business with sole responsibility for the delivery of the service.

However, not all elements of the water and wastewater supply chain preclude duplication and therefore not all of these exhibit the characteristics of a natural monopoly. The only elements of the supply chain that exhibit natural monopoly characteristics are the water and wastewater pipe networks. The introduction of competition and competitive pressures into the remaining non-natural monopoly segments of the supply chain, such as water procurement, water and wastewater treatment and retail services, is feasible, and could potentially lead to new and better ways of operating and lower prices for customers.

In considering the introduction of competition into these elements of the water and wastewater network, it is necessary to be mindful of the many practical matters which affect the industry. For example, if adverse impacts on third parties, including the environment, are to be avoided in the use of aquifers as a source of bulk water, rights to access the water have to be clearly assigned and enforced.

Another example is the role of water in the creation of a healthy, disease-free environment, which provides a significant benefit to the community as a whole. As such, it is not considered desirable to turn off the supply of water should someone be unable to pay for the service. A further consideration is that, in the unlikely event that it is deemed appropriate, there is often no practical way to exclude customers from the use of the wastewater service.

The introduction of competition into the water and wastewater networks requires careful consideration of all aspects of the industry. These considerations need to include matters that relate to the water and wastewater industry specifically, as well as other matters such as government policy and environmental, social, and economic concerns. In addition, the benefits and costs of altering the existing Western Australian water and wastewater industry structure need to be considered carefully with regard to the potential for, and impacts of, changes to existing economies of scale and scope within the sector as well as one-off transitional costs. Only once all these issues have been addressed can decisions

regarding alternative approaches to the delivery of water and wastewater services be made.

Table 2.1, based upon that developed in the Issues Paper, highlights some of the ways in which competition can be introduced in the water and wastewater supply chain.

Table 2.1 Conceivable Forms of Competition in the Water and Wastewater Supply Chain

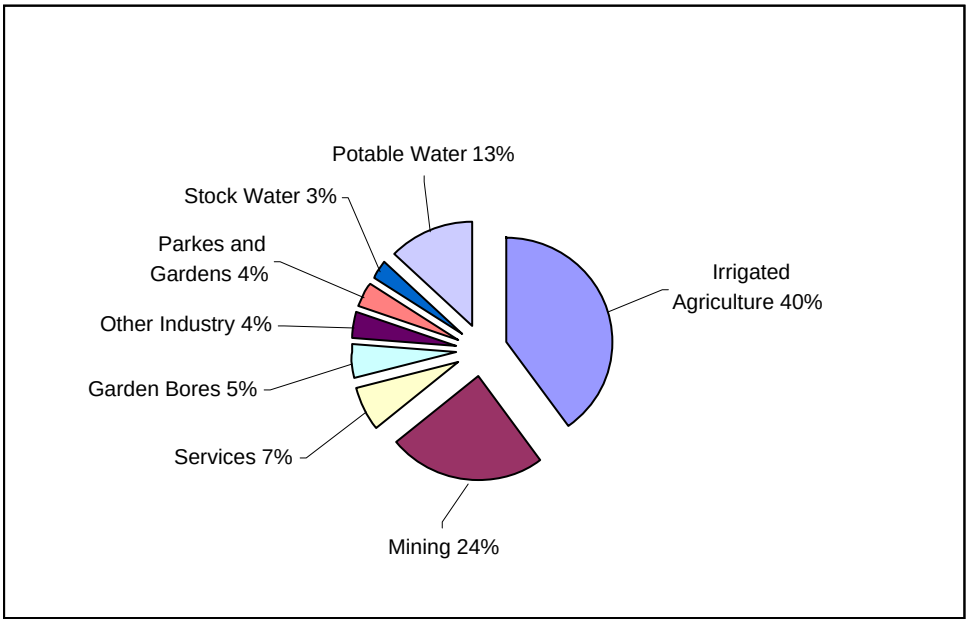
Supply Chain	Is competition conceivable?	Examples of competition
Water procurement	Yes	A bulk water market could be established with competing suppliers of bulk water (decentralised procurement). This could be facilitated by **third party access**). Alternatively, an independent entity could tender for a certain volume of water, level of security of supply, or for a specific project (**centralised procurement**).
Water treatment	Yes	An independent entity could tender for a specified project or outcome (**centralised procurement**).
Water network	No	If the network is a natural monopoly, which it is likely to be, then by definition competition is not possible, although by-pass by large users is possible. However, **third party access** to the network could facilitate competition in the bulk water and retail/trading markets.
Water and wastewater retailing	Yes	**Trading and retail competition** could be established. Alternatively, a **comparative competition** regime could be introduced with retailing/distribution activities separated geographically. In addition, the service provision for an entire market could be put out to tender (**centralised procurement).**
Wastewater network	No	Competition is unlikely given the natural monopoly nature of the network, although by-pass by large users is possible. However, **third party access** could facilitate competition in the wastewater treatment/disposal market or the retail/trading market.
Wastewater treatment	Yes	Service providers could compete to treat wastewater for either disposal or recycling (decentralised procurement achieved via **third party access**). Alternatively, an independent entity could tender for a specified project or outcome (**centralised procurement**).
Wastewater disposal	Yes	There is already, to some extent, a market for treated wastewater by-products, e.g. for use in the agricultural sector.

The aim of introducing competition is to provide benefits to consumers in the form of the low cost provision of services of appropriate quality. In a competitive market, the price of a good plays a dual role. Not only does it give an indication to consumers' of the cost of the good provided, but it also provides information on consumers willingness to pay for goods and thereby signals to the market the potential for new producers to enter. However, in the water and wastewater services sector, price is determined on a cost recovery basis and as such, minimal investment signals exist in the market.

2.1.1 The Structure of the Water and Wastewater Industry

Not all water is the same. There are differences in the quality and location of water which affects its possible uses. Figure 2.2 shows the breakdown of water usage in Western Australia.[11] 87 per cent of all water used is for non-potable purposes with potable water (that treated to drinking water standard) accounting for the remaining 13 per cent.

Figure 2.2 Western Australia Water Usage



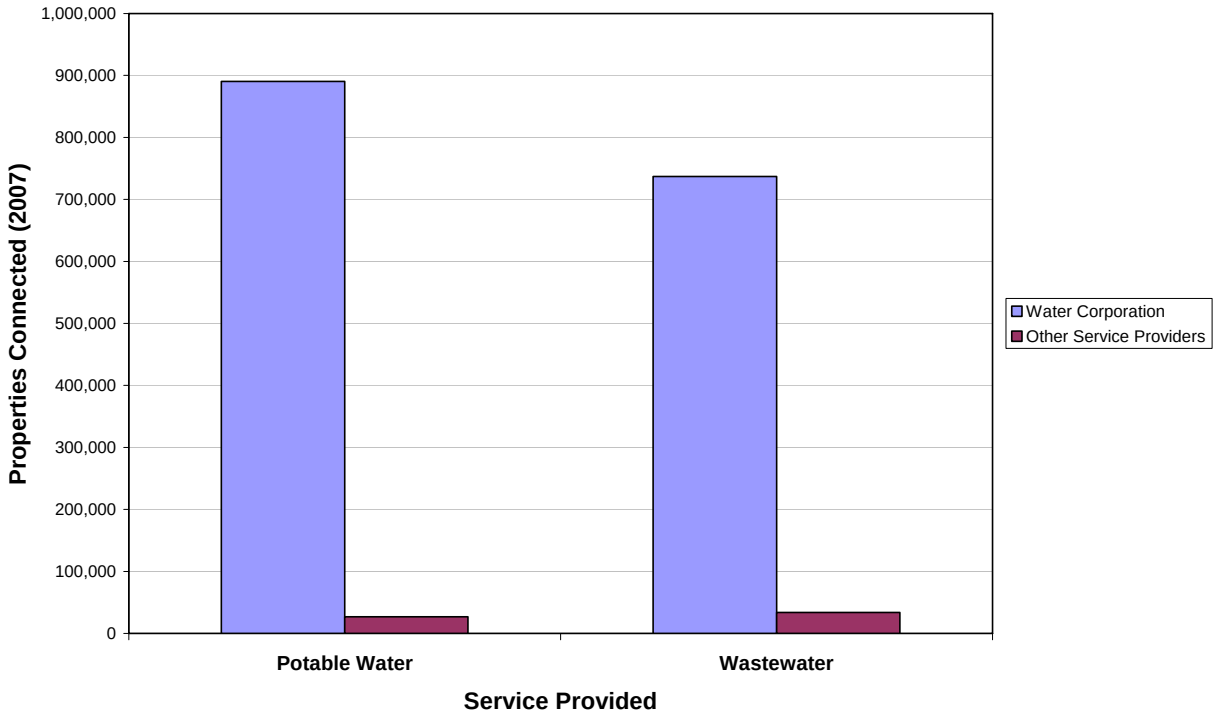
Source: Irrigation Review Steering Committee

The supply of water and wastewater services in Western Australia is undertaken predominantly by monopoly service providers. The provision of potable water and treatment of wastewater in Western Australia is dominated by the Water Corporation (**Corporation**). The Corporation serves the major metropolitan areas of Perth and surrounds as well as the majority of regional centres and towns. In total, the Corporation provides 97 per cent of potable water and wastewater services (see Figure 2.3). Other water service providers include Busselton Water, AQWEST, which serves Bunbury, and a variety of local governments, mining towns and self supply connections.[12]

[11] Figure 2.2 is based on information contained in Irrigation Review Steering Committee (July 2005), *State Water Strategy – Irrigation Review Final Report,* , p5. This data is also referred to in the Water Corporation submission on the Issues Paper, p28.

[12] Appendix 3 contains a more detailed description of the Water Corporation, Busselton Water and Aqwest.

Figure 2.3 Provision of Potable Water and Sewerage Services to Connected Properties in WA



The focus of this inquiry is the provision of potable water, and subsequent wastewater services, given the complexities associated with its supply and as this is where the greatest potential benefits from increasing the level of competition is considered to exist. A submission on the Issues Paper noted that the potable water market makes up a relatively small proportion of the market relative to industry, agriculture and mining and suggested that this is where gains are to be made.[13] While it is true that potable water represents only a relatively small component of all water supplied, it is important to note that the vast majority of non-potable supplies, some 98 per cent, are self sourced.[14] Given that the majority of non-potable water is self sourced, it is unnecessary to focus on introducing competition into this segment of the market as non-potable water users already have a clear incentive to procure water at least cost.

However, it is expected that the principles and recommendations to be developed from this inquiry will also be applicable to the non-potable water sector, including recycled water. Indeed, a key element of the inquiry relates to the use of water trading and the subsequent potential for non-potable supplies as an increased source of potable water in future.

The supply of potable water occurs in two distinct regions - the interconnected system in the South West of the State, and geographically separate regional and remote non-interconnected systems.

Integrated Water Supply Scheme

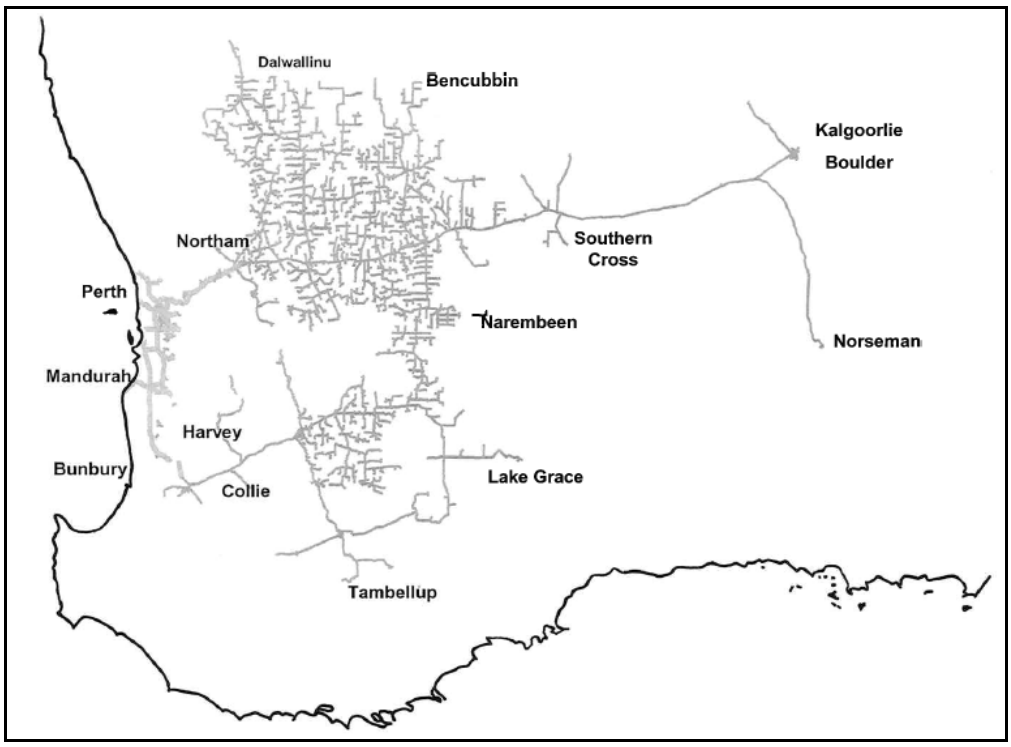
The Integrated Water Supply Scheme (**IWSS**) provides potable water to approximately three quarters of all people in Western Australia. The IWSS supplies water to towns in the

[13] Community and Public Sector Union submission on the Issues Papers, p3.

[14] Water Corporation submission on the Issues Paper, p28.

South-West from Mandurah to North of Perth. The IWSS also provides water inland around the Perth hills, and to towns along the Goldfields pipeline to Kalgoorlie. Figure 2.4 shows the area served by the IWSS.

Figure 2.4 The Integrated Water Supply Scheme



Source: Corporation

Water within the IWSS is supplied from a range of sources and at a variety of costs as shown in Table 2.2.

Table 2.2 IWSS Supply Sources 2006-07

Source	Gigalitres	Operating Costs[15] ($/kL)
Surface Water	111	0.14
Ground Water	168	0.19
Desalination	18	0.51[16]
Water Reclamation[17]	4	0.42
Total	**301**	**0.19[18]**

Source: Corporation

[15] Operating costs are those costs incurred in producing the given volume of water excluding capital costs.

[16] It should be noted that the desalination plant was only operational for part of the year. It has an annual capacity of 45 GL. The average operating cost when operating at full capacity is expected to be $0.51/kL.

[17] Reclaimed water is not used in the IWSS. Rather it is used for fit-for-purpose requirements and therefore offsets the use of additional scheme water.

[18] Weighted average of operating costs.

Regional and Remote Regions

Potable water services to regional and remote non-connected systems in WA are provided almost exclusively by the Corporation. Other potable water service providers (AQWEST, Busselton Water, Hamersley Iron and Rottnest Island) supply only four per cent of regional connected properties, with the remainder supplied by the Corporation.

Sewerage and/or non-potable water services are provided by another 24 service providers in regional areas (primarily regional shire councils), although 97 per cent of regional customers receive their sewerage services from the Corporation.[19] The non-potable water services provided by the regional service providers are largely for the recycling of wastewater produced by wastewater treatment plants, which is used for purposes such as irrigation of public green spaces.

Table 2.3 provides the list of current license holders.

In addition to licensed service providers, water and sewerage services to individual properties are often supplied privately in regional areas, through the use of rainwater tanks, farm dams, private bores and septic tanks.

For many regional systems, regulated prices for water and sewerage services do not cover the cost of providing these services. To cover the difference, the Corporation receives Community Service Obligation (**CSO**) payments from the Government. In 2005/06, CSO payments for services to country areas were $235 million.

[19] Other non-potable water and sewerage service providers apart from Water Corporation are the City of Kalgoorlie-Boulder, Hamersley Iron, Rottnest Island Authority, Gascoyne Water Services, Ord Irrigation Cooperative and 19 regional shire councils.

Table 2.3 Licence Holders for Water, Sewerage, Irrigation and Drainage Services in Western Australia (2007)

Licence Holders	Licence Type				
	Potable Water Supply	Non-Potable Water Supply	Sewerage	Irrigation	Drainage
Aqwest - Bunbury Water Board	✓				
Busselton Water Board	✓				
Hamersley Iron Pty Ltd	✓		✓		
Rottnest Island Authority	✓		✓		✓
Water Corporation	✓	✓	✓	✓	✓
City of Kalgoorlie Boulder		✓	✓		
Gascoyne Water Services		✓		✓	
Harvey Water (SWIMCO)		✓		✓	
Ord Irrigation Cooperative		✓		✓	
Preston Valley Irrigation		✓		✓	
Shire of Brookton		✓	✓		
Shire of Coolgardie		✓	✓		
Shire of Dalwallinu		✓	✓		
Shire of Denmark		✓			
Shire of Dowerin		✓	✓		
Shire of Dumbleyung		✓	✓		
Shire of East Pilbara		✓	✓		
Shire of Gnowangerup		✓	✓		
Shire of Goomalling		✓	✓		
Shire of Jerramungup		✓	✓		
Shire of Kent		✓	✓		
Shire of Koorda		✓	✓		
Shire of Lake Grace		✓	✓		
Shire of Moora		✓	✓		
Shire of Morawa		✓	✓		
Shire of Northampton		✓			
Shire of Ravensthorpe		✓	✓		
Shire of Victoria Plains		✓	✓		
Shire of Wickepin		✓	✓		
Shire of Yilgarn		✓	✓		

Source: Economic Regulation Authority

3 Integrated Water Supply Scheme

This chapter examines the most effective manner in which to increase the level of competition in the provision of water and wastewater services in the Integrated Water Supply Scheme.

3.1 Bulk Water Procurement

Additional bulk water sources are required, from time to time, for two reasons. The first, as discussed earlier, is due to a reduction in the expected average yield from dams as a result of inflows that are significantly lower than the long term historical average, on which system planning had previously been based.

The second reason for the need for additional bulk water sources is population growth that is faster than the rate of per capita reduction in demand through demand management measures. The Australian Bureau of Statistics estimates the population of Western Australia will increase from 2.0 million to 3.2 million (60 per cent) in the period to 2051 with the population of Perth increasing from 1.5 million to 2.5 million over the same period.[20] Even if usage per person decreased by a significant amount, a need for additional bulk water supplies remains. Current demand forecasts suggest a *net* growth in demand for potable supply in SW of WA of about 5 GL per year.

The aim of this section is to determine the most effective way in which to promote competition in the supply of bulk water sources necessary to meet the likely increased demand for water. The section assesses the Corporation's proposed approach to bulk water procurement against alternative models.

3.1.1 The Corporation's Current Approach

The approach adopted currently by the Corporation to water source planning (as opposed to its now proposed approach which is discussed below) is to determine the need for a major augmentation on the basis of assumptions about dam inflows, groundwater abstraction and demand. The Corporation has based its requirements to proceed with the next major source on the view that future inflows will be no more than those experienced in recent years and could be substantially less. Basing the need to procure additional supplies on forecasts substantially less than those ever experienced is referred to as 'worst case scenario' planning. The completion of a 50 GL per year source by late 2011 reduces the probability of a total sprinkler ban in 2011/12 from 3.6 per cent to almost zero (based on the distribution of inflows since 1997, and the latest storage levels of the dams).

Once the timing and volume of a major source is identified, the Corporation investigates alternative options and commences the regulatory approval processes.

The competing sources are then identified and costed, after which the Corporation seeks Government endorsement for one of the projects. Under section 49 of the *Water Corporation Act 1995*, the Corporation is required to have the shareholder minister (currently the Minister of Water), with concurrence from the Treasurer, approve the funding of major projects.

[20] ABS Publication 3222.0 'Population projections, Australia, 2004 to 2101' p49-50.

The Corporation then goes out to tender within a 'Design, Build, Operate' framework that establishes an alliance between the Corporation and a private sector business.

The Corporation's approach has been successful in avoiding the need for total sprinkler bans as have occurred in most other major cities in Australia. The Corporation has also been receptive to proposals to develop non-traditional sources, such as the water trade with Harvey Water irrigators.

The approach adopted by the Corporation is similar to that adopted throughout Australia. In the past, this approach has worked relatively well in Western Australia with the Corporation often cited as an example of how to apply such an approach to water source planning. However, as the model relies heavily on public sector planning, funding and control with private sector involvement being clearly confined and limited, and given the developments in the water and wastewater services sector due to technological improvements and increased climate uncertainty, this traditional approach to water source procurement must be reassessed. A new bulk water procurement model must be developed with sufficient flexibility to deal adequately with the challenges and opportunities emerging in the water and wastewater services sector.

3.1.2 The Corporation's Proposed Approach

The Corporation has proposed a model that offers some increase in private sector involvement by facilitating private ownership of sources. In practice, this means that any source developed after the second desalination plant could be owned by the private sector. Private sector involvement may therefore be some considerable time away (say by 2025 under conservative inflow scenarios) because the second desalination plant, which is to be owned by the Corporation, is being designed so that it could eventually have its capacity doubled to 100 GL per year. While new projects might be permitted to 'compete' against the costs of such expansion, the incremental costs of expansion of the second desalination plant are likely to be modest relative to a totally new facility, so the scope for effective competition could be quite constrained until these expansion options have been exercised.

The Corporation's proposal involves it continuing to undertake the identification of a future source (although this would be developed in consultation with interested parties), securing the planning and environmental approvals and designing the integration into the existing network. The private sector would then be invited under a 'Build, Own, Operate' scheme to bid for the development of that source, or alternatively propose the development of an alternative source.

The Corporation has decided not to bid because of the impact this would have on potentially deterring other proponents from bidding. According to the Corporation, it prefers to act as the customer rather than a competitor in the bulk water market.

The process would take five to seven years between initial planning and the signing of a water supply agreement with the winning supplier. As part of this process, the Corporation would require pre-feasibility testing of potential bidders.

3.1.3 Assessment of the Corporation's Proposal

The Authority commissioned a series of studies to consider possible models for bulk water procurement. These studies are available on the Authority's web site.[21] The studies assisted the Authority in identifying a range of matters regarding the Corporation's proposal which require consideration. These include:

- the approach of adopting a centralised procurement framework;
- the explicit development of a feasible large volume source option;
- the integration of procurement and operations within a single entity;
- a bias towards worst-case scenario modelling;
- the process for dispatching private sector source options;
- a potential conflict of interest from a single entity being both a purchaser and supplier of bulk water; and
- a lack of clarity in the role for government.

Each of these matters is considered in turn.

Centralised procurement

Under the Corporation's proposed procurement model, private proponents are invited to tender for the contract to supply a certain volume of water at a certain time. This is a centralised procurement approach, with the Corporation coordinating the delivery of additional supplies.

Under a decentralised procurement model, in comparison, there is no central entity responsible for managing procurement. Price signals would be used to indicate the need for additional sources; the point at which new sources would be developed would be when a water business determined that it would be profitable to do so. The Corporation would compete with the private sector to deliver water to customers. As such, full retail contestability would be required, as would an access regime.

For a significant part, decentralised procurement underpins the gas and electricity markets. However, there are some important differences between the water industry and other utility industries that complicate the development of decentralised procurement in water.

A key difference between the water and energy markets occurs from uncertainty regarding supplies; specifically, uncertainties regarding inflows into dams and aquifers. Whereas electricity and gas supplies may be forecast with relative certainty, there is great uncertainty surrounding predictions of future water supply, even in the medium term. As discussed earlier, this is due to the difficulties in establishing the extent that climate change is impacting on inflows and whether the impacts are being compounded by a drought. Market-driven investment in the face of such uncertainty is possible, but any market price would be likely to include a significant 'risk premium' considering the investment needed in the face of uncertain future sales.

[21] National Economic Research Associates (October 2007), *Bulk Water Procurement Options in Western Australia*; and ACIL Tasman (October 2007), *Review of Bulk Water Procurement Options in Western Australia.*

Further, the electricity industry, as an example, may have more cost effective options to mitigate supply risk than is the case in the water industry. In the electricity industry, risk is mitigated by building relatively low capital cost peaking plants, whereas water factories have relatively high capital cost. In addition, major electricity sector 'peaks' tend to be of relative short duration, creating a range of options for demand management bidding by users with large loads – such as aluminium smelters – which can offer peaking 'capacity' at even lower capital cost by shutting down during periods of high demand. The 'peaks' that count in water supply can involve drought conditions extending over several years, with little scope for forecasting the break in these conditions.

An implication of uncertain future inflows in the water industry is that storages have a value – an opportunity cost of usage – that can exceed their marginal cost of delivering water into the system as is conventionally measured. If water in storage is used today and is not replenished, the costs of meeting demand in the future may be increased as additional more expensive sources are required or as tighter usage restrictions are triggered. It is this very uncertainty of future supplies, extending over several years, that has resulted in most Australian urban supply systems traditionally requiring storage capacity alongside of water restrictions. In Australia, the required water storage capacity in relation to average demand is very high by international standards.

A centralised model has been traditionally used in Australia to manage this uncertainty. While a well functioning competitive market may also be able to manage these uncertainties effectively, such a market is likely to require significant management, take time to develop and, as noted above, require the introduction of an access regime and retail contestability. In the time taken to establish a well functioning competitive market, existing market participants would be able to exercise market power.

The difficulties associated with designing a decentralised market in water that manages uncertainty effectively and guards against the potential abuse of market power suggests the need, at least for some time, to have a coordinated approach to water source procurement.

Development of a feasible large volume source option

Under the Corporation's proposed centralised procurement model, the Corporation continues to 'prove-up' a source to meet the worst case scenario by securing the planning and environmental approvals. The private sector is then free to bid for development and ownership of the source. Alternatively, the private sector can offer other source options.

The Corporation's approach ensures that a feasible large volume option is available should alternative more cost-effective options not be proposed. The need for a feasible option recognises the length of time it takes to secure planning and environmental approvals for water source projects. The approach also increases the likelihood that there will be significant private sector interest in the project, given that the costs of proving-up the source have been undertaken by the Corporation, and the option is likely to be acceptable to the Corporation and Government.

While the conceptual argument for a feasible large volume source option is sound, it is possible that the approach could be developed further. It is important to distinguish between the need to have a feasible large volume option to meet demand, should higher inflows not recur, and the need to trigger construction of the identified source option, should the risk of a supply shortfall become intolerable. The benefit of maintaining a flexible position in regard to triggering construction is that it can result in substantial savings in capital costs in the event that inflows are higher than in recent past years, particularly in the case of large, capital-intensive projects.

Large volume sources commonly have an important weakness in dealing with uncertain future inflows. They generally involve high up-front costs that are incurred or committed before it is known whether the large volumes will be needed early. This point is developed further in relation to the discussion of worst-case scenario modelling below.

There is also a risk under the Corporation's proposed approach that the private sector will focus on bidding for the source identified by the Corporation rather than develop innovative alternatives. Were the private sector to pursue alternative options, there would be costs associated with securing the planning and environmental approvals, identifying the integration costs, and there would be the risk that the option may not be acceptable to the Corporation or Government. These concerns extend beyond perceptions of acceptability to the purchaser. The very fact of the Corporation investing in developing a proposal and in securing necessary approvals will alter the competitiveness of that proposal relative to others given that a bidder attempting to develop an alternative source would have to incur the equivalent costs directly. The process would, in this sense, introduce a 'bias' in favour of the option initially identified by the Corporation.

Overall the principle that an option is available, should it be required, to meet the scenario of very low inflows is an appropriate one that avoids the risk of having a significant shortfall of water supplies. However, it is important that the feasible option put forward does not inhibit the ability of the market to develop alternative cost effective supply options.

Integration of procurement and operations

The Corporation's proposed procurement model continues to integrate the planning and procurement functions with the rest of the Corporation's operational functions. In this way, the procurement process benefits from having a wide pool of expertise available to identify source requirements and source options and to integrate them into the network.

This approach recognises that the most cost effective way of managing the system involves joint consideration of system operation and system procurement (along with demand management) and that procurement and operation cannot efficiently be planned sequentially. For example, system operation that involves the use of desalination in preference to the same volume of dam supply effectively leaves water in the dams for future use. In turn, this could alter the appropriate timing to trigger the next project to supply extra source water.

Any sound procurement system will need to include mechanisms to allow these interactions between operation and procurement to be taken into account.

Worst-case scenario modelling

The Corporation's general approach to water source procurement is to identify a relatively conservative inflow scenario and then procure sufficient water supplies to meet demand on the basis that the scenario eventuates. This approach is referred to as 'worst case scenario modelling'. Current worst case scenario modelling is based on an assumption of the continuation of post-2000 inflows. In effect, this assumes away the possibility that very recent rainfall levels have involved a significant deep drought effect, over and above any structural climate change. The assumption may be correct – but is certainly not yet established. The risk with this approach is that the scenario does not eventuate and a source option is developed 'unnecessarily', at an irreversible expense. The approach has the potential to incur significant costs in excess of those required to ensure security of supply.

While it could be argued that the additional source will be needed eventually due to population growth, it is important to recognise that for each year a significant project such as a desalination plant is deferred, the saving is in the order of $40 to 50 million.[22] It could also prove, several years out, that a more cost effective augmentation option is available. For example, desalination efficiency has been increasing for a number of years. Consultants have advised that new developments, involving the use of nanotechnology to construct more efficient filters, point to possibly very large jumps in energy efficiency in coming years. In addition, growing knowledge of climate change trends and/or demand management technologies could point to a different technological solution – for example, one with a different mix of demand management, water recycling and desalination, being appropriate. These considerations point to additional value in deferral of major project commitments if this can be done without compromising system security.

Further, should the second desalination plant be constructed at this time, it is likely to restrict the opportunities for alternative private sector sources to be developed for the foreseeable future. The existence of the excess capacity provided by the second desalination plant will effectively crowd out alternative sources. Until the second desalination plant is operating at or near full capacity, there will be little opportunity for competition to identify innovative alternative supply.

There is a more sophisticated way than the traditional approach to dealing with the uncertainty of inflows, while at the same time not compromising security if the worst case scenario eventuates or crowding out the potential for innovative supply options to be developed. The 'options' method is based on adopting a more flexible approach to decision making, especially when it comes to large irreversible capital projects. The options method takes into account the benefits of deferring projects which involve expensive and irreversible capital investments until the uncertainty as to whether or not they will be needed is reduced or until they cannot be further delayed without introducing an unacceptable risk to security. Recognising this value in deferral can, and commonly does, justify incurring costs – and possibly substantial costs – to buy additional flexibility and hence reduce the risks of committing to major outlays that later prove to have been unnecessary, too early or of a less than ideal form.

Within the current context, the uncertainty is largely associated with future inflows. This uncertainty will be reduced with the passing of each winter rainfall period. However, there are also other uncertainties that will be reduced in the near future. One of these uncertainties is the potential for additional water supplies as a result of the establishment of an effective water trading regime (this issue is discussed in section 3.1.5). Another uncertainty is the sustainable level of abstraction from the Gnangara Mound, which is under consideration by the Department of Water and is expected to be available by 2009. It is possible that this work could reduce the Corporation's share of available groundwater for use as a source of supply for the IWSS. Then there are the uncertainties relating to future technological options for both supply (including recycling) and demand management.

An important feature of the options approach is that options that have a very high cost on a per kL basis can often be cost justified in the short term, if they deliver substantial flexibility to avoid large and irreversible commitments to expenditure. Such high unit cost options are valid if they reduce the overall expected (risk-weighted) cost of balancing supply and demand. The expected cost can be determined by examining the source options that are required to meet different inflow scenarios, with each scenario given an appropriate weighting.

[22] Depending on the phasing of the capital expenditure and its immediacy.

While the Corporation models a range of inflow scenarios, investment decisions are based on the worst-case scenario. However, even if a modest weighting is given to the possibility that inflows will stabilise at a higher level, even including periodic deep droughts with inflows similar to those seen over the last several years, the expected cost of balancing supply and demand can be reduced by using small volume options. These small volume options may have a higher cost per kL of capacity provided or of water delivered into the system than a desalination plant but defer the need to make a substantial capital commitment until uncertainty is reduced. By 'buying time', these measures also have the benefit of allowing better alignment between the timing of new supplies becoming available and the timing of demand that actually needs the extra supply. The financial gains from this better alignment could be large. Because of this alignment effect, it appears possible that significant use of smaller project options could be cost effective even under the worst case scenario. Importantly, the use of smaller more flexible sources does not crowd out alternative potentially cheaper sources should they be developed in subsequent years.

Consider the following demonstration of the application of an options approach under differing scenarios. Three inflow scenarios have been selected to represent increasingly reduced inflows. The first scenario assumes inflows will stabilise at post 1975-levels, the second assumes a post-1997 scenario, with the third and most conservative scenario assuming inflows consistent with post-2000 levels.

Post-1975 scenario

Should inflows return to the average of post-1975 levels, the existing supplies would be sufficient to meet the needs of the IWSS for the foreseeable future, with the existing Perth Seawater Desalination Plant operating at half capacity to keep the probability of a total sprinkler ban below 3 per cent.[23]

Post-1997 scenario

Under a post-1997 inflow scenario, additional sources of bulk water are required. An options framework would investigate the potential to meet the need for additional supply through the use of small options, should they prove to be the least expected cost alternative. According to the Corporation, the following sources with relatively small volumes are available but are not currently being pursued:[24]

- accessing approximately 30GL over five years from the dewatering activities of mining companies in the Collie district. This option would require the construction of a 10km pipeline at a cost of $35 - $45 million.
- transferring approximately 10 GL from Harris Dam into Stirling Dam, which does not require any infrastructure expenditure, though there would be some transfer costs. Given the current storage level of Harris Dam this is a once-off opportunity that might be spread across one or two years.

Under the Corporation's current procurement program, construction of a second desalination plant at Binningup is to commence in late 2008 and the plant is to be operational by late 2011. The adoption of an options approach based on the implementation of the two sources mentioned above would allow for the exercise date for construction of the second desalination plant option to be deferred from late 2008 to late

[23] A 3 per cent probability of a total sprinkler ban is used in this example because, under the post 1997 inflow scenario and using the Corporation's current source development plan, the probability of a total sprinkler ban is kept below 3 per cent by ensuring the desalination plant is on-line in late 2011.

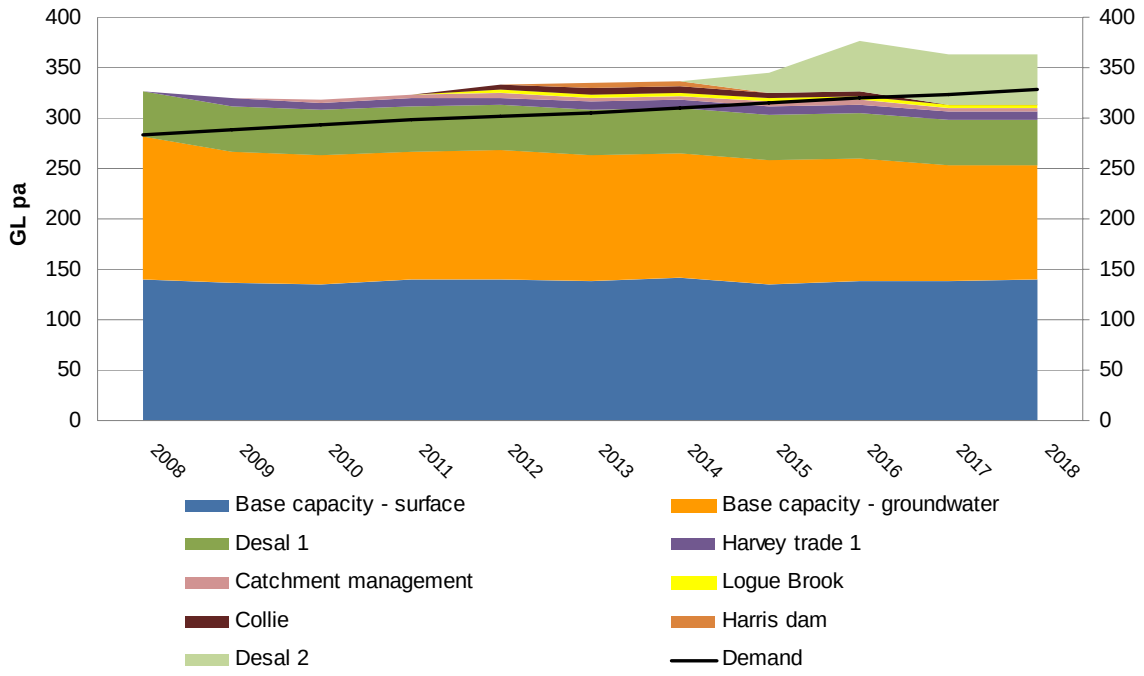
[24] Email from the Corporation to the Authority, 9 November 2007.

2011 while still ensuring that the probability of a total sprinkler remains below 3 per cent. This deferral would save water consumers approximately $150 million (in present value terms).

Figure 3.1 illustrates how each source can be 'stacked' to ensure there is sufficient capacity to meet demand (while maintaining excess capacity to allow for annual variability in inflows under the post-1997 inflow scenario).

Under this scenario, groundwater abstraction is maintained at an average level of approximately 130 GL per year (compared to abstraction in 2006/07 of 165 GL and abstractions in 2007/08 of approximately 145 GL).

Figure 3.1 An Alternative Approach to Balancing Supply and Demand Based on Smaller Sources assuming post-1997 inflows



Post-2000 scenario

Should inflow projections be revised downwards to the average of levels since 2000, a further 18 GL per year (in addition to those required for the post-1997 scenario) is required to keep the probability of a total sprinkler ban below 3 per cent.[25] While it would be difficult to ensure sufficient security under this scenario without committing to the construction of the second desalination plant, there are a range of possible additional sources. These include:

- the potential sinking of extra bores in less environmentally sensitive areas;
- a possible water trade with Aqwest;
- increased use of demand management options; and
- a review of pricing arrangements.

[25] Until the second desalination plant comes on stream.

The Corporation has advised that an additional bore in the Jandakot field could provide up to 5 GL per year and two additional bores at Neerabup could provide up to 13 GL per year. However, the Corporation has also advised that the use of these bores as additional sources would be inconsistent with the current groundwater abstraction rule (see Box 1), which limits the total amount of groundwater abstraction from the Gnangara Mound. The underlying principle of the rule is to use the Gnangara Mound as a balancing source whereby abstractions are increased when inflows into dams are low and reduced when relatively high inflows occur. The reduction in abstractions when relatively high inflows occur allows for a 'recharge' of the Gnangara Mound. For example, the level of abstraction from the Gnangara Mound has been reduced by around 20 GL this year due to a relative increase in dam levels.

However, it is important to realise that the abstraction rule is designed to guard against environmental damage caused as a result of over-abstraction. The additional bores at Jandakot and Neerabup are considered by the Department of Water to be possible substitutes for bores in the Gnangara Mound to reduce the overall environmental impact of abstraction. Given the lesser environmental impacts associated with abstraction from Jandakot and Neerabup it may be appropriate, for a temporary period only, that the abstraction from the Jandakot and Neerabup bores be treated separately from that covered under the groundwater abstraction rule.

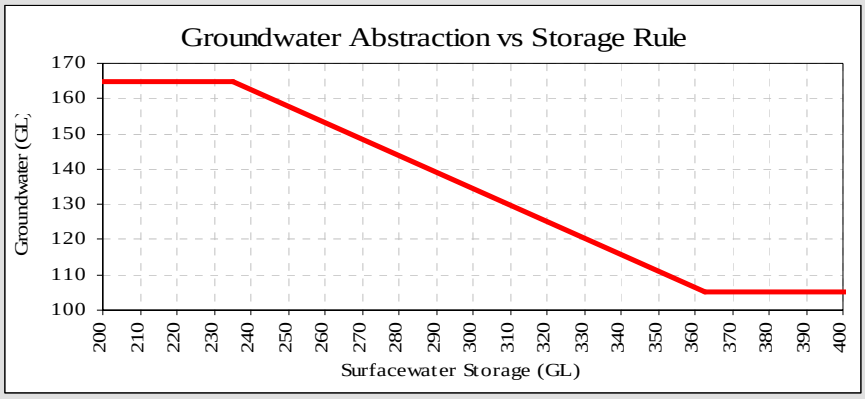
Alternatively, the additional groundwater abstraction could be considered to offset the water savings that result from the current three day per week restrictions on the use of garden bores (estimated to be saving approximately 18 GL per year, which is the same amount as required under this scenario).[26] As such, rather than considering the abstraction via these new bores as an increase in total abstractions, it could be viewed as a transfer of the water from use in gardens to use within the IWSS.

[26] Source: Water Corporation

Box 1. The Groundwater Abstraction Rule

Groundwater accounts for approximately half the water requirements of the IWSS. Water is extracted via a series of bores, treated, and fed into the IWSS. The vast majority of groundwater is abstracted from the Gnangara Mound, with smaller amounts taken from Jandakot and Neerabup.

The Corporation has developed a rule which governs the volume of Ground Water abstracted for use in the IWSS. The rule in effect uses groundwater reserves as a balancing item such that abstractions are increased when dam (surface) storages are low and are reduced when dam storages are high. The abstraction rule is represented in the following chart.



As an example of how the abstraction rule operates, consider the following. If dam storages are less than 235 GL, groundwater abstractions of 165 GL are allowed. As dam storages increase, groundwater abstractions are reduced such that at dam storages of 300 GL, abstractions are approximately 135 GL. Once dam storages exceed 362.5 GL, abstractions fall to 105 GL.

The Department of Water is currently reviewing the rule to ascertain whether the maximum abstraction level of 165 GL per annum is sustainable.

A further water source option that could be considered is a potential bulk water trade from the Bunbury region. It is understood that Aqwest has an annual allocation of 13.2 GL which is in excess of its current annual demand of approximately 7 GL. It may be possible for the Corporation and Aqwest to enter into a trade that would result in any water not needed by Aqwest in the short-term being transferred for use in the IWSS.

Demand management can also assist in meeting the supply-demand balance by reducing demand. Demand management includes rebates for the installation of more water efficient appliances and fittings, rainwater tanks and grey-water recycling systems. However, the potential contribution of an expanded rebate scheme is likely to be relatively minor, probably no more than 1 GL per year. Nevertheless, a benefit of a demand management program is that it can be altered rapidly should conditions change – and this can justify the use of higher unit cost demand management measures and incentive payments, because the level of irreversible commitment to costs can start low. For example, rebates could be discontinued following a significant rainfall event. Demand management options are discussed in further detail in Appendix 4.

Pricing can also play a role in reducing demand. An approach to pricing referred to as Long Run Marginal Cost (**LRMC**) pricing is being introduced gradually in Western Australia and will be implemented by 2013-14.[27] The objective of LRMC pricing is to

[27] LRMC was estimated in 2005 to range between $0.85 per kL and $1.23 per kL (in real dollar values of 2006/07). The lower estimate is being applied to usage up to 550 kL per year and the higher estimate is

reflect in usage charges the cost consequences of a sustained increase in demand (such as the costs of future water sources). As a result, low usage charges are being increased and high usage charges are being lowered to reflect the estimates of LRMC. The estimates of LRMC for the metropolitan area were calculated in 2005 as part of the Authority's Inquiry on Urban Water and Wastewater Pricing and is due for review in 2008. It may be appropriate to bring forward the review of LRMC, given the increase in source costs since the last review and the possible increase in the estimates of LRMC.

A further possibility would be to adopt an alternative pricing approach to LRMC pricing, such as scarcity-based pricing where usage charges would vary based on supply availability. Differing pricing alternatives are discussed in greater detail in section 3.2.3.

Under a post-2000 scenario, the decision to construct the second desalination plant could be deferred until 2012 if a combination of options such as the use of less environmentally sensitive bores, a water trade from the Bunbury region and increased demand management programs, proved acceptable.

The Authority invites the Corporation to formulate a package of options that could allow for the deferral of the second desalination plant, while not compromising security.

Comparison of options

The key strength of the small schemes option is that it is *robust* across scenarios in respect of managing both supply security risk and the risk of committing to very high costs only to have it emerge that these costs were unnecessarily high. Early commitment to the second desalination plant would address supply security concerns but entails prospects, under plausible inflow scenarios, for substantial unnecessary infrastructure costs. 'Gambling' on this being a drought that will break soon avoids very large infrastructure costs but would introduce unacceptable risk to supply security. Using small schemes and other measures to defer the time until a commitment to a large investment needs to be made to ensure supply security buys insurance against excessive or inappropriate investment – while retaining access to the large scheme opportunities should the emerging inflow patterns indicate that these need to be triggered.

The fact that water supply projects entail substantial lead times means that some risk of overinvestment is unavoidable – and always has been. It has long been necessary to build dams well in advance of the possible drought that justifies their construction – and it could then be decades before the extra supply was actually needed. Modern technologies that are not rainfall dependent have allowed this lead time requirement to be reduced dramatically – and it makes good sense to seek to exploit this new flexibility to limit the risk of overinvestment while ensuring that there is always adequate investment.

Each of the above scenarios (and, in reality, the range of possibilities between them) would result in a somewhat different actual rollout of water supply capacity, within the same adaptive strategy. There would, however, be two important features of all these rollout possibilities:

- they would have common initial investments that entail modest up-front costs (even if also high unit costs) that allow deferral of the irreversible commitment to a larger scheme that is not needed for some time under some scenarios; and
- they entail on-going incentives to invest in better understanding of the options, in new technologies and packages of technologies and in better knowledge of the

being applied to usage between 550 kL and 950 kL per year. An exception to LRMC pricing is the retention of a $1.59 per kL charge for usage above 950 kL per year.

forward risks to allow constant adjustment of the strategy to contain the expected costs while ensuring system security.

Overall, the deferral of the second desalination plant by the substitution of smaller schemes has been estimated to reduce the cost of the forward program of source development by approximately $150 million in present value terms under these two very dry scenarios.[28,29] It is notable that these costs are heavily constrained by the requirements to keep the probability of a total sprinkler ban at a very low level – suggesting that a modest shift in this security requirement could allow much greater savings – to be set against the cost of a small increase in this risk.

It is important to recognise, however, that the extent to which recent inflow events have been the result of climate change and drought is still uncertain. In such circumstances, it is appropriate to minimise the expected costs of maintaining a certain level of security. In principle at least, it is appropriate to recognise that this involves probabilities of each of the scenarios being realised and a shift away from deterministic planning based on a single scenario. Actual assessment of these probabilities cannot be done with precision in a context where there are climate trends that are not yet well understood. Any probabilities are necessarily subjective. However, understanding whether and how the strategy might be adjusted under different plausible probabilities is a powerful tool for assessing whether there is a robust strategy, that performs reasonably well across the range – and for testing the robustness of the strategy that emerges from the worst case scenario planning approach.

To illustrate this reasoning, consider probabilities that might attach to each of the above three inflow scenarios (post-1975, post-1997 and post-2000 respectively) to allow the expected cost of the alternative portfolio to be estimated. This could be done against the backdrop of the CSIRO work, cited earlier, suggesting that the climate might well be moving, over the next couple of decades, towards one where the last 10 years is reasonably representative. That analysis does not appear to point to the much drier 7 year series as typical, but it would of course embed periods as dry as this, and drier, periodically. The same reasoning might allow for some optimism that in the short term there could be a return to conditions a little wetter than the last 10 years. We consider two possible characterisations of the probabilities, the first rather more pessimistic than the second.

- If the respective probabilities were set conservatively at 0 per cent for post-1975 inflows, 50 per cent for post-1997 inflows and 50 per cent for post-2000 inflows, the expected cost of the alternative portfolio is $1,006 million compared to an expected cost of $1,160 million under the Corporation's source development strategy (for the same level of security).

- Allowing some possibility of improved short- to medium-term inflows (for example with probabilities of 25:50:25 for the post 1975, post 1997 and post 2000 inflows respectively) demonstrates the advantage of a more flexible portfolio and the circumstances under which this flexibility is likely to be most valuable. Under these assumptions the expected cost of the alternative portfolios would be around $300 million lower than the expected cost of the Corporation's approach.

[28] While it may be argued that under a post-2000 scenario, the Corporation approach allows a greater reduction in groundwater abstractions (approximately 125 GL compared to approximately 140 GL from 2012/13 to 2015/16) it should be noted that restrictions on bore usage can result in savings of approximately 18 GL/year thereby allowing groundwater abstractions to be reduced to approximately 120 GL/year under either the Corporation or options framework.

[29] In the event that the post-1975 scenario eventuates, future costs would be just $40 million under the alternative portfolio, compared to $860 million under the existing Corporation strategy.

It should be noted that the options approach recognises that a significant investment may be necessary in the event that the worst case scenario eventuates. It is useful to consider the analogy with insurance, where there is a choice between a low premium, high excess policy and a high premium, low excess policy. A high premium, low excess policy may prove less expensive in the event of a claim. However, where there is a reasonable chance that a claim may not be needed for some years, low premium, high excess policy can prove more cost effective, in the sense of involving lower expected payments over time.

Further detail on the current approach to procurement and the application of an options approach can be found in the consultants' report on the Authority's web site.[30]

Dispatch

Under the Corporation's procurement model, the decision on which water source is dispatched is taken by the Corporation in accordance with its Metropolitan Operating Strategy, which is developed on an annual basis. This strategy has the purpose of ensuring that the sources used by the Corporation in any given period are the least cost combination of sources given the characteristics of the network and demand. This necessarily involves taking into account the opportunity cost (and loss of system options) associated with drawing down reserves relative to operating water factories or demand management measures. Indeed, there is scope for some substitution between system operation and source procurement and this requires joint consideration of the procurement and operating strategies if expected supply costs are to be minimised.

The Metropolitan Operating Strategy includes private sector sources as well as the Corporation's sources. For example, the latest strategy document includes the water trade from Harvey Water. However, greater consideration needs to be given to the process for establishing whether there are private sector sources that could be incorporated into the Metropolitan Operating Strategy. For example, as a more effective water trading market becomes established, there may be mutual benefit in making it possible for market gardeners or irrigators to sell their water rights, on either a temporary or permanent basis, to the Corporation.

The development of a more sophisticated way of ensuring that water supplies being dispatched are the least cost options is becoming a more significant issue as the existing range of sources come to rely more heavily on relatively expensive desalination. At present, it is likely that the opportunity cost of existing desalination is less than the opportunity cost of using water from the dams (because the use of dam water today increases the risks of greater expenditure in future). However, at some point in the future, with some improvement in inflows this may reverse. The decision process for operating a desalination plant is explained further in Box 2.

[30] www.era.wa.gov.au/2/508/46/inquiry_into_co.pm

Box 2. The Decision to Operate a Desalination Plant

The decision to operate the Perth Seawater Desalination Plant depends on whether the cost of doing so is less than the cost of alternative sources.

The plant has six modules which provide for it to be operated at increments of 24 ML/day up to 144 ML/day. Operating costs increase at a constant rate as each module is added.

The operating costs that vary with output include:

variable electricity – 12 cents per kL;

chemicals – 6 cents per kL;

wear and tear – 6 cents per kL.

In addition, the operating cost of pumping the water through the distribution network is approximately 7 cents per kL.

The avoidable fixed costs of operating the plant are primarily labour costs of approximately 9 cents per kL (based on maximum output).

If the plant were not operated, chemical costs would need to be incurred to maintain the membranes used in the reverse osmosis process.

It should be noted that the payments made to the operator of the plant as a result of a contractual arrangement are generally not relevant to the decision about whether to operate the plant because those contractual commitments would need to be met even if the plant is not operated.

Based on the figures above, the short run marginal cost of operating the Perth Seawater Desalination Plant is approximately 31 cents per kL (note that avoidable fixed costs are not typically included as a short run marginal cost because they do not vary with output).[31]

In comparison to running a desalination plant, the short run marginal cost of dam water is likely to be in the range of 10 to 20 cents per kL, depending on the dam. However, the opportunity cost of using dam water is the cost of bringing forward expenditure on the next major source, and the cost associated with an increased risk of severe watering restrictions, which could be significant in the event that rainfall does not replenish the water that is taken. This opportunity cost should be included in the calculation of the short run marginal cost of dam water.

At present it is likely that the cost of using dam water is higher than the cost of running the desalination plant. However, if there were a significant rainfall event which resulted in the dams filling to a level that deferred the need for the next source option by a number of years, it may be the case that the desalination plant would best be 'mothballed' for a period of time.

Source: data was provided by the Corporation

Conflict of interest

Under the Corporation's proposed procurement approach, the Corporation does not bid for the worst-case scenario project. The Corporation has indicated that it does not need to bid because it has confidence that there will be sufficient interest from the private sector. By not bidding, the Corporation also removes any real or perceived conflict of interest flowing from being both purchaser and potential supplier.

There are also potential concerns about protection of third party intellectual property under the Corporation's proposal, given the role of the Corporation in undertaking pre-feasibility of proposals. These concerns may discourage some private sector investment in developing ways to contribute to a smarter, more cost effective strategy.

Conflict of interest issues also arise in the determination of sources to dispatch. The potential concern is that the Corporation could have a conflict of interest in determining

[31] This explains the apparent discrepancy between these costs and those contained in Table 2.2.

whether private owners of sources are dispatched ahead of its own sources. In addition, the Corporation could have a conflict of interest in operating its own sources in a way that reduces the need for future capacity to be developed by private owners.

However, as a cost-minimising entity, the Corporation should in theory have no conflict of interest. By continually seeking to minimise cost, the Corporation should be neutral as to which sources are dispatched and whether additional capacity is procured from the private sector.

Nevertheless, the perception of a conflict can be a significant deterrent to new entrants and is a relevant consideration in designing the market.

Role of government

The Corporation's approach does not clarify the role of government in the procurement process. Currently, the Government determines:

- the source (witness the decision to proceed with desalination over a pipeline from the South West Yarragadee);
- the timing of the introduction of the next source; and
- the level and duration of demand restrictions, which impact on the timing of the next source.

There is also an area where the Government, surprisingly, does not appear to have a direct role, which is in determining the rule that the Corporation applies when abstracting water from the Gnangara Mound (see Box 1). As was explained earlier, this rule links the abstraction from the Gnangara Mound to the level of storages in the dams and has a significant impact on the timing of the development of additional water sources.

It is possible that any ongoing role by government in decisions about which sources are appropriate to develop could have implications for private sector participation in the process because of the introduction of political risk. Political risk occurs if the process and criteria upon which the decision on which source to develop is uncertain or subject to political intervention. In such a situation, a private sector participant is unlikely to invest significant resources in developing an option that may later be ruled ineligible.

Conclusion

The Authority has identified a range of concerns with the Corporation's proposed approach. The key concerns relate to the following matters.

- The Corporation's proposed model limits the scope for competition to develop innovative alternative supply options.

- The Corporation has a potential conflict of interest. Private sector proponents may be hesitant in submitting alternative source ideas due to concerns regarding intellectual property. The Corporation may be biased towards the option they have identified and developed when assessing alternative options. In addition, private sector proponents may be concerned about the Corporation's role in dispatching both their own and private sources.

- Worst case scenario modelling may not result in the least expected cost investment in bulk water supplies.

- The lack of clarity regarding the role of government introduces the risk that political decisions could interfere with commercial transactions.

3.1.4 Alternatives to the Corporation's Procurement Proposal

The Authority has considered two alternatives to the Corporation's procurement proposal. These alternatives have been developed to address the concerns identified above. The two options are:

- a separate bulk water operator, which would leave the network/retail part of the Corporation responsible for procurement; and/or
- a separate procurement entity.

Each option is discussed in turn.

A Separate Bulk Water Operator

A bulk water operator that was separate from the rest of the Corporation has the potential to improve the procurement process because it would create a clear separation of roles between the purchaser and provider of bulk water services. The Corporation's distribution and retail arm could manage the procurement process by seeking bids from all bulk water providers, thereby reducing any real or perceived biases that may exist if the bulk water provider is also the purchaser of additional sources. A model which utilises a separate bulk water operator has been applied in other States.

In 1998, an outbreak of *Cryptosporidium* and *Giardia* occurred in Sydney's drinking water.[32] Following the outbreak, an independent inquiry found that the management of Sydney's catchments were fragmented between a range of government agencies with overlaps and gaps in responsibilities. The inquiry recommended that a separate catchment management authority be established with responsibility for managing the catchments, dams and associated infrastructure.[33]

In response, the Sydney Catchment Authority (**SCA**) was established in 1999 and now provides bulk water to Sydney Water, which in turn manages the water and wastewater distribution network. The price of bulk water supplied by the SCA to Sydney Water is regulated by the Independent Pricing and Regulatory Tribunal (**IPART**), the State's economic regulator, which also determines Sydney Water's prices.

Similar to the arrangements in NSW, Victoria has a separate catchment management entity, Melbourne Water. Melbourne Water provides catchment management services, bulk water supply and wastewater treatment for the three distribution and retail businesses operating in Melbourne: Yarra Valley Water, South East Water, and City West Water. These distribution and retail business buy bulk water from Melbourne Water, distribute this water to their customers, collect wastewater, and bill customers, before returning the wastewater to Melbourne Water for treatment.

This arrangement, with a single bulk water provider and three retail businesses, was introduced following a 1994 restructure of Melbourne's water and wastewater industry. The restructure took place in an attempt to achieve efficiencies in service provision and maximise benefits to customers.

[32] *Cryptosporidium* and *Giardia* are parasites which can cause gastroenteritis in humans.

[33] Sydney Catchment Authority Annual Report 1999-2000, p3.

In August 2006, the Queensland Government issued the Queensland Water Commission with a reference seeking advice on institutional and pricing matters regarding water and wastewater service delivery. The scope of the reference was subsequently expanded to include an investigation of different ownership structures. The Final Report was provided to Government in May 2007 and made a series of recommendations.[34]

The recommendations included:

- grouping together bulk water supply assets with water and wastewater treatment assets based upon catchment boundaries and reducing the number of owners from 25 local councils to two State owned entities; and
- establishing a further bulk water supplier responsible for operation of the desalination plant and the Western Corridor Pipeline.

The Queensland Government has stated that it will accept the findings of the report and introduce the market structure and arrangements as recommended by the Queensland Water Commission.[35]

Submissions

Submissions to this inquiry have also indicated support for a separate bulk water supplier.

The Department of Water supported the separation of bulk water supply from the monopoly activities such as operation of the network.

> The potential benefits of separating the bulk water segment of the market from the retail segment may include:
>
> - security of supply and sustainability decisions not necessarily driven by retail and/or commercial reasons;
> - water transfer from one market to another provides clear opportunities to apply differential pricing to account for environmental costs and scarcity;
> - enhanced opportunities for competition in discrete market segments; and
> - independent and transparent regulation and governance.
>
> Importantly for this inquiry, the separation of the water industry in other jurisdictions into contestable and non-contestable market segments has not been in conflict with concerns about the security and sustainability of supply.
> …..
>
> [Department of Water recommends that] the Authority:
>
> - note and examine the reasons for the segmentation of the water industry into bulk and retail water in other jurisdictions ; and
> - identify a preferred industry model for Western Australia that balances public interests with commercial interests.
>
> (Department of Water submission, pp 40-41)

The Chamber of Commerce and Industry also supported separation.

[34] Queensland Water Commission (May 2007), *Our Water: Urban water supply arrangements in South East Queensland, Final Report*.

[35] www.abc.net.au/news/newsitems/200705/s1932150.htm

> CCI believes the key is to identify and separate 'monopoly' and 'contestable' water industry activities, and allow market principles to apply accordingly. (Chamber of Commerce and Industry submission, p1)

The Department of Treasury and Finance supported the introduction of competition into non-natural monopoly sections of the supply chain but stressed that any changes should be phased in over time, avoiding a 'big bang' approach.

> [T]he DTF considers that the provision of bulk potable water and bulk wastewater services to be inherently contestable. (Department of Treasury and Finance submission, p15)
>
> [Recommended that] the Government consider the partial disaggregation of the Water Corporation (that is, separation of the Water Corporation's bulk water source division). (Department of Treasury and Finance submission, p v)
>
> A 'big bang' approach of full vertical disaggregation of the WC and the building of a sophisticated market in the short term is not supported. Phasing in reform starting with private sector entry is preferable as it allows accumulation of information and experience (Department of Treasury and Finance submission, p i)

Alinta submitted that separation of bulk water from the network would provide transparency in bulk water supply costs. It noted similarities between the gas network and the water network and suggested that it might consider getting into the water business.

> In the water supply industry, bulk supply is the analogue of production in gas and generation in electricity. In Alinta's view there is a strong case for the separation of bulk supply of water from distribution and merchant/retailing as has been done already in NSW and Victoria. In this way bulk supply costs can be made transparent thus providing appropriate price signals to the proponents of the new sources of supply that will be required to meet demand. However, given that aggregate supply is the primary concern in the water industry, it appears unnecessary to take the further step of separating existing bulk supply operations into competing businesses. (Alinta submission, p3)

Rio Tinto supported a centralised procurement model where bulk water procurement is split from distribution/retail functions, to allow for competition in bulk water provision.

> RTIO considers that a centralised procurement model, in which retail and distribution businesses are separated from the provision of bulk water, offers scope for competitive outcomes in the supply of bulk water. However, for competition to work within this model it is important to ensure that institutional arrangements oversee clear, timely and transparent processes and enable all competitors to have equal access to planning information. (Rio Tinto Iron Ore submission, p2)

However, the Corporation's submission argued against separation of bulk water operations. The Corporation submitted that the synergies arising from the joint procurement of sources and operation of the network provided strong grounds against the separation of bulk water activities out of the Corporation.

> Serious consideration was given to a model that split bulk water sources from the monopoly network operator and distribution. There are two potential reasons to do this:
>
> 1) The bulk water supplier could then be an independent project proponent that could compete with private sector project proponents without a perceived conflict of interest. However:
>
>   - The withdrawal of the Water Corporation from the role of project proponent removes the need to incur the cost of creating two organisations;
>
>   - There are significant synergies in operating the sources and the network, and it is efficient to maintain the ownership of existing sources by the network operator. Given the need for a network operator to optimise source use, the

opportunity for benefits from private sector involvement is primarily in project selection and construction, not operation and ownership.

2) If in-the-market competition between separately owned water sources were to occur:

- The Water Corporation's current view is that the complexity of the source yield/security trade-off with the integrated management of 18 different major sources that include dams, borefields and desalination plants, and reuse means that an efficient market-based outcome is unlikely to be achieved…

(Corporation submission, p20)

Discussion

The Authority sought advice from ACIL Tasman on the costs associated with separating bulk water operations from the rest of the Corporation's activities. After reviewing the literature regarding vertical integration of water suppliers, ACIL Tasman concluded that there appear to be economies of scope between retail and wholesale water supply, suggesting likely modest efficiency gains from vertical integration.[36] Economies from the vertical integration of bulk water supply and distribution functions may arise from:[37]

- the sharing of water resources, pumps, treatment facilities, and pipelines;
- better information availability, especially where joint decisions are needed to determine the optimal size of plants and transmission pipelines;
- technical relationships between the businesses, which can avoid duplication of costs, and better co-ordination of operations;
- reduced transaction costs, such as those associated with contracting with suppliers.

Three studies found evidence of economies of scope in vertical integration: Garcia, Moreaux and Reynaud[38], Stone and Webster Consultants[39] and Torres and Morrison Paul[40]. The findings support strong economies of integration for very small suppliers. The results from Stone and Webster support economies of integration for utilities over a size range that encompasses the Corporation, although these economies are only relatively modest in size. Torres and Morrison Paul found relatively sizeable economies of scope, which were particularly significant for smaller utilities (up to 310 ML/day). Although the Garcia, Moreaux and Reynaud study found that diseconomies of vertical integration arose at a relatively small scale, this result may reflect the particular characteristics of the utilities studied.[41] Overall ACIL Tasman concluded that there is support for economies of

[36] ACIL Tasman noted that these economies would need to be weighed against any potential gains that might flow should separation of some of the activities create scope for greater use of competition as a source of innovation in service provision.

[37] However, the studies reviewed by ACIL Tasman varied considerably in their estimates of the magnitude of gains from vertical integration, and in their findings of the size at which the economies of vertical integration dissipate.

[38] Garcia, Moreaux, M and Reynard, A. (2004), *Measuring Economies of Vertical Integration in Network Industries: An Application to the Water Sector.*

[39] Stone and Webster Consultants Ltd (2004), *Investigation into the Evidence for Economies of Scale in the Water and Sewerage Industry in England and Wales.*

[40] Torres, M. and Morrison Paul, C.J. (2006), *Driving Forces for Consolidation or Fragmentation of the US Water Utility Industry: A Cost Function Approach with Endogenous Output,* Journal of Urban Economics 59, pp104-120.

[41] In that the average vertically integrated utilities were smaller than the average vertically separated utilities and hence may not yet have fully exploited potential size economies.

scope in vertical integration, although they are likely to be modest and other factors, such as regulatory and environmental factors are important.

Advice from Cardno BSD as part of the ACIL Tasman study suggests that there are economies from keeping water treatment and water storage integrated, due to the technical links between the operation of sources and treatment.

On the other hand, bulk water supply has been successfully separated from distribution in Melbourne and Sydney, where the benefits of improved focus and incentives were considered to outweigh any loss of economies of vertical integration or transaction costs.[42]

This assessment may partly reflect the larger scale of the bulk water suppliers in Melbourne and Sydney. Organisational diseconomies of scale will be greater for these larger organisations than for the metropolitan operations of the Corporation. In addition, it appears that economies of vertical integration diminish with size.

Furthermore, there is a legitimate issue regarding whether the structure of size and scope economies could be altering, given the changing mix of technologies being used in water supply. Traditional procurement and operating strategies are well understood, and in most cases there is little differential in opportunity cost of supply from different sources. In most cases, the formal studies would be bedded in these systems. With the move in WA and elsewhere in Australia towards a much heavier emphasis on desalination and demand management technologies, where choice of which source to dispatch has differential implications for future supplies and pressures for source procurement, it is possible that the synergies are intensifying. While this does not necessarily require that bulk supply planning be co-located with operations planning, it does imply a need for close coordination of these planning processes to ensure the best joint outcome across source procurement and operation.

In addition, there are benefits to maintaining centralised procurement and the integration between procurement, source management and operations, as would continue under the Corporation's proposed model.

On balance, while there are arguments for the separation of the bulk water function from the remainder of the procurement, planning, distribution and retail functions, there are a range of reasons which suggest separation is inappropriate. These include:

- the findings of the ACIL Tasman literature review which indicated the existence of economies from vertical integration;
- the advice from Cardno BSD which suggest synergies due to technical links between the operation of sources and treatment;
- the relatively small size of the Corporation compared to organisations in other jurisdictions where separation has occurred; and
- potential increases in synergies in the future due to technological advances such as that due to increased reliance on desalination.

In addition, an alternative model can be developed which addresses the concerns identified earlier but alleviates the need to separate the Corporation's operations. This model involves the establishment of an independent entity tasked with managing bulk water procurement and is discussed in the following section.

[42] ACIL Tasman (2007), *Size and Scope Economies in Water and Wastewater Services,* p39.

Finding

1) There are synergies between the Corporation's bulk water operations and distribution functions which indicate it may not be appropriate at this time to separate these functions.

A Separate Procurement Entity

The Authority has identified a modification to the Corporation's proposed procurement approach that addresses the concerns discussed previously but that does not require a reconfiguration of the Corporation's operations. The modifications to the Corporation's proposal include:

- The establishment of an independent statutory authority into the procurement process, charged with responsibility for ensuring least expected cost balancing of supply and demand, subject to maintaining a level of water security determined by government.[43]
  - The independent procurement entity (**IPE**) would provide confidence to potential investors that all investment proposals will be given due consideration. Independent market operation is an essential feature of all successful utility markets.
  - It would be independent from the Corporation, the Department of Water and government.
  - It would operate under its own legislation.
  - It would be led by an appointed governing body with advice from its own secretariat.
- Instead of having the Corporation determine a portfolio of source options, with input from the private sector, this function would be performed by the IPE. The IPE would procure a portfolio of 'call options', which would give the IPE the right, but not the requirement, to insist on delivery under certain pre-defined conditions. A portfolio of call options would have differing volumes, lead times and durations of supply, recognising a range of potential inflow scenarios. The options would include demand management as well as supply options. It is possible that the options could be traded in a secondary market.
- Instead of having the Corporation propose to government a source option to meet the worst case scenario, this proposal, along with the Corporation's other proposals, would go to the IPE. The IPE would assess the Corporation's proposal against alternative proposals from the private sector. The IPE would be concerned with ensuring that the total portfolio of options available has the collective ability to secure supply cost effectively – and evolves in such a way as to maintain this capability. Each proposal would then be assessed for the value it offers to the portfolio – typically via avoidance of the costs that would otherwise

[43] This is not the same as least cost procurement, and it allows for the possible complementarity between procurement, system operation and demand management strategies in delivering this outcome. It also explicitly does not require that the IPE deliver the outcome – rather that it assumes responsibility for ensuring the outcome is delivered by the collective activities of itself, the Corporation and other suppliers, and water users – including their own supply projects as well as demand management activities.

need to be incurred to sustain security. Each successful proponent would be funded the amount of its bid, which would be expected to be sufficient to prepare the project for construction if and when required. [44] If the Corporation were successful, it could decide to use a competitive tendering method to select the party to design, build, own and operate the source, should the source be required.

- The selection and on-going maintenance of the portfolio of call options would be informed by a model, owned by the IPE, but developed in conjunction with the Corporation – and would draw heavily on system modelling already developed by Water Corporation, but extended into a fuller options context. The model would show the current options likely to be exercised in alternative inflow states. It would be updated regularly based on the latest registry of call options and to reflect the latest inflow assumptions. It would embody the agreed range of scenarios, including the worst case scenario, to be used for planning purposes; and would include facilities for testing the value of a call option under a range of plausible assumptions. The IPE would provide the model to potential proponents to assist in their assessment of the commercial viability of their projects. Making the model publicly available, allowing for 'in-house' testing and development of ideas by potential proponents, would help to protect the intellectual property associated with innovative options, and hence engender incentives for the development of ideas.
- The call options would include demand management measures, including rebate schemes, offers by large water using organisations to curtail demand, and varying levels of restrictions. It might be appropriate for the IPE to set the level of demand restrictions, subject to criteria established by government. Ideally the principles applied should allow for these levels to be based in an improving understanding of the cost of restrictions relative to alternative supply and demand management measures.
- The Corporation would continue to have a role in identifying the appropriate time to construct new sources (or 'exercise' options). However, under the proposed procurement approach the Corporation would make its recommendations to the IPE, which would have responsibility for either approving the recommendation or making an alternative decision. Note that the role may involve deciding to revoke or roll-over existing options. It is likely that the decision to exercise options would be made on an annual basis following the winter rains, say at the end of October.
- Once an option was exercised, the contractual arrangements would be transferred from the IPE to the purchaser of the water, usually the Corporation. The IPE would only hold the call option contracts.
- The Corporation would continue to be responsible for identifying an appropriate annual source management strategy, which involves deciding on the sources to be dispatched over the coming year. However, the Corporation would be required to seek the IPE's endorsement of that strategy and the IPE would have the power to modify the source management strategy if required. This process is best viewed as one of joint planning, across operational and new source development possibilities, to deliver the most cost effective solution to the demands for a secure supply-demand balance – and as a process that engages the highly relevant skills of both the IPE and the system operator.
- The Authority could provide regulatory oversight of the IPE. In these circumstances, the Authority would approve the fees charged and would provide advice to the Minister periodically on the effectiveness of the procurement

[44] For a readiness option, the funding would be a cost bid to sustain the readiness capacity, with agreed costs to be covered in the event of a call on the option.

arrangements. In addition, the Authority could oversight a dispute resolution service.

- Where appropriate, the IPE would be subject to merit review and judicial review.

Box 3 provides an example of how the IPE would seek the development of an additional large source.

Box 3. Example of the contractual arrangements for a large source of potable water	
1 February 2008	The IPE identifies the potential need, in the event that low inflows persist, for a significant source to be developed by 1 November 2014
1 March 2008	The IPE seeks bids for a 'readiness option' or options to have 50 GL of potable water capable of being bought online by 1 November 2014, should it be required.
1 March 2008 to 30 May 2008	Prospective proponents investigate technologies, the risks associated with obtaining environmental and planning approvals, and the likelihood of being dispatched by using IPE's procurement model.
1 June 2008	Two offers are received, each with the likely technology being a desalination plant. a) Proponent 'A' bids $15 million for a development phase of three years and a construction time of three years, with all the risk taken by the IPE through a contract for supply based on capacity payments to cover their capital costs and output priced at the marginal cost of production. b) Proponent 'B' bids $20 million for a development phase of three years and a construction time of two years, with the risk shared between the IPE and proponent through a contract for supply based on capacity payments to cover 50 per cent of their capital costs and output priced at a 25 per cent premium to their marginal cost of production.
1 June 2008 to 31 July 2008	The IPE undertakes due diligence on each proponent to ensure it has the capability to manage the contract and eventually supply the water.
1 August 2008	The IPE enters into a readiness option contract with proponent B because based on the IPE's forecasts their option has the lowest expected cost and it has demonstrated a capability to deliver.
1 August 2008 to 31 July 2011	Proponent B works at designing the project, identifying the integration costs, establishing environmental and planning approvals and securing a site.
1 January 2012	Proponent B seeks and receives authorisation from the IPE to transfer the call option to Proponent X, which has identified a more cost effective technology to meet the contractual commitments.
1 October 2012	The IPE decides to exercise the option as alternative sources have not emerged and inflows have remained low. The Corporation enters into a supply contract with Proponent X. The pricing parameters are set in accordance with the risk sharing arrangements of the original contract (as transferred into the new contract in 2012) and the actual costs of construction and operation of the plant.
1 November 2012 – 30 October 2014	Proponent X constructs the plant.
1 November 2014	On the advice of the Corporation, the IPE decides to exercise the supply option for the 2013/14 year. The Corporation takes 50GL of water.

In many cases, the IPE's activities would be directed more at a strategy based around a range of smaller call options – but the principles remain the same. Crucially though, the assessments involve assessments of the value of projects to the portfolio and not on the simple project economics (volumes and unit costs of water from a project). At times when the dominant concern is with security rather than capacity to meet growth in demand, this approach will favour quite different options from those that emerge when the demands are for volumes of water to be supplied in the short term to meet firm demand growth.

The Corporation's proposed approach fits within the IPE approach outlined. The Corporation, along with other potential suppliers, would submit a proposal to the IPE. Should the Corporation win, it would then proceed to select an appropriate site for the source and gain the necessary planning and environmental approvals. The Corporation would then be able to on-sell the call option to a third party should it wish to do so.

Further similarities exist between the IPE approach and the Corporation's proposed approach. Indeed, the Corporation's current approach can be examined within a call options framework, as is explained in Box 4.

It is interesting to note that at present some call options are pecuniary while others are not. For example, the option to construct a desalination plant at Binningup involves the Corporation incurring expenditure of $21.5 million to get to the stage when the option can be exercised. This amount represents the cost of acquiring the call option. Other options do not involve payments, e.g. the options to use additional water from Gnangara Mound and water in storages. In compiling a portfolio of call options, it will almost certainly make sense to include a mix of options, with different up-front costs, lead times and capability to deliver water over time and cost of actual delivery (both pecuniary and non-pecuniary). Sound portfolio design and management can actively exploit such diversity to better manage the uncertainties regarding future need.

As was explained above, under a more sophisticated options framework, it is likely that a portfolio of call options would have been procured with a structure substantially different from that of the current portfolio. In particular, it is likely that options that provide smaller amounts of water, are temporary or involve only limited irreversible commitment to costs, even if they involve a higher cost per kL, would be highly competitive elements in the overall portfolio, given current circumstances.

Box 4. The Corporation's Procurement Programme Expressed in an Options Framework

Current call options include sources that are available if required and potential sources that are currently being funded:

- water in storage, providing a total amount of 100 GL, available if required;
- groundwater from Gnangara Mound, providing a possible 20 GL per annum (compared with current abstraction) if storages drop below 235 GL, available if required;
- the second desalination plant, providing a potential 50 GL per annum from late 2011 (trigger point is late 2008);
- Logue Brook, providing 5 GL per annum from 2010;
- Eglington, Yanchep and Gingin groundwater options to meet growth in the north of Perth, providing around 50 GL per annum, available when required to meet local growth;
- dam catchment management, which is subject to a trial at Wungong. If successful, there is the potential providing for 30 GL per annum, although the trial won't be completed for 12 years and then there will be some time before the 30 GL is available; and
- a trial of managed aquifer recharge, with the potential to provide around 20 GL per annum by 2014, and up to 60 GL per annum by 2040.

Options exercised and currently being used to balance supply and demand (in addition to dam water and ground water) include:

- desalinated water, producing 45 GL per annum;
- water traded with Harvey Water, producing 12GL per annum;
- scheme water restrictions, producing approximately 20 GL per annum;
- garden bore restrictions, producing approximately 18 GL per annum;
- rebates, producing approximately 4 GL per annum; and
- higher pricing for usage above 950 kL per annum.

Other known options that are not currently being treated as call options:

- South West Yarragadee, providing a potential 45 GL per annum within 2 years;
- Wellington Dam, providing a potential 45 GL per annum in 6 years;
- Harris Dam, providing a potential 10 GL (total) over 2 years;
- in Collie, water from mine de-watering could be transferred to Harris Dam, potentially providing up to 30 GL in total over 5 years;
- an expanded rebate scheme;
- a higher level of restrictions;
- scarcity pricing, which would involve linking prices to storage levels in the dams;[45] and
- water trades with Aqwest, Harvey Water or those using Gnangara Mound.

[45] Scarcity pricing is discussed in greater detail in section 3.2.3

Submissions

There was support in submissions for an independent procurement entity from many interested parties.

The Department of Treasury and Finance expressed concern about the Corporation's role in policy and planning and supported the further consideration of the establishment of an independent entity responsible for planning functions, similar to the role of the Independent Market Operator in electricity.

> The ERA's issues paper questions whether an agency similar to the Independent Market Operator (IMO) for electricity be set up in Western Australia, with the express role of making decisions regarding competitive supply of specified works and operations as well as the need for additional water sources.
>
> Further consideration of this matter is supported. The DTF remains concerned about the extent of the Water Corporation's involvement in policy (in particular, it should be consulted for advice on competition issues but not be the lead agency in these matters). Planning is also an area which could potentially be, in part, undertaken by an IMO. (Department of Treasury and Finance submission, p15)

This was a view supported by the Chamber of Commerce and Industry (**CCI**), which recommended that the roles of the various government agencies involved in water be articulated clearly and that the planning and policy-making functions be separated from water service provision.

> CCI considers that in the interests of successful market reform, consideration should be given to limiting the Water Corporation's role to service provision. A model must be designed that provides a level playing field and removes cross subsidisation. Specifically we believe that Water Corporation must not perform the policy-making and planning functions that could provide an unfair competitive advantage over other participants. In this respect we believe that consolidating and centralising planning and policy-making functions within the Department of Water would be beneficial. (Chamber of Commerce and Industry submission, p2)

The Department of Industry and Resources, with reference to the process that occurred with the application by United Utilities Australia to operate a desalination plant at Esperance and provide bulk water to the Goldfields, noted the lack of a government agency tasked with examining and facilitating potential market entry.

> The continuing [United Utilities Australia] interest in entering the Western Australian water market again raises the need for a mechanism within Government to underpin and assess possibilities for market entry. (Department of Industry and Resources submission, p14-15)

Rio Tinto also recommended that an agency, independent of any licensed water service providers, be responsible for additional water source procurement. In addition, Rio Tinto noted that the Corporation currently has access to planning information, through its seat on the Western Australian Planning and Commission's Infrastructure Coordinating Committee, and because of its source development and planning functions, which gives the Corporation a competitive advantage over other potential entrants.

> It is important that an agency (independent of any licensed water service providers) be given responsibility for the consideration of new supply options, and that processes are transparent and fully integrated with state planning processes to ensure that opportunities for introducing competitive processes for supply of water services are identified at the earliest possible point in the planning process. This institutional arrangement would:

- ensure the earliest possible lead times for the potential private sector providers to identify opportunities;
- test economics of the project; and
- receive the necessary approvals for market entry.

There is also a need to ensure that all competitors have equal access to planning information and that the development of planning serves the best interests of the state as a whole. For example, for a number of years following the establishment of the Water Corporation, the Corporation enjoyed a place on the Western Australian Planning Commission's Infrastructure Coordinating Committee (ICC). However, the Water Corporation has not yet been asked to relinquish its place on the ICC and would therefore have access to planning information that could give it a competitive advantage over any private sector provider wishing to enter the market, or indeed the Water Boards. Similarly, it is evident that the Water Corporation inherited the Water Authority's source development planning functions following the corporatisation, which again has provided them with early access to planning information. It is important that the ERA inquiry consider the best location of planning functions to ensure that, in bidding for new opportunities in the water service provision, all participants (private and public) are treated equally with regard to access to the necessary planning information.

(Rio Tinto Iron Ore submission, p3)

However, the Corporation argued that it should retain its current role as the lead agency responsible for source development. The Corporation argued that, given the complexities associated with managing water and wastewater services, the Corporation was best placed to fulfil the role of a single, centralised agency, with overall accountability for service delivery.

'Security Through Diversity' is the term coined by the Water Corporation to help guide the State through the drying climate crisis since 2001, when the dams have yielded one quarter of their historical average. It describes a multi-faceted approach which includes new water sources, recycling, catchment management, water trading, and a number of initiatives with industry and the community to boost water use efficiency.

The program was conceived and is run by the Water Corporation. It has succeeded because of absolute clarity of accountability - in Western Australia, there has never been any doubt as to who has final responsibility for making sure customers do not run out of water.

The Corporation has been well supported in this role by the Government and the public. The Western Australian Government has made earlier decisions to respond to climate change than its eastern states' counterparts. The public has also responded to our water efficiency measures. As a result, total sprinkler bans and the need to make short-term reactive source decisions have been avoided.

There has been a clear advantage of having one integrated utility - covering most parts of the State - providing advice. Governments of other states, with far more fragmentation in their utility structures, have not had recourse to a single competent party to define and solve the problems, either across their water supply networks or across the entire water cycle.

Reforms now being considered in Queensland, Victoria and Tasmania all involve bringing together disaggregated structures in search of control and efficiency. Around the world, no model has emerged for the water industry which is recognised as better than the integrated model.

A concept favoured by some policy makers is that a utility such as the Water Corporation should take no part in planning or policy determination, leaving the sourcing of new supplies to others and focusing solely on efficient delivery. In practice, this approach has failed as demonstrated by the positions in which the other states of Australia have found themselves.

> …..
>
> Water source planning…is best carried out by a party which has direct customer responsibility. This is because of the need continually to manage and predict both demand and supply, to understand the direct consequence of service failure on both customers and the business and how sources will integrate into the scheme. As the Water Corporation does not propose to compete with the private sector for the provision of future water sources, there is no conflict of interest in the Corporation continuing to undertake this planning.
>
> (Corporation submission, p i-ii)

The view that the Corporation should retain overall planning and management was also supported by the Community and Public Sector Union/Civil Service Association (**CPSU/CSA**) submission.

> The CSA believe that the current procurement policy settings and practices are yielding best practice outcomes for the Water Corporation and its suppliers. (CPSU/CSA submission, p2)

Discussion

In developing its modification to the Corporation's proposal, the Authority has considered the potential arguments against an IPE, although the Authority welcomes comments. The IPE certainly does not remove the Corporation from the planning process. The Corporation would continue with a key role to play in ensuring that the joint procurement and operating strategy was as sound and cost effective as possible. However, its role would be set in a wider institutional framework that does incorporate important checks and balances, including balance against a single entity having sole responsibility for the information used for assessing strategy alternatives.

The arguments as perceived by the Authority, and the Authority's views, are presented below.

- *Water source planning "is best carried out by a party which has direct customer responsibility".* However, it is the Government, not the Corporation that currently sets the security requirements and this is proposed to continue. Further, if the Corporation is successful in bidding the most cost effective option, there would be no change from the current arrangement. In addition, it is proposed that the Corporation have an active role in developing the source procurement model that would underlie water source planning, be responsible for advising on the timing of constructing new sources and for preparing the annual Metropolitan Operating Strategy.
- *The Corporation should be permitted to control its procurement of water sources, as do mining and other companies*. However, companies in the private sector typically operate in a competitive environment, which impacts on their decision making by requiring them to align risk with the expected return. The Corporation does not have this incentive, with the consequence that customers could face paying for poor decision making. The proposed approach would deliver some checks and balances – and testing of strategy – akin to those imposed in these other markets.
- *The selection and management of sources would benefit from input from a wide range of experts, including those involved in operations.* This issue could be addressed by:

- having the IPE work in conjunction with the Corporation in developing the model to guide the selection process; and
- delegating to the Corporation the roles of identifying the appropriate times to construct new sources and preparing an annual Metropolitan Operating Strategy (while providing for the IPE to override the Corporation's advice if appropriate).

- *Recruitment of qualified personnel may be hampered by a lack of opportunities to work across a range of related activities*. This issue could be addressed by positioning this function within a larger organisation, such as the Independent Market Operator for electricity. There will almost certainly be opportunities for movement between the IPE and Corporation within the areas of close interaction – in operational and source procurement planning for overall system efficiency and security. In addition, should the IPE reside within the Independent Market Operator (**IMO**), there would be opportunities for the internal transfer of staff.
- *Expertise at the IPE could be difficult to maintain if the procurement function is an intermittent role linked to major source developments.* This concern would be exacerbated if the second desalination plant were to proceed to construction and inflows were to stabilise at higher levels than recently experienced. However, the role envisaged for the IPE is more than just procuring major source developments. It also involves managing a portfolio of options with differing durations, being open to proposals at any time, going out to the market at regular intervals, and approving the annual Metropolitan Operating Strategy.
- *There would be additional costs associated with a separate organisation.* However, the costs could be reduced by combining the IPE function with an existing entity such as the IMO, there should be some offsets from within the Corporation and these costs are likely to be small relative to the potential costs of failing to discover a more cost effective strategy.
- *Separating procurement into a) securing options and b) contracting for water could reduce the potential for cost savings by maintaining multiple bidders as long as possible.* However, under the IPE approach, the potential for market power at a later stage in the contracting process can be addressed by requiring the risk sharing arrangements to be proposed as part of the original bid, with subsequent pricing details based on actual costs of construction and operation (see Box 3 for an example).
- *The selection of the portfolio needs to consider the cost of integration assets.* The IPE could obtain this advice from the Corporation or the proponent could deal directly with the Corporation to identify these costs before submitting a bid. To an extent, integration costs should also be reflected in the structure of the system modelling capability, to be developed by the IPE in close consultation with the Corporation.

A further issue considered by the Authority is whether the IPE should be incorporated into the Authority's functions. This was a view put forward by Australian Water Resources:

> Currently major water supply projects are subject to an environmental review process. However, given that the cost of water supply projects are borne by the consumer, there also needs to be a process overseen by a body such as the ERA that audits the costs of future water supply options in the planning process. After major water supply projects are operational, there needs to be an audit of cost performance. At every stage of the process, cost calculations and assumptions need to be made available publicly for perusal by interested parties. The ERA should hold hearings where the cost information is queried by interested parties with the Water Corporation having to explain its figures and adjust them where there are errors or obvious deficiencies. A similar process should be set up

> regarding energy usage of major water supply options and health effects. (Australian Water Resources submission, p1)

However, the Authority considers that the IPE would undertake a function that is significantly different from other functions currently undertaken by the Authority. The IPE is effectively operating a market whereas the Authority's main role is to ensure markets work effectively, through either licensing, regulating access, or monitoring (as occurs in relation to the wholesale market for electricity). It would be appropriate for the Authority to monitor the effectiveness of the water market, and possibly facilitate a dispute resolution service, but it would not be appropriate for the Authority to operate the market or undertake dispute resolution.

As an alternative option, the Department of Industry and Resources considered that the Department of Water could undertake a role in facilitating private sector entry.

> Of recent times there has been a lack of water industry policy development and it remains unclear which government agency is responsible for facilitating competition and market entry into the water sector. Previously one of the functions of the OWR [then Office of Water Regulation] was to advise the Minister for Water on opportunities for the introduction of competition. The OWR also ran a number of competitive tenders for the provision of water services within a controlled area, including Kemerton Industrial Park, Preston Industrial Park, Dalyellup, Coral Bay and Hopetoun…. At a larger scale, the OWR also had a number of meetings with proponents for a desalination plant and pipeline to provide water to the Goldfields from Esperance…In the absence of a government water market facilitating agency this role has in part been undertaken by the Department of Industry, where it relates to resource development, Specifically, DoIR assisted both Goldfields Utilities Limited and UUA to undertake feasibility, cost benefit and impact studies on the possibility of providing desalinated water to the Goldfields, and supported them in accessing Government decision makers. However, it is clear a greater role needs to be undertaken within the Department of Water to support this and other industry policy needs of the Minister for Water. (Department of Industry and Resources submission, p14-15)

The Authority does not consider the approach proposed by the Department of Industry and Resources appropriate for the reason, as discussed above, that it does not clearly distinguish the role of government from the role of the procurement entity.

Overall, the Authority has examined the Corporation's proposed procurement model and considers that an alternative arrangement, based on an options framework, and establishing an IPE, would be a more effective way of ensuring that the least expected cost of balancing supply and demand is achieved, subject to the constraint of maintaining security of supply under a worst-case scenario. The main reasons for why the Authority considers an IPE is necessary is because it ensures the fair treatment of bidders and it clearly separates procurement from the roles of government, the Corporation, the Department of Water and the Authority – while ensuring the IPE is able to provide a balanced accommodation of the concerns of all roles, without any explicit conflict.

Importantly, the IPE would ensure decision making was transparent, with the security parameters set by government, the separate trigger points clearly identified (for securing an option, exercising an option and utilising an option), and the decision rule for abstracting groundwater determined in an open and transparent manner.

Draft Recommendation

2) An Independent Procurement Entity should be established with responsibility for ensuring least expected cost of balancing supply and demand subject to the constraint of maintaining security of supply at a level set by government.

3.1.5 Other Bulk Water Procurement Matters

In addition to determining an appropriate model for bulk water procurement, there is a range of matters which must be addressed to develop opportunities for competition. These matters relate to:

- water trading; and
- third party access.

Water Trading

The ability to source water via trading helps to diversify further the potential sources, or call options, of bulk water available to balance supply and demand in the IWSS. A water trade occurs when an individual or entity with a water entitlement trades this entitlement with another party. Trades are voluntary and therefore occur only when they are in the interests of both parties. Trades may be undertaken on either a temporary or permanent basis.

The benefit of water trading is that it facilitates the transfer of water from lower value to higher value uses, helping to ensure that water is put to its highest valued use. In the context of bulk water supply, the potential use of water trading as a source of bulk water is valuable as it may be the most cost-effective next source of water, thereby postponing more costly alternatives and ultimately reducing the price of water to consumers. That is, water sourced via trading may represent the least cost call option in terms of additional sources. Importantly, temporary trading in water or call options over water could be a valuable instrument for delivering greater flexibility to delay irreversible commitment to a high cost project. This could be achieved without the need for the water to actually move to the new use – as long as it is reserved for possible later delivery if and when needed. Viewed in this way, water trading could support readiness options, where the water would, in many cases, later return to its original use in the event that there is an improvement in rainfall.

For example, it is conceivable that the IPE could develop a more cost effective portfolio using either or both of:

- acquiring permanent rights to water in another connected or connectable system and managing the water through temporary trades and options to ensure that it is available when needed but that, subject to this, the holding costs are offset through other valuable use of the resource; and
- the IPE buying call options over water held by others, who would assume responsibility for managing their resource in a manner consistent with their obligations to the IPE.

Western Australia became a signatory to the National Water Initiative (**NWI**) in April 2006, committing it to implement a range of water related reforms, including water trading reforms. The Western Australian Government had already established a Water Reform Implementation Committee, in September 2005, to provide advice on progressing water reform in the State. In December 2006, the Water Reform Implementation Committee, recognising the requirements of the NWI and the importance of establishing an effective water trading regime, released its 'Blueprint for Water Reform in Western Australia'. Of the 72 recommendations contained in the blueprint 10 related directly to water trading. The Western Australian Government then published its Response to the blueprint document in February 2007.

The key water trading recommendations that resulted from this process were the introduction of:

- Statutory Water Management Plans which will define 'consumptive pools' of available water;
- Water Access Entitlements which confer on the holder a share of the consumptive pool; and
- comprehensive water metering arrangements.

These arrangements are necessary to determine the available supply of water, allocate this water, and monitor its consumption, thereby allowing for the trading of water.

It is planned that the legislative reforms and registry systems will be finalised by the end of 2008, though this will depend on the workload of Parliamentary Counsel. Forward estimates provide funds to the Department of Water for water reform-related expenditure until at least 2010. After 2008 this will be needed for implementation aspects.

Submissions

There was general support in the submissions for greater use of water trading where feasible (e.g. Corporation, Chamber of Commerce and Industry, Department of Treasury and Finance).

The Corporation noted that there was the potential for increased water trading, but noted water quality issues, and the need for property rights to be settled.

> The Water Corporation would like to have a greater opportunity to trade water entitlements as a source of bulk potable water. The benefits of trading for the wider non-potable water users (87% of water use) could also be substantial.
>
> A significant constraint on the use of water trading as a source of bulk water for a potable water supply is water quality. Sources need to be managed to drinking water quality standards (e.g. the need to change the management of the Logue Brook catchment from irrigation to drinking water which excludes recreation activities) or expensive water treatment is required. This limits the potential for potable water trades.
>
> Additionally, temporary trading is likely to require utilising transmission assets opportunistically, as permanent investment for intermittent use could result in low utilisation rates and be expensive.
>
> The Water Corporation believes that an efficient and competitive water trading regime requires greater definition and certainty of the property rights associated with water allocations.
>
> (Corporation submission, p vi-vii)

The Department of Treasury and Finance submitted that water trading can result in unanticipated benefits, once tradable entitlements to water have been established.

> Water trading markets are critical to establish the efficient spatial and temporal allocation of water. In the short term it is envisaged that markets will operate mainly through relatively simple bilateral contracts (even in the electricity market these are still by far the largest part of trading).
>
> It is important that the legislation governing this trading is not too narrow and restrictive. There is a need at least for both permanent and temporary trades (which could vary in term). The scope of trading should not be limited without good cause, as the full opportunities it can bring are not always anticipated. For example, a plantation owner located on a groundwater source currently has a de facto water allocation. Including this as a formal entitlement, which could be traded, would provide an incentive to trade the water to a higher value use if the price is right, whereas without a tradable entitlement, there is none. A 'barter trade' (irrigation farm piping for water) has seen 17 GL of water provided to the WC by Harvey Water.
>
> As with all trades, this was mutually beneficial to irrigators and Perth consumers, since the WC has large unfilled dams there may be other trading opportunities, such as purchasing additional water from Harvey in seasons in which they have water excess to their needs. Irrigators with a high value vineyard have the option of short term trades to avoid loss of vines in a drought year, the short term trade effectively helping them manage risks. Other more sophisticated approaches can provide better, but more complex, risk management tools.
>
> A sophisticated market such as eastern Australia's National Electricity Market (NEM) and Western Australia's combination of electricity markets (Retail Trading Market, Capacity Market and Balancing Market as well as bilateral trading) would seem to be premature as the benefits at this time would be unclear and these markets would be expensive to establish and run.
>
> (Department of Treasury and Finance submission, p.iv)

Harvey Water noted the possibility of trades from Gnangara Mound and the Harvey irrigation district.

> Although it is often correctly said, that irrigators use most of the water in WA, the reality is that most of their water supplies are drawn from their own individual relatively small dams or from bores into the upper aquifers. Relatively few farm dams are over 50 ML whereas the North Dandalup Dam built for [Perth Water Supply] is about 75,000 ML, for example.
>
> The cost of aggregating these many small, widely separated farm dams or individual bores into one major system of sufficient size to be useful is too costly to be practical.
>
> In principle it may be theoretically possible to trade water from irrigators but except perhaps for special access to large volume situations such as the Gnangara mound and the irrigation cooperatives, it is not likely to be a major activity. (Harvey Water submission, p2)

Harvey Water also pointed out the scope for trade in non-potable water supply.

> The discussion above on the differences in water is intended to lead back to the opportunities in the market for non-potable water which Water Corporation is not well set up to supply.
>
> As previously inferred Harvey Water knows these opportunities are available and believes that they are complementary to rather than in competition with the core business activities of Water Corporation. While not necessarily direct competition as the inquiry intends, they also offer the prospect of services which meet the requirements of customers more closely or at a lower price, which to our understanding is one of the major goals of competition.

> Harvey Water believes that the opportunities for fit-for-purpose water services will steadily grow as pressure mounts on potable water supplies and the use of that water for non-potable purposes. (Harvey Water submission, p3)

The CPSU also recommended investigation of the non-potable water market, as this is where gains can be made.

> [C]ommercial operators would not be able to enter the potable water market, due to the Water Corporation's 25 years, exclusive license.[46]
>
> The costs would outweigh the benefits due to infrastructure requirements. Commercial operators would only be able to operate in the non potable market. The operators could not deliver non potable (irrigation and industrial) water through potable infrastructure, as per Drinking water guidelines, and would be required to build dedicated infrastructure.
>
> The potable water market is a relatively small market, currently only about 17% of the water market.
>
> Making Industry, Agriculture and Mining more efficient would deliver greater efficiencies – non potable market is where the big gains are to be made. (CPSU/CSA submission, p3)

The Department of Water submitted that water trading may become important in regional areas but it was unlikely to be a significant source of potable water unless new water sources are developed. The Department also noted that there was the potential for windfall gains to sellers of water where that water was sourced at little or no cost.

> The Authority [should] note that:
>
> - water trading may become important in some regional areas but is not expected to be a significant source of potable water for the large population areas of Western Australia unless new water sources are developed from, for example, the recycling of wastewater and stormwater collection; and
> - windfall gains will be made by the sellers of water where the water has been sourced at no or little cost.

The Chamber of Commerce and Industry supported the removal of any constraints to water trading, but also advocated guarding against potential anti-competitive behaviour.

> There should be no constraints on the use of water trading, however, appropriate mechanisms should be in place to avoid cartelling, water hoarding and general anti-competitive behaviour. Furthermore, the State water planning process must be clearly understood and its impact on trading made clear. (Chamber of Commerce and Industry submission, p4)

In addition to considering the submissions in response to the Issues Paper, the Authority commissioned a report from Resource Economics Unit (**REU**) to investigate the potential of water trading as a source of bulk water and to identify any shortcomings of the proposed legislation.

Potential for Water Trading as a Source of Bulk Water

REU identified that while the potential for water trading is limited in regional and remote areas of the State, successful water trades have already taken place within the IWSS, with a transfer of water from irrigation to use as potable water. In addition, the report found that there is scope for further such trades within the IWSS. The areas identified as being most able to support water trading were the three irrigation districts within the

[46] It should be noted that the Corporation no longer has an exclusive license.

Harvey Irrigation Area (Waroona, Harvey and Collie Irrigation Districts), Wellington Dam and the Gnangara Mound.

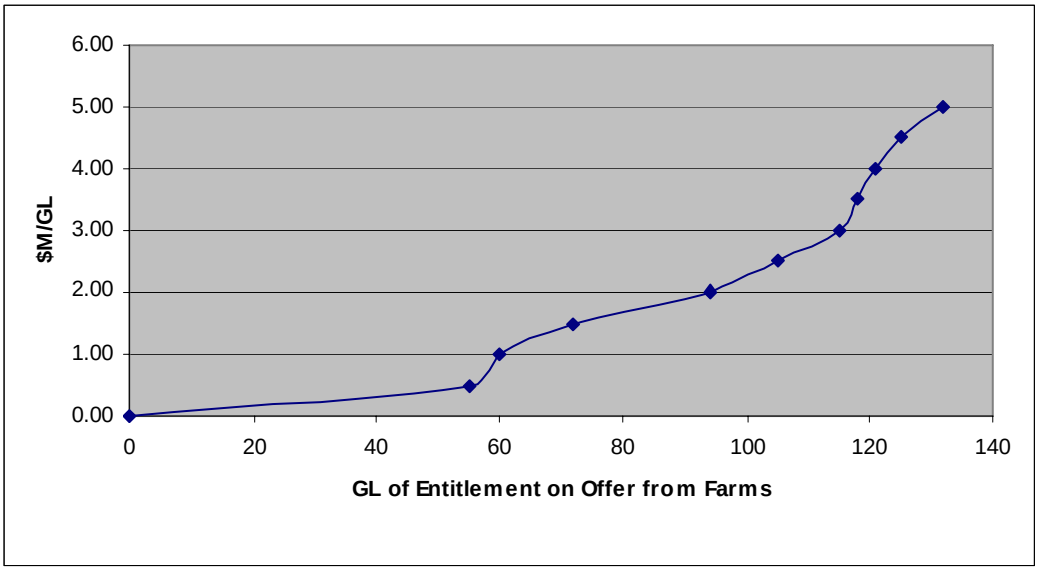
Harvey Water

A permanent water trade has occurred between the Harvey Water Irrigation Cooperative (**Harvey Water**) and the Corporation. Water used previously for irrigation purposes was traded to the Corporation for treatment and use as potable water. The required treatment was no different to that applied in other high-quality reservoirs, because the Corporation acquired sole entitlement to Stirling Reservoir, which has a protected catchment. The arrangements of this trade were such that the Corporation paid Harvey Water an amount which enabled it to undertake piping of open water channels. The water no longer 'lost' to the system was then traded to the Corporation. The piping of these open water channels is estimated to eliminate 17.1 GL of losses, and this is the amount traded to the Corporation. Further opportunities for trades from the Harvey area have been identified by Harvey Water. These include a 5 GL trade from Logue Brook and a 19 GL trade from Collie. These trades would also be based on the elimination of losses through the piping of open water channels.

REU investigated the potential for further opportunities to trade water outside the Harvey region. It found that the expected annual return on water (the value of irrigation water to farmers within the Harvey Region and hence the minimum price a farmer would require to trade their entitlement) was such that, even when transport and treatment costs were taken into account, the likely cost of this water as an alternative IWSS bulk water source would be competitive relative to alternative options such as desalination and new groundwater sources. That is, in a call options framework, water sourced via trades with the Harvey region may represent the least cost call option.

Figure 3.2 shows a derived supply curve for water from all irrigation areas in the south west of the State from Gingin to the south coast. The figure shows that at a permanent trade price of $5 million per GL, there is potentially 150 GL that may be supplied. $5 million per GL is equivalent to $5 per kL as an asset value, or on an annualised basis, approximately $0.40 per kL. This 'farm gate' price is similar to alternative supply options, and was taken by REU as an upper limit for trade to occur. However, the report also noted that the full 150 GL would be unlikely to be available due to matters such as transportation and treatment costs. Despite this, the research indicates that there are significant volumes of water which could potentially be considered for use in the IWSS.

Figure 3.2 Expected Supply of Tradeable Water from South West Irrigation Farms at Different Water Asset Values



Source: Resource Economics Unit.[47]

Wellington Dam

A recent report for the Minister of Water Resources investigated the potential opportunity to use water from the Collie-Wellington Basin as a source of bulk water for the IWSS.[48] The report to the Minister of Water Resources recommended that further work be carried out to establish a definitive water resource development plan, including an economic analysis of the costs necessary to use the water as a source of bulk water for the IWSS.

As an indication of the possible supply available, Wellington Dam has a capacity of 186 GL. Of its capacity, only 85 GL is allocated (which is slightly higher than the average inflow since 2001 of 75 GL).[49] However, not all of this allocation has been withdrawn in recent years, due mainly to poor water quality associated with high salt levels. Under current management arrangements the water in Wellington Dam is not considered for use as potable water due to the use of the dam for recreational purposes. However, the report to the Minister recommended that any future investigation into the use of Wellington Dam as a source of potable water investigate the additional treatment costs which would need to be incurred in order for recreation within the catchment to continue.

The Authority can see considerable value in the further investigation of alternative sources of bulk water such as Wellington Dam.

Gnangara Mound

The Gnangara Mound supplies approximately half of the water requirements of Metropolitan demand, and around 60 per cent in recent dry years. Water is extracted via bores, before being treated and fed into the IWSS. Table 3.1 shows the range of uses of water extracted from the Mound.

[47] Based on Brennan, D, Current and future demand for irrigation water in Western Australia – Department of Agriculture Resource Management Technical Report 307, cited in Resources Economics Unit (2007).

[48] Collie-Wellington Basin Water Source Options Steering Committee (May 2007), *Water Source Options in the Collie-Wellington Basin*, Final Report to the Minister for Water Resources.

[49] Op.cit, pp8-9.

Table 3.1 Extractive Uses of Gnangara Mound Groundwater in 2005

	GL	%
Water Corporation	151	45
Horticulture and Agriculture	61	18
Industry and Services	15	5
Parks and Recreation	35	10
Domestic and Rural Lifestyle	16	5
Home Gardens	58	17
Total Use	**336**	**100**

Source: Department of Environment Consultancy Brief, June 2005, quoted by Resource Economics Unit (2007)

In addition to the uses contained in Table 3.1, pine plantations are a major water extractor on the Mound. Pine plantations cover approximately 12 per cent of the area of the Mound. The water extracted by these plantations is significantly greater than that of native vegetation and as such must be considered as an additional source of extraction.

The large volumes and range of uses of water extracted from the Mound suggest that there is an opportunity for water trading to distribute this water to its most efficient use, possibly for use as an additional source of bulk water within the IWSS. Users on the Gnangara Mound have shown a willingness to trade water on a permanent and temporary basis, accounting for approximately two thirds of all permanent groundwater trades between 2002-03 and 2006-07.[50] However, these are relatively small in volume (2 GL over this period) and do not involve trades with the Corporation for use in the IWSS.

Finding

3) There are potentially considerable additional sources of bulk water available from Harvey Water, the Gnangara Mound and Wellington Dam.

Shortcomings of the Proposed Water Trading Legislation

REU identified the following shortcomings of the proposed water trading legislation:

- restraints on external trades by irrigators within Harvey Water;
- inconsistent treatment of pine plantations;
- a delay in implementing reforms until the science of Gnangara Mound is better understood.

Restraints on external trades within Harvey Water

The requirement imposed by Harvey Water that only water saved through increased efficiency within the system be traded outside of the Harvey Water area is based on a

[50] Resource Economics Unit (2007), p56.

belief that its members would view it as prejudicial to their interests to trade water out of the area, thereby reducing the available supply of water within the cooperative.[51]

The current stance by Harvey Water to resist transfers out of the area (except for system efficiency gains) reduces significantly the likelihood of any trades occurring, despite there being potential benefits to individual members of the cooperative. Each member of Harvey Water owns water in the form of shares in the cooperative plus a corresponding certificate of water entitlement. But this is not tradeable outside of the cooperative. The cooperative itself is the licence holder under the *Rights in Water and Irrigation Act 1914.* By resisting out of areas trades, Harvey Water is restricting the ability of its individual members to trade their entitlement even though they may realise benefits. In addition, the position of the cooperative reduces available alternative bulk water supply options, potentially leading to the early introduction of more expensive sources and thereby increasing the cost of potable water to all consumers throughout the IWSS.

The NWI, as one of its action items, made explicit mention of removing any institutional barriers to water trades. Paragraph 60 (iv) (a) called for the 'immediate removal of barriers to temporary trade' and paragraph 60 (iv) (b) called for the 'immediate removal of barriers to permanent trade out of water irrigation areas' to be phased in over several years with full and open trade by 2014. The Western Australian implementation of the legislative aspects of the NWI principles is expected to be completed by end 2008. However, at this stage it is not known whether (i) Statutory Water Management Plans (**SWMP**) [52] will be developed in the near future for the south west irrigation areas or whether (ii) a Water Access Entitlement will be conferred on individual members of an irrigation cooperative. If Water Access Entitlements are issued to individual members, then the ability of Harvey Water to resist these trades will be removed. However, in the intervening period, there is a risk of committing to alternative, more expensive water sources than otherwise would have been necessary.

In addition, by resisting these potential trades, Harvey Water may be acting in an anti-competitive manner. The matter of potentially anti-competitive conduct by irrigation cooperatives was identified in the Murray-Darling Basin. One of the main arguments espoused by the irrigation cooperatives for disallowing individual trades was that, once a farmer leaves the cooperative (by permanently trading away their water entitlement) the cost faced by those remaining is increased as the cost of maintaining the system must be spread over fewer farmers. A recent Australian Competition and Consumer Commission decision addressed this matter and recommended that the fees levied by cooperatives should include an access fee to cover fixed costs and a water delivery fee to cover variable costs.[53] Members of the cooperative which wish to leave would be required to pay a termination fee related to the access fee such that remaining farmers are not disadvantaged. The adoption of such an approach in Western Australia could alleviate similar concerns for irrigation cooperatives such as Harvey Water.

The restrictions on individual farmers trading out of the Harvey region must be addressed to not only allow irrigation water to be considered as a potential potable bulk water source but also to enable farmers to trade their water entitlement should they be able to derive benefits from so doing.

[51] Resource Economics Unit (2007), p48.

[52] A SWMP is plan developed by government to ensure the appropriate use of water resources within specific catchments.

[53] ACCC (2006), *A Regime for the Calculation and Implementation of Exit and Termination Fees Charged by Irrigation Water Delivery Businesses in the Southern Murray-Darling Basin.*

Draft Recommendation

4) Pricing arrangements within irrigation cooperatives should be adjusted to allow for the trade of water out of cooperative areas by individual members should they choose to do so. A recent decision by the Australian Competition and Consumer Commission provides guidance on a possible approach.

Inconsistent treatment of pine plantations

The CSIRO in Perth has recently undertaken a study attempting to quantify the influence of pine plantations on the Mound (currently unpublished). As an indication of the water usage of pine plantations, REU, based on discussions with the CSIRO regarding its research findings, concluded that replacing pine plantations with native Banksia woodland could result in a net gain in recharge to the aquifer of 42 GL/year.[54]

It is not clear that the matter of pine plantations will be addressed adequately in either the SWMP or Gnangara Mound Sustainability Strategy. As noted previously, pine plantations account for a significant volume of water use on the Mound. Without their specific inclusion, the plan for the management of the Mound will be incomplete. In addition, the inclusion of pine plantations in the consumptive pool is necessary to send appropriate price signals to plantation owners regarding the most appropriate use of their plantation. On this point, REU concluded the following:[55]

> In our view it would seem that where a consumptive pool is established the taking of water by a plantation should be treated like any other abstractive use. Our argument is that the issue of a water access entitlement changes the economics of the plantation enterprise at the margin. If there is a potential purchaser of the plantation's water access entitlement within the consumptive pool this may influence the owner's decision about the sale price of timber, how soon the plantation should be felled, and when land might be returned to an alternative use. This would also reveal the true opportunity cost of retaining the plantation.

Draft Recommendation

5) To facilitate an effective water trading regime, all significant users within a catchment, including pine plantations, should be taken into account when developing Statutory Water Management Plans and water allocations.

Delays caused by lack of scientific understanding

Before an effective water trading regime can be established, a detailed scientific understanding of the dynamic operation of the Gnangara Mound is necessary. Such an understanding is a prerequisite for the sustainable management of the Mound. To this end, the Department of Water is in the process of developing a SWMP which is due to be released in early 2008. The SWMP will, among other things, consider future groundwater allocations on the Mound. The SWMP is to be followed in 2009 by the release of the

[54] Resource Economics Unit (2007), p53.

[55] Resource Economics Unite (2007), pp63-64.

Gnangara Mound Sustainability Strategy, a multi-agency review. It is expected that the SWMP will be updated following the release of the Gnangara Mound Sustainability Strategy.

Progress on the development of the SWMP and Gnangara Mound Sustainability Strategy should be commended. However, the lack of certainty regarding a sustainable yield and future allocations may be leading to the development of alternative bulk water supply options which could more cost effectively be provided from the Mound. For example, additional water sources will be required if the Corporation's allocation is reduced below its current volume (which appears likely). If the SWMP and Gnangara Mound Sustainability Strategy were finalised, the Corporation would potentially be able to more easily source this additional water via trading on the Mound.

REU observed that:[56]

> Until Government gives a clear indication of environmental water allocation policy for the Mound, the value of water access entitlements will be uncertain, discouraging the Corporation from entering the market.

REU concluded that:[57]

> There are significant opportunity costs involved in any delay of institutional reforms in relation to water trading. The resolution of outstanding natural resource management issues, such as in Gnangara and the Collie Basin, is a key constraint. It will be a mistake to delay water trading reforms until these issues are totally resolved.

Further analysis of water trading matters can be found in the report from REU available on the Authority's web site.[58]

Draft Recommendation

6) On the Gnangara Mound, finalisation of the Statutory Water Management Plan and Gnangara Mound Sustainability Strategy is critical. In the meantime, an effective water trading market should be developed, despite a degree of environmental uncertainty.

Other Matters

The Terms of Reference referred to the potential involvement of 'water hoarders' in a potential water trading regime. A water hoarder can be described as an individual or entity which obtains a water allocation purely on a speculative basis without any intention of consuming the water in the short term. The Water and Rivers Commission currently distributes water allocations on a 'first come, first served basis'. The suggested concern regarding water hoarders is that following the replacement of the 'use it or lose it' provisions with consumptive pools, there may be an increased incentive for individuals or entities to obtain allocations without any intention of consuming the water.

[56] Resource Economics Unit (2007) p57.

[57] Resource Economics Unit (2007 p3.

[58] www.era.wa.gov.au/2/508/46/inquiry_into_co.pm

In regard to the effect of the 'use it or lose it' provisions, REU stated that:[59]

> It has been suggested that the 'use it or lose it' approach to licensing employed by the Water and Rivers Commission actually gave farmers an incentive to over-use water. Such an incentive will not exist under the proposed perpetual water access entitlements system.

Further, REU found that:[60]

> The main circumstance under which some accumulation of entitlements might occur could be if a water broker or similar agency sought to accumulate entitlements in order to on-sell them at a later date to a single purchaser as a 'job lot'. This would save the ultimate purchaser time and effort in obtaining the volume of water sought through trade. Such activity would therefore serve a useful purpose and should not be considered to be anti-competitive.

In addition, it was found that:[61]

> The holding of water in the expectation of rising prices might also delay the transfer of water and therefore bypassing low-value trade gains in favour of later transfers to even higher value uses. This is an empirical issue to be judged on a case-by-case basis.

REU concluded that:[62]

> [T]here is little substance to concerns about water hoarding. Moreover, should circumstances arise where anti-competitive behaviour is shown to exist, the Department of Water has determined that existing trade practices legislation is sufficient to deal with it.

The establishment of an effective trading regime is necessary to allow for mutually beneficial water trades to take place. While it has been suggested that the removal of the 'use it or lose it' provisions may create an incentive for hoarding, in addition to the arguments put forward by REU, it is important to note that in the context of trades to the IWSS, water sourced from trading would be one of many competing sources of bulk water. As such, the ability of a trader to exercise any market power would be constrained by the existence of alternative sources.

In regard to the potential for market power, it is worth considering how the matter has been addressed in other markets. The electricity market developed in Western Australia has a requirement that generators bid into the market at marginal cost. This is designed to ensure against abuse of market power by generators. However, when considering a similar requirement to compel water allocation holders to bid into a water market, it is important to note that a key difference between electricity and water is that water can be stored. The ability to store water for the future means that the value to any given allocation holder of water in storage will be based on expectations of future availability. The value of stored water increases as expectations of future shortages rise. This assessment of future value is necessarily a subjective judgement taken by each allocation holder. As such, the value of water will vary between allocation holders. The implication of these differing values is that a requirement to bid water into the market at a legislatively defined value, as occurs in the electricity market, is likely to be impractical in the case of water.

[59] Resource Economics Unit (2007) p61.

[60] Resource Economics Unit (2007) p61.

[61] Resource Economics Unit (2007) p61.

[62] Resource Economics Unit (2007) p61.

In the case of annual allocations that cannot be stored (such as an annual groundwater abstraction allocation), there would be no incentive for an allocation holder to not trade excess water given that it will be unavailable for future use.

While the concerns regarding water hoarding appear to be limited, there is still an ability for a single individual or entity to obtain a significant share of the allocations and thereby be in a position to exert a degree of market power when trading allocations. In such an event, it is likely that the *Trades Practices Act 1997* would be sufficient to address the concerns. However, the Authority will give further consideration this matter, between the release of the Draft and Final Reports.

Finding

7) The concerns regarding water hoarding appear to be limited. However, there is the potential for a single individual or entity to obtain a significant share of water allocations and thereby be in a position to exert a degree of market power. While the Authority considers that the *Trade Practices Act 1974*, would be sufficient to deal with such potential anti-competitive behaviour, the Authority will consider the matter further.

Third Party Access

The Terms of Reference require the Authority to consider:

> opportunities for enhanced competition by introducing third party access regimes to existing water and waste water-related infrastructure, including identifying appropriate principles and mechanisms to implement efficient and effective regimes.

Third party access regimes allow an entity other than the infrastructure owner to use the infrastructure to deliver services to customers, and set out the terms and conditions of use and the access prices that may be charged by the infrastructure owner. The Authority's aim is to consider whether the introduction of some form of third party access regime is appropriate in the context of the Western Australian water and wastewater services sector. These considerations must be informed by an analysis of the likely benefits and costs of introducing such a regime.

This section summarises the preliminary assessment and views of the Authority regarding whether a State-based third party access regime should be introduced in Western Australia.

An effective third party access regime would introduce a more 'decentralised' approach to water planning as it would encourage private sector participation in the development of new water sources, recycling initiatives and demand management approaches. The 'trigger point' at which new investment occurs is the point at which it becomes profitable for an efficient third party to do so. This would reduce the reliance placed on a central body responsible for water and wastewater planning and encourage greater innovation in finding ways to balance supply and demand. For example, there may be confidentiality issues regarding new technologies, or services may be tailored to the specific requirements of the end users.

An effective regime allowing third parties to access water and wastewater infrastructure could facilitate a wide range of services which might be provided more competitively by suppliers other than the infrastructure owner. For example, third parties could seek access to:[63]

- wastewater pipelines and treatment plants, for the purpose of supplying treated wastewater or wastewater by-products to agriculture or industry;
- non-potable water pipelines (in networks where there is a separation between potable and non-potable supplies) in order to supply non-potable water to agricultural customers; and
- water networks in order to transport potable water to customers from an alternative private water source (although this would require meeting health and environmental standards for potable water supply).

As noted in the Department of Treasury and Finance submission,

> ..any future third party access regimes are likely to most easily be realised in the areas of wastewater collection and treatment services. (Department of Treasury and Finance submission, p11)

The Shire of Augusta-Margaret River submitted that:

> There is also an opportunity to provide greater assurance for access to treated wastewater resources. While the Water Corporation is generally supportive of proposals for use of treated water for irrigation of open space, there is no requirement for the Water Corporation to consider third party access. A competitive arrangement that ensured fair opportunity for access to treated water resources will assist in making more sustainable use of water resources through recycling. (Shire of Augusta-Margaret River submission, p1-2)

Third party access regimes are common in the gas, electricity and telecommunications industries, but are less common in the water and wastewater industry. In England and Wales, the water licensing regime allows competing suppliers to develop their own water source and use existing supply networks to supply water to their own customers, or to buy bulk water supplies from other suppliers and sell it on to customers.

There are no current institutional or legislative restrictions on seeking third party access to water and wastewater networks in Western Australia. Under current legislation, potential entrants seeking access to infrastructure of national significance can apply to the National Competition Council (**NCC**) to have the infrastructure declared under Part IIIA of the *Trade Practices Act 1974*.

Should the approach to the NCC be unsuccessful or the findings of the NCC be rejected by the relevant Minister, who has the discretion to set aside the NCC findings, the access seeker can apply to the Australian Competition Tribunal for review of the Minister's decision not to grant access to the infrastructure.

One company which has applied for third party access under the *Trade Practices Act* is Services Sydney, which applied to the National Competition Council in 2004 to gain access to Sydney Water's water and wastewater network (see Box 5).

[63] These opportunities are noted in the submission by Department of Treasury and Finance, p11.

Box 5. Services Sydney vs Sydney Water

- In March 2004, Service Sydney lodged an application with the National Competition Council under Part IIIA of the *Trade Practices Act 1974* for access to infrastructure owned by Sydney Water. Services Sydney planned to construct a tunnel system to transfer sewage from the Sydney Water network, treat it, and sell the treated water.
- In December 2004, the NCC recommended that Services Sydney be granted access.
- The Minister did not respond within 60 days, which under the legislation was deemed a refusal to declare the relevant services.
- Services Sydney appealed against the NSW Government's deemed decision to the Australian Competition Tribunal (**ACT**).
- In December 2005, the ACT handed down its decision, upholding the NCC decision.
- Separately, IPART published a final report in October 2005 on its review of water and wastewater service provision in Sydney. The report recommended that a State-based access regime for water and wastewater infrastructure be developed.
- Services Sydney and Sydney Water failed to agree on access prices. In November 2006, Services Sydney appealed to the Australian Competition and Consumer Commission (**ACCC**) to arbitrate the dispute.
- In July 2007, the ACCC published its final determination on the access dispute, recommending that a retail minus avoidable cost methodology be applied to determine access prices.
- Services Sydney initially appealed to the ACT against the ACCC determination, but has since withdrawn its appeal.

As an alternative to the national access regime under the *Trade Practices Act*, the *Competition Principles Agreement* also provides for State-based regimes for third party access to infrastructure.[64]

The development of a State-based regime, in which the general terms and conditions of access are clear to access seekers in advance, could considerably reduce the risks and delays in obtaining access. Further, while a State-based regime would be based on national competition policy principles established in the *Competition Principles Agreement*, it can also be tailored to specific circumstances within the State.

Submissions

There was general support for third party access in the submissions in response to the Issues Paper, and a strong preference for a State-based regime.[65]

[64] Sections 6(2) to 6(5) of the *Competition Principles Agreement* set out the principles with which State-based access regimes should comply. Appendix 5 contains these sections of the *Competition Principles Agreement*.

[65] See submissions by Water Corporation, Synergy, Alinta, Shire of Augusta and Margaret River, Chamber of Commerce and Industry, Department of Treasury and Finance, Department of Water.

The Corporation stated that it supported the introduction of a State-based regime.

> The Water Corporation supports the implementation of a State-based access regime.
>
> - Other parties should have access to key infrastructure to allow them to compete on a visibly equitable basis;
> - A State-based regime will avoid the cost and legal delays associated with utilising the default Part IIIA of the Trade Practices Act. (Corporation submission, p.vii)
>
> …the Water Corporation believes that the establishment of fair access to our monopoly infrastructure will provide the opportunity for private sector service providers to back their own commercial judgement should they disagree with the assessment of the economics of their proposal under the Corporation's proposed source procurement process. (Corporation submission, p.viii)

The Department of Water suggested that the Authority:

> Recognise that a precedent has occurred with Services Sydney/Sydney Water which can be expected to have flow-on effects throughout Australia. (Department of Water, p 27)

The Department of Treasury and Finance stated the following:

> An access arrangement is needed so entrants can use the WC's natural monopoly infrastructure such as existing transmission pipes to transport bulk water to a retailer or direct to consumers is important in facilitating competition. Access regimes should be developed in the short to medium term. (Department of Treasury and Finance submission, p.iii)
>
> …
>
> [DTF recommends] that Government progress a third party access regime for the WC's natural monopoly infrastructure. (Department of Treasury and Finance submission, p.v)

Synergy supported the introduction of a regime.

> Third Party Access is critical to enable water supplier's access to wholesale or retail markets. Third party access enables suppliers to target new customers or customers already serviced by existing government water utilities. This provides competitive pressures and improved management practices and service delivery to customers. It can also bring new efficient technologies into the water supply chain e.g. desalination, recycling etc. (Synergy submission, p1)

The Chamber of Commerce and Industry stated that it considers that:

> ….that a third party access regime allowing private sector suppliers to distribute water either through a bulk supply contract with the Water Corporation, or direct to individual customers should not be discounted. Private sector operators with an interest in utilising waste water should also be able to access state-owned networks.
>
> …
>
> CCI is concerned to avoid a situation similar to that recently witnessed in NSW, where Services Sydney had to resort to protracted legal action to obtain a Declaration under Part IIIA of the *Trade Practices Act 1974* to gain access to Sydney Water's sewerage transmission and interconnection network.
>
> A state-based regime that is fair, robust, will minimise delay and clearly articulate water quality standards is preferred.
>
> (Chamber of Commerce and Industry submission, p5)

The Chamber of Minerals and Energy did not support third party access for water services to towns serviced by mining companies:

> In relation to situations where resources companies provide water services to towns, it is unlikely that the industry would support any concept of regulated third party access to company water supply systems. (Chamber of Minerals and Energy submission, p2)

Features of a State-Based Third Party Access Regime

For a State-based access regime to conform with the principles of the Competition Principles Agreement, it must comply with sub-clause 6.[66] As in the case of the Commonwealth third party access regime, State-based access regimes must apply to services:

- provided by means of infrastructure which is not economically feasible to duplicate the facility;
- where access is necessary to allow effective competition in downstream or upstream markets; and
- where the safe use of the facility can be ensured at an economically feasible cost and where there are appropriate safety regulations in place.[67]

Sub-clause 6 also states that a State-based access regime should incorporate the following principles:

- a process for seeking coverage of certain infrastructure;
- negotiated access and agreement on terms and conditions between the infrastructure owner and access seeker wherever possible;
- independent arbitration of disputes in the event of a failure to agree on the terms and conditions of access;
- a process for appeals;
- a process for revoking or modifying an access arrangement; and
- separate accounting arrangements for parts of the businesses covered by the access regime.

Sub-clause 6(4)(i) requires that a dispute resolution body must take into account:

- the legitimate business interests of the infrastructure owner;
- the costs to the owner of providing access (but not any losses arising from increased competition);
- the economic value to the owner of any additional investment by the access seeker;
- the interests and obligations of the owner and others in relation to contracts for the use of the facility;
- requirements for the safe, reliable and economically efficient operation of the facility;
- the benefits to the public from competition.

[66] See Appendix 4 – sub-clause 6(3) for the Competition Principles Agreement.

[67] Competition Principles Agreement sub-clause 6(1) and 6(3)(a).

The first State-based regime for third party access to water and wastewater infrastructure has recently been introduced in NSW (the *Water Industry Competition Act 2006*). The general approach adopted in this legislation is summarised in Box 6.

In the NSW regime, the State regulator, IPART, plays a central role in providing advice to the Minister on coverage, approving access undertakings, making access determinations, arbitration of disputes, and administration of the access regime. The Chamber of Commerce and Industry noted in its submission that a State-based regime in WA would require similar regulation:

> A state-based regime that is fair, robust, will minimise delay and clearly articulate water quality standards is preferred. Under this arrangement the tariff structure should be transparent and CCI recommends that an industry regulator should be responsible for regulating access to water and waste water distribution infrastructure. In this respect we strongly recommend that the Economic Regulation Authority should perform this role, similar to the Authority's roles in the regulation of gas, rail and electricity infrastructure. (Chamber of Commerce and Industry submission, p5)

The Department of Water also commented on regulatory requirements for a State-based regime, noting that there is a need for assets and costs associated with access arrangements to be kept separate from other costs and assets of the infrastructure owner's business. This is in line with the NSW legislation, in which service providers are required to submit to IPART cost allocation manuals corresponding to each access service. The Department of Water suggested that the Authority:

> - Review and strengthen the regulatory regime to ensure that it supports a third party access regime.
> - In the absence of industry segmentation, ensure that there is appropriate ring-fencing of the infrastructure/service subject to the access arrangement to minimise margin squeeze and to determine the true assets and costs relevant to the access arrangement being sought.
> - Recognise that competition and market development take time.
>
> (Department of Water submission, p27)

A regime based on negotiated access, supported by independent arbitration and appeals mechanisms, is consistent with other third party access regimes in Western Australia (e.g. gas, electricity, rail) and is likely to be favoured by industry participants, e.g.

> Given that the level of demand for access in the water industry is uncertain, Alinta favours a basic access regime built around the negotiate/arbitrate model as a first step. More sophisticated arrangements can be adopted later if warranted. Alinta supports the 'adaptive management' approach adopted by the NSW Government. (Alinta submission, p3)

Box 6. General Approach to Third Party Access in New South Wales' *Water Industry Competition Act 2006*

Third party access agreements between a service provider and an access seeker in NSW can be reached in two ways:

1) through an access undertaking, proposed by the service provider, setting out the terms and conditions of access, and agreed to by the access seeker; or

2) through Ministerial declaration of infrastructure to be covered by an access agreement.

Access undertakings

- The service provider may give IPART (the regulator) an access undertaking specifying the terms and conditions for access to its infrastructure.
- IPART consults publicly and decides, in accordance with the principles in the Act, whether or not to approve the access undertaking.

Coverage declarations

- The service provider, access seeker or Minister may apply to IPART for coverage of infrastructure to provide a service requiring third party access.
- IPART consults publicly on the application and provides a report to the Minister within four months of the application stating whether the declaration principles in the Act have been met, and recommending the terms and period for the coverage declaration.
- The Minister decides on the coverage application within six months of the application.
- IPART publishes the Minister's decision and keeps a record of infrastructure services that are deemed covered.
- The service provider may also apply to IPART to have an existing coverage declaration revoked. The process for determination is the same as for coverage declarations.

Binding non-coverage declarations

- The service provider may apply to IPART for a binding non-coverage declaration in relation to infrastructure which has not yet been built, or is not currently used to provide water or wastewater services. The process for determination is the same as for coverage declarations.
- The Minister may revoke binding non-coverage declarations at the request of the service provider or if the application contained false, misleading or insufficient information.

Access agreements and determinations

- Access agreements set out the terms and conditions of access for infrastructure services that are the subject of either coverage declarations or access undertakings.
- Where no agreement can be reached between the parties, these terms are set out in an access determination. In the event of a dispute, either party may apply to IPART for arbitration (by IPART or an arbitrator appointed by IPART).
- The arbitrator, having regard to the principles in the Act, including pricing principles, makes a determination within six months of the dispute application to IPART, which is published on IPART's web site.
- Within three months of coverage, the service provider submits a cost allocation manual to the regulator for approval and must keep separate accounts for declared infrastructure services.
- IPART maintains a public register of infrastructure services that are the subject of coverage declarations, binding non-coverage declarations and access undertakings.

Sewer mining

- Sewerage service providers may lodge a notice with IPART setting the terms for sewer mining from the infrastructure.
- Disputes between the service provider and sewer miners may be arbitrated by IPART or an arbitrator appointed by IPART, with the determination published by IPART within six months of the dispute application.

Overall, there is potential for benefits in the form of increased competition in the non-natural monopoly segments of the water and wastewater supply chain from the establishment of an effective third party access regime. Given the uncertainty about the extent to which an access regime will be utilised, the Authority's preliminary recommendation is that a simple model be put in place along the lines of the one recently introduced in New South Wales. A more comprehensive regime could be established following review at a later date.

Draft Recommendations

8) A State-based third party access regime should be implemented in Western Australia.

9) A State-based third party access regime should be based on the principles of the Competition Policy Agreement, including provisions for negotiated access between the infrastructure owner and the access seeker, independent dispute resolution and an appeals mechanism.

Access Pricing

A key component of the terms and conditions of a third party access regime is the principles by which the access prices charged by the infrastructure owner to the new entrant are determined. Ideally, access prices should achieve the objective of making access profitable only to those new entrants which can provide the service more efficiently than the existing service provider.

There are a wide range of possible approaches to setting access prices – these are discussed in detail in Appendix 6. Broadly, they can be classified as being either cost-based ('bottom-up') or retail-minus ('top-down').

- In cost-based approaches, access prices are calculated on the basis of determining the cost incurred by the incumbent in providing access. Cost-based approaches include determining access charges on the basis of short-run marginal cost, long-run marginal cost, or a 'building block approach' where access charges are calculated on the basis of the entrant's share of the average cost of providing the infrastructure service.
- Retail-minus approaches take the retail price as the starting point and subtract from that an estimate of the costs avoided by the incumbent in providing access to determine the access price. The ACCC used a retail-minus approach in its decision regarding access to some of Sydney Waters sewerage infrastructure.[68] IPART also used another form of retail-minus approach in its investigation into the provision of water and wastewater services in Sydney.[69]
  - The ACCC and IPART approaches differ in terms of how they estimate the costs avoided by the incumbent, with the ACCC approach taking a more long-term estimate of the costs. Under the ACCC approach, the *avoidable* cost of providing access is subtracted from the retail price, whereas under an IPART

[68] ACCC (19 July 2007), *Arbitration Report: Access Dispute Between Services Sydney Pty Ltd and Sydney Water Corporation*.

[69] IPART (October 2005), *Investigation into Water and Wastewater Service Provision in the Greater Sydney Region: Final Report*.

> approach the *avoided* cost is subtracted. Avoidable costs are those costs that would be avoided in the longer term. Avoided costs are a shorter term concept.

The use of either a short-run marginal cost or long-run marginal cost approach implies that the access seeker is making no contribution to shared network costs. As such, the Authority does not consider the use of either to be appropriate as it may lead to the under-recovery of costs incurred legitimately by the network owner. This view is shared by the Department of Treasury and Finance:

> While marginal cost pricing is commonplace when determining and setting consumer prices, the DTF is not aware of regimes which make use of SRMC and LRMC pricing in setting access prices.
>
> Certainly, the DTF would caution against third party access prices based on SRMC. SRMC allows for recovery of day-to-day costs, but does not allow for the recovery of capital expenditure – an obvious disincentive for the incumbent to engage in ongoing expenditure on new and more efficient technologies and infrastructure as well as replacement infrastructure.
>
> When used as a method for determining access prices, the LRMC may also lead to an under recovery of the common costs of providing access and the sunk costs made by the incumbent service provider. It is the view of the DTF that LRMC pricing would act as an effective subsidy to market entrants, at the expense of the incumbent service provider.
>
> (Department of Treasury and Finance submission, p13)

In Western Australia, a uniform tariff policy exists for residential water consumption up to 300 kilolitres per annum in the South West, while prices for residential wastewater services are based on property values. A potential problem with a cost based building block approach, given the existing tariff structures, is 'cherry picking' by new entrants of customers in areas that are inexpensive to serve. For example, wastewater treatment costs may be less in areas that are close to sea outfalls, or some areas may have shorter average lengths of sewers because of higher population densities. New entrants could therefore choose to supply only those customers whose service costs are less than the prevailing tariff, leaving the incumbent to serve the remaining highest cost customers and at risk of revenue loss.

Several submissions expressed concern about the potential for cherry picking under a cost based building block approach, and a preference for a 'retail-minus' approach. The Corporation stated that:

> Access charges should be based on the existing retail tariff plus/minus any costs that are incurred or avoided by the retailer to ensure that only viable projects proceed, avoiding the potential to 'cherry pick' the uniform tariff structure.
>
> (Corporation submission, p.vii)

The Department of Treasury and Finance noted that:

> … in an environment of uniform pricing, [a building block approach] may allow for cherry picking where access pricing is location/customer specific.
>
> (Department of Treasury and Finance submission, p13)

WACOSS recommended:

> … that the costs of third-party access be 'averagised' across the entire network to promote the equitable maintenance of all parts of the network and the continuation of universal tariff regimes. (WACOSS submission, p5)

Under a retail-minus approach, the access price is based on the existing structure of retail prices, and subtracts from these the costs which are avoided by the incumbent due to the provision of the service by the new entrant. Thus, the service could be provided by the new entrant if it is able to supply it at less cost than the incumbent. The retail-minus approach therefore is compatible with the existing retail tariff structure.

While the retail-minus approach would avoid the problem of cherry picking, it does require that retail prices are set in a way that is reflective of the costs of providing the services. This is problematic in Western Australia in the case of wastewater service prices, which for residential customers are based on Gross Rental Values and are not cost reflective. Further, the Department of Treasury and Finance noted that there is a risk that retail-minus access prices could lock in monopoly rents to the incumbent:

> The DTF acknowledges the recent ACCC and IPART rulings in favour of [the retail-minus approach] (with regards to the Sydney Services application), and notes that such a methodology may be the most 'pro-competitive' by using the current retail price as a starting block and encouraging competition where third parties are able to provide a service at less than the avoidable cost of the incumbent.
>
> However, the DTF cautions that such a pricing methodology can also lock in monopoly rents established by Government in its pricing policy, and so might result in less than efficient pricing outcomes.
>
> On the other hand, the building block approach may better protect against monopoly rents.
>
> (Department of Treasury and Finance submission, p13)

The Authority accepts that, if retail prices are not effectively regulated to ensure that they are cost reflective, there is a risk that a retail-minus approach could deter efficient entry and/or lock in monopoly rents. For example, if retail prices for wastewater services in a particular area are high (due to high property values), an efficient entrant would be faced with a high access charge (the retail price minus the avoidable costs of the incumbent), which would deter entry. Alternatively, if prices contain some margin above actual costs, due to ineffective price regulation, this would also lead to higher access prices and could potentially deter efficient entrants. From a cost efficiency point of view, however, retail-minus pricing is efficient, as entry is assured only if savings in avoidable costs can be achieved.

The Department of Water noted in its submission that in the UK, retail-minus pricing has been an impediment to access.

> It is understood that price of access based on retail-minus approach has proved to be an impediment to the introduction of third party access in the UK. (Department of Water submission, p26)

The Authority understands that in the case of the UK, these problems are largely due to particular (and potentially inefficient) transaction costs faced by new entrants in that regime, as well as the need for new entrants to pay the unavoidable retail costs as well as their own retail costs.[70]

The Authority acknowledges the concern about the potential, due to the existing price structures in Western Australia, for cherry picking under a cost-based building block approach. The Authority recognises the merits of a retail-minus approach in avoiding these problems and its compatibility with existing tariff structures. However, the successful implementation of a retail-minus access pricing regime in Western Australia

[70] Ofwat (July 2007), *Consultation on Market Competition in the Water and Sewerage Industry in England and Wales*, p18.

would depend on the effective regulation of retail prices to ensure that tariffs reflect the costs of service. In the case of wastewater services, this would require a move away from GRV-based prices, to prices that reflect the costs of wastewater service provision. It would also be necessary to minimise transaction costs, and to carefully consider the calculation of avoidable costs, so that efficient entry is encouraged and not deterred.

In terms of which costs are subtracted from the retail price to determine the access price, the Authority also recognises the merit of the ACCC methodology. This is because the costs to be incurred in service provision are likely to increase over time, due to capital investment and infrastructure expansion, and an avoidable cost approach is therefore likely to result in a larger estimate of costs than the use of avoided costs.

Importantly, given the earlier emphasis the Authority has placed on recognising option value and opportunity cost, it would seem essential that avoidable costs be calculated in a way that takes these effects into account. The IPE, in assessing the need for additional call options, can be expected, for example, to have factored into its modelling the option value of the unutilised wastewater stream, and the option value of spare system capacity that could allow future sources to be brought rapidly into the system. These option values will best be assessed within the type of probabilistic options modelling framework proposed for the IPE – and should feed into any access regime on this basis. Of course, new private schemes could well reduce the need for the IPE to invest in maintaining or adding call options – and both these effects are important in weighing the value and cost of access.

Draft Recommendation

10) Further consideration should be given to prices under the State-based third party access regime being based on a 'retail minus avoidable cost' approach.

Licensing Arrangements

Several submissions noted the need for a strong and transparent regulatory regime to support third party access.

WACOSS recommended:

- that the introduction of third-party access to water and wastewater carriage networks only be considered in cases where relative financial and environmental risks and considerations regarding sustainability have been demonstrated to be acceptable. Such consideration should occur in a publicly accessible and transparent manner;
- that access prices for any future third-party access to the water and wastewater carriage network be centrally regulated in a transparent and publicly accountable manner…

(WACOSS submission, p5)

The Authority accepts the arguments that appropriate regulatory controls would be necessary to support any third party access regime, to ensure that access arrangements meet the required health and safety standards, and that access prices are cost reflective. Regulations would need to be transparent and easily understood by market participants, while not being overly burdensome or costly.

Draft Recommendation

11) Any State-based third party access regime should be supported by sound and transparent regulation to ensure that access arrangements are safe, efficient and achieved at a minimum cost.

Further Consultation

One stakeholder requested further public consultation on the issue of third party access:

> AQWEST considers that the ERA should facilitate a suitable forum [on the issue of a third party access regime] between licensed water utilities and the ERA so that this issue can be discussed and progressed. (AQWEST submission, p5)

The Authority is of the view that the process for developing the terms and conditions for any State-based third party access regime (if this approach is accepted by the Government), along with the supporting legislation and regulatory arrangements, could be expected to take some time and to involve substantial consultation with stakeholders.

As part of this inquiry, if there is sufficient interest, the Authority will consider holding a public forum on all the issues dealt with in this inquiry, including that of third party access.

3.2 Other Structural Matters in the IWSS

This section considers whether any other structural reforms may be appropriate within the IWSS at this time. Structural reform may be desirable if there are efficiency gains arising from economies of scale or scope in the provision of water and wastewater services.

3.2.1 Economies of Scale and Scope

The Authority engaged ACIL Tasman to provide an analysis of the economies of scale and scope that exist in the water and wastewater services sector.[71] The key findings of the analysis were as follows.

- Economies of scale in water supply is a combined measure that reflects economies of volume, customer numbers and service area size. There appear to be substantial economies of scale with respect to volume delivered. However this effect is counteracted by increasing numbers of customers and service area size.
- The minimum efficient scale for a water business has been estimated by different studies to lie within a wide range - between 125,000 and 1 million connections. Some studies suggest economies of scale dissipate beyond around 400,000 connections. There are approximately 600,000 connections is Perth.
- Meta analysis of the empirical studies suggests that economies of scale are largely exhausted beyond 200 ML/day or 73,000 ML pa. The Corporation's Perth operations deliver over 200,000 ML pa.
- There appear to be diseconomies of scale for large and medium large firms. However analysis of a Saal and Parker study suggests that the Corporation is below the size range where diseconomies apply. [72]

[71] ACIL Tasman (2007), *Size and Scope Economies in Water and Wastewater Services.*

- The minimum efficient scale for wastewater appears to be approximately 100,000. There are approximately 600,000 connections is Perth.
- There appears to be little benefit from combining water with wastewater operations although potential synergies may increase with the emergence of wastewater recycling opportunities. Conversely, there appears to be little lost from combined water and wastewater operations.
- A horizontal separation of network/retail businesses may lead to increased dynamic efficiency through competition between similar businesses, that could offset some or all of the economies of scale. This is based on an analysis of the market structure in Melbourne where it has been claimed that competition between network/retail businesses has led to increased dynamic efficiencies.
- There appear to be economies in billing in terms of the provision of billing services over large customer bases and across services. However, retailing services are not considered a natural monopoly service as it is possible to profitably duplicate the services.

Based on this analysis, it is evident that the Corporation's operations in Perth exceed the minimum efficient scale. This implies that there is potential for smaller organisations without any substantial reduction in economies of scale and/or scope.

Of course, operating above the minimum efficient scale does not necessarily imply diseconomies of scale. The key issue here is whether some modifications to the arrangements that reduce the size or scope of individual operations would involve costs that might exceed the potential gains from greater competition and wider incentives for innovation and customer focus. The evidence suggests that sustained cost increases from such a restructure could, if real, be quite modest – provided that the transition and legacy costs are not excessive.

Two possibilities become evident. The first relates to the possible establishment of competing service providers. The second possibility relates to the separation of retail services from the remainder of the network. These two options are discussed in turn.

3.2.2 Competing Service Providers

In the context of the IWSS, and in particular Perth, a model involving the creation of competing service providers could take the form of creating a North/South split in the Corporation's current operations. Given the earlier findings of synergies between the operation of bulk water services and the remainder of the network, an option would be to establish two fully integrated entities with responsibility for bulk water, network and retail functions operating in their distinct areas – North and South of the Swan River. The two entities would operate in accordance with the IPE arrangements as discussed earlier. The benefits of creating separate entities would arise from the ability to compare their performance via a comparative competition approach and the subsequent increased incentive for the entities to seek dynamic efficiencies. Box 7 explains the differences between comparative competition and benchmarking.

[72] Saal, D. and Parker, D. (2005), *Assessing the performance of water operations in the English and Welsh water industry: a panel input distance function approach*, Aston Business School Working Paper RP0502 *and* Water Corporation Annual Reports.

Box 7: Comparative Competition versus Benchmarking

A comparative competition regime can be thought of as a competition between each of the businesses. The performance of each business is considered in terms of the costs incurred and the service levels achieved and are ranked against the performance of all other businesses.

The ranking process seeks to take into account each business's specific circumstances (for example, any operational circumstances that may differ across the businesses and justify either higher or lower costs).

The ranking process requires the use of detailed financial and economic modelling to account for the differences in operating circumstances and is therefore more straightforward where the differences are few.

The companies which are able to keep to a minimum their operating costs and the costs of maintaining their assets are rewarded by being able to retain these cost savings through higher relative prices for a set period of time. These cost savings are later passed on to customers in the form of lower prices. Those companies whose costs are deemed to be excessive relative to the other businesses see their prices reduced.

Comparative competition is not benchmarking alone.

- A comparative competition regime implies that there is a direct link between the historical performance of a business relative to its counterparts and its future revenues.
- A benchmarking approach typically consists of simply comparing the costs of a business with similar businesses and making a judgement call as to whether the performance of the business is reasonable.

The intention of a comparative competition regime is to recreate the conditions of a competitive market where efficient businesses are rewarded via higher profits and inefficient businesses are not.

Submissions

Several submissions addressed the possible creation of competing service providers.

The Corporation stated that:

> Comparative competition does not require the creation of comparable businesses as Perth can be compared to other capital cities and individual activities can be benchmarked against other organisations. (Corporation submission, p ix)

However, later in the submission, the Corporation noted that:

> The problem with comparison based on this data [data from other organisations] is that the operating conditions of utility are significantly different (for example different water sources, topography, city layouts and density, regulatory environments, cost allocations and asset valuation methodologies, and international purchasing power).
>
> Potential solutions to these problems are:
>
> - Extensive analysis to try and normalise the data to make it comparable;
> - Benchmark specific activities that can be measured like for like;
> - Create comparable structures within a city that are operating under similar circumstances and can be directly compared.
>
> (Corporation submission, pp22-23)

On the matter of the possible creation of comparable structures within a city, the submission cited two examples; the first in Perth and the second in Melbourne. In regard to Perth, the Corporation stated that it had:

> …created two comparable management regions, Perth North and Perth South, which allowed comparison of relative performance. Additionally, there are two private contracts for the operations and maintenance services within these regions. (Corporation submission, p23)

WACOSS stated that:

> The experience of comparative competition, or benchmarking competition in water and wastewater service markets internationally has been varied. This variance owes itself to the different states of ownership and disaggregation of services that might exist in any jurisdiction. In principle, comparative competition may provide sufficient market signals to providers to stimulate increases in various types of efficiency, the resultant savings being passed-on to consumers. Some concerns remain, however, around how such a system may be implemented in a West Australian context…WACOSS identifies equity issues in pricing and the provision of Community Service Obligation (CSO) payments as potentially posing problems. It is also questionable as to how effective comparative competition would be in Western Australia without the disaggregation of the water and wastewater industry, which WACOSS does not support. (WACOSS submission, p 10)

The Department of Water stated that:

> comparative competition should not be confused with performance monitoring, such as that been undertaken by the NWI. (Department of Water submission, p20)

In addition, the Department noted that there was no suggestion that the performance monitoring, in terms of service quality and price, be used to establish targets and incentives such as those which would occur under a comparative competition framework.

The Department of Water recommended that the Authority recognise:

> - that true comparative competition is not a practical option for the regulation of the water industry in Western Australia; and
> - that performance benchmarking offers the opportunity for some external assessment but needs to be undertaken on a level playing field.
>
> (Department of Water submission, p21)

Discussion

Experience in other jurisdictions indicates that there is the potential for the establishment of competing service providers. Despite the structural differences, the experience in Melbourne provides an interesting case study for considering whether the Corporation's Perth operations could be configured differently.

The Melbourne water industry comprises Melbourne Water and three network/retail businesses (City West Water, South East Water and Yarra Valley Water). Melbourne Water provides bulk water and wastewater services to the three network/retail businesses. The network/retail businesses are each responsible for the provision of network (water and wastewater) and retail services to distinct geographic areas. No retail competition exists.

A review of the metropolitan water sector is underway currently in Victoria by the Victorian Competition and Efficiency Commission (**VCEC**). A draft report is due in early December

2007 and a final report in February 2008. As part of the review, the three retail businesses have provided submissions to the VCEC. In their submission, the retailers argued that the industry structure has brought benefits including:

- significant improvements in customer service;
- a cultural shift towards continuous improvement and innovation; and
- substantial productivity gains.

In addition, key performance indicators published by the retailers show significant improvements over the period 1993/94 (prior to reforms) to 2006/07. For example, South East Water reports improvements of 19 per cent in overall customer satisfaction, with water quality complaints improving by 55 per cent and sewer blocks per 100 km of main improving by 59 per cent.[73] The network/retailers also point to significant reductions in costs per property that have been achieved over the period.[74] They also cite a recent study by Coelli and Walding, which concluded that the Melbourne businesses were on the efficiency frontier using total factor productivity measures.[75] In its 2005 review of the structure of the water industry in NSW, IPART concluded that the process of restructuring the Melbourne Water industry "revealed many opportunities for improving productive efficiency and introduced a more productive workplace culture".[76] However, Melbourne Water stated that there was limited capacity for the disaggregated structure to provide further significant gains.[77]

As noted in its submission, the Corporation had previously created an internal North-South split in pursuit of efficiencies some years ago. This was partially reversed some years later. The Corporation stated that it:

> …made the decision that the cost of maintaining two regions, and the issues around subtle differences in practices for customers are not justified from the ongoing benefits of comparative competition. The ongoing benefits of having separate operations and management contracts have been reviewed against the additional overhead costs, and the decision was made to continue with separate operations and maintenance contracts. (Corporation submission, p23)

That is, the Corporation still maintains a North-South split at an operational level with shared senior management. The retention of a split at an operational level suggests that efficiencies from separation do exist.[78]

It should also be noted that the Corporation makes extensive use of competition in the provision of its services through competitive tendering arrangements. The Corporation advises that 90 per cent of its capital works and 50 per cent of its operating expenditure involves competitive tendering.[79]

Furthermore, the efficient operation of the Corporation is considered by the Authority when undertaking reviews of the Corporation's operations for price recommendation

[73] ACIL Tasman, *Size and Scope Economies in Water and Wastewater Services,* p41.

[74] South East Water (2007), initial submission to VCEC review, p25.

[75] Coelli and Walding (June 2005), *Performance Measurement in the Australian water supply Industry*, quoted in City West Water (2007), submission to VCEC inquiry into reform of the metropolitan retail water sector.

[76] IPART (2007), *Literature Review: Underlying costs and industry structures of metropolitan water industries*, p36.

[77] Melbourne Water (2007), Submission to the VCEC inquiry into reform of the metropolitan retail water sector, p8.

[78] ACIL Tasman, *Size and Scope Economies in Water and Wastewater Services*, p42.

[79] Water Corporation submission, p1.

purposes. The Corporation is therefore able to only recover the prudent and efficient cost of operating the network. In assessing the efficient operation of the business, the Authority engages expert engineers who make use of techniques such as benchmarking when providing recommendations to the Authority. The Corporation has the incentive to seek efficiencies and cost savings in all of its operations.

The Authority's preliminary view is that a permanent North/South separation of the Corporation is unlikely to yield significant benefits in Perth at this time for the following reasons:

- a North/South split already exists at an operational level;
- the high degree to which competitive tendering is used suggests significant efficiencies have already been achieved; and
- the continuing oversight of costs by the Authority is placing pressure on the Corporation to achieve efficiency gains.

Overall, there are likely to be minimal further gains from any disaggregation of the Corporation in the Perth area at this time particularly after taking into account the costs that would be incurred in implementing such a separation.

Finding

12) There are likely to be minimal gains from any disaggregation of the Corporation's Perth operations at this time.

3.2.3 Retail Service Contestability

Retail services mainly include providing bills to customers and answering and responding to customer queries. In regard to retail services, ACIL Tasman concluded the following:[80]

> Billing services are often quoted as an activity subject to economies of scale, and scope in terms of joint billing of water and sewerage. Economies of scale would seem likely, with the use of a billing system able to handle increased numbers of customers relatively easily.
>
> In England, a number of water only companies provide water services alongside a WASC supplier of sewerage services. Billing is done jointly, with the water only company contracted to include sewerage on the bills sent to customers. In this manner, the loss of economies of scope through separate provision of services is minimised.
>
> Much of the cost involved in customer service is involved in answering and responding to customer queries. The ability to contract call centre services suggests that disaggregation of the industry would involve only minimal loss of economies of scale. Technical responses to service problems are unlikely to involve significant economies of scale and scope, as the work load will relate to the number of customers (and possibly the age of infrastructure).
>
> Retail services do not display the characteristics of a natural monopoly and as such the introduction of competition is feasible. In addition, there would appear to be little lost from disaggregation of incumbent operators.

[80] ACIL Tasman (2007), *Size and Scope Economies in Water and Wastewater Services*, p74.

Submissions

Many of the submissions received on the Issues Paper addressed the matter of retail contestability and the introduction of Full Retail Contestability (**FRC**).

The Corporation argued that retail costs represent less than five per cent of the total cost of service provision and that while other service providers may achieve economies of scale by offering bundled services, this would necessarily be at the cost of economies of scale in the Corporation's billing and customer service processes. The Corporation argued that it would therefore be unlikely that after including the costs of setting up a retail market there would be net benefits.

> The Water Corporation's assessment is that there is little scope for net benefits to be gained from introducing wide scale retail competition. This conclusion is based on:
>
> - Retail costs represent less than 5% of the total cost of service provision. While other service providers may achieve economies of scale by offering bundled services, this would necessarily be at the cost of economies of scale in the Water Corporation's billing and customer service processes. It is unlikely that after including the costs of setting up a retail market there would be net benefits.
>
> (Corporation submission, p24)

The Corporation did submit that:

> A potential benefit of retail competition is that the prices generated could reveal customers' real preferences. It is difficult to determine what customers really value through surveys and consultation when they don't have to back their stated preferences with their own money.
>
> (Corporation submission, p25)

The Corporation also stated that if different levels of security were offered to customers, it would be inconsistent with the current government policy to apply uniform restrictions to all customers.

> Alternative levels of security of supply could be offered (eg customers who pay more could avoid restrictions).
>
> - Efficient valuation of security of supply requires customers to make an informed decision about consumption today compared with the chance of restriction tomorrow. An informed decision on the benefit the customer is paying for (ie avoiding the probability of future restrictions) is complex and difficult to understand.
> - Current Government policy is to apply uniform restrictions on all customers as a water efficiency measure. It would be inconsistent to allow customers to buy their way out of the restriction regime.
>
> (Corporation submission, p25)

The Department of Treasury and Finance supported retail competition and noted that it could be attractive to utilities such as Synergy or Alinta, or to new bulk suppliers, but expressed concern about the potential dominance of the Corporation in a retail market.

> Water retailing competition is supported. Retailing is contestable and it could be attractive to utilities such as Synergy or Alinta to exploit the economies of scope that there may be from adding water retailing to electricity and gas trading. Also, any bulk water supplier who enters the market may seek to retail water as well. Retail entry would not be encouraged if entrants can purchase water only from the Water Corporation, which is itself a retailer. (Department of Treasury and Finance submission, p.ii)

The Great Southern Development Commission submitted that retail competition was unlikely to be viable given the low cost nature of water. It also noted that such competition may conflict with conservation objectives if it promotes higher sales.

> The fact that water is a relatively low cost commodity (compared with electricity and gas) with high infrastructure costs (similar to electricity and gas) suggests that the introduction of certain competitive elements, such as contestable retail sales, are unlikely to be viable for suppliers other than Water Corporation and could therefore be eliminated from consideration.
>
> Furthermore, such competition 'within the market' does little to encourage conservation as competitors will aim to increase their level of sales. This competitive mindset is in opposition to current government programs aimed at curtailing water use.
>
> (Great Southern Development Commission, submission, pp1-2)

The Chamber of Commerce and Industry stated that retail competition could become viable if upstream competitive reform is achieved. The submission argued that if a company is willing and able to enter the market on commercial grounds it should be afforded the opportunity.

> CCI considers that trading and retail competition could become viable if upstream competitive reform is achieved in the water market.
>
> Water providers may wish to sell their water direct to customers through bilateral trading mechanisms, which could be viable where non-potable or treated wastewater can be traded for use in industrial process. Providers may also see commercial opportunity in directly retailing potable water to industrial, commercial or residential customers.
>
> We consider that if new water retailers or retailers currently selling other utility services are able to purchase bulk water from suppliers and on-sell to consumers, considerable efficiency gains may also be made. Retailers may be positioned to 'bundle' services for water, electricity and/or gas together, giving consumers the option of consolidating their utility bills.
>
> Ultimately the decision to bilaterally trade or retail water should be a commercial decision. Whilst the argument is sometimes mounted that metering cycles and billing systems could be problematic, fundamentally, if a company is willing and able to design appropriate structures, they should be afforded the opportunity to enter the market. Proponents should assess the financial viability of a trading or retailing scheme, including determining the costs of metering and billing, and reach a commercial decision regarding whether to participate. Appropriate licensing regimes would need to be established to facilitate this.
>
> CCI strongly supports the establishment of mechanisms that would allow the private sector to trade or retail water if commercial opportunities existed. CCI acknowledges, however, that an assessment of the benefits and costs of implementing such an arrangement should be undertaken.
>
> (Chamber of Commerce and Industry submission, pp5-6)

Alinta supported the removal of barriers to retail contestability in the water and wastewater industries:

> Full retail contestability was a fundamental aspect of the reforms in the gas and electricity industries, and access to monopoly infrastructure services was essential for that to occur. Without access, competing retailers would not be able to deliver electricity and gas to their customers. The costs of establishing access and systems to support full retail contestability in electricity and gas have been substantial.
>
> As far as Alinta is aware, there is no evidence that *full* retail contestability would be an appropriate policy objective in the water and wastewater industries. Having said that, it is desirable to remove barriers to retail contestability and provide for access to facilitate

> innovative models that may involve direct retailing and/or access to infrastructure. (Alinta submission, p3)

Synergy argued that a prerequisite for retail competition was a competitive wholesale water or wastewater market.

> In our experience, what is critical to ensuring retail competition are the following:
>
> - Regulated tariffs set at levels that reflect costs of supply and provide margin headroom for competitors to offer market based contracts.
> - Retailers can purchase supplies from a competitive wholesale market.
>
> In our opinion, there would need to be major reform of retail pricing in the water market to enable the efficient rationing of water to those users who value it highly and to provide signals for new sources of supply. This would need to be addressed prior to the opening of retail competition in the water and wastewater sectors.
>
> Having a competitive wholesale market entails the following:
>
> - Many wholesale sellers and buyers of water and wastewater services.
> - Third party access to monopoly controlled water and wastewater transport infrastructure.
> - Creation of a market operator to administer the market, enforce market rules and to ensure that there is sufficient capacity (wholesale supply) to meet a prescribed reliability criteria (1 in 50 year water restrictions etc).
> - Visible short run price signals to enable the market to be in balance.
> - Visible long run price signals that enable market participants to make appropriate investment signals.
>
> Without a competitive wholesale water or wastewater market, there is no guarantee that customers will benefit from market deregulation, since wholesale water or wastewater participants will be able to utilise market power to push up wholesale prices. (Synergy submission, p1)

WACOSS was against the introduction of FRC in the water and wastewater service sector, on the grounds that divestment of responsibility for service provision from the Government to private entities could be detrimental to consumers, particularly low income and other vulnerable customers.

> [WACCOSS recommended] Full Retail Contestability in the retail sector of the water and wastewater service sector not be considered as an appropriate option in Western Australia for the provision of water and wastewater services. (WACOSS submission, p5)
>
> …
>
> Full Retail Contestability, or direct product competition, is being progressed in the Eastern States within the National Energy Market. WACOSS, in previous submissions to the ERA and the Office of Energy (OOE) has asserted that this type of competition, which potentially entails total divestment of state responsibility for pricing and service provision, poses significant risks for consumers in the context of essential service markets.
>
> Many of WACOSS's specific concerns stem from the real experience of consumers living on lower incomes, or else facing other types of vulnerability, particularly in the Eastern States of Australia where FRC has been introduced for small users. In the context of water, the potential risks to small consumers have been recognised by the UK Government, which has instead introduced a type of comparative competition between vertically integrated service providers.
>
> …

> It has been demonstrated within electricity markets in Australia subject to [full retail competition] that small consumers experience significant switching and search costs14. These costs can include contract termination fees and connection fees which can be accrued by people wishing to switch providers. Small consumers also potentially face significant difficulty in differentiating between services offering identical, or similar products.
>
> …
>
> Evidence suggests that people living on lower incomes and people residing in regional areas may also not have been well-served by the introduction of FRC in the Victorian electricity market. This may be partially due to the lower potential for profit involved in serving these consumers. WACOSS expects that this situation would prove to be analogous in the context of FRC in the water and wastewater service sector.
>
> (WACOSS submission, pp10-12)

Discussion

The benefits of competition in the provision of goods and services can be seen through increased product choice, and alternative price and quality characteristics. An effectively operating market generally reveals an understanding of consumers' preferences and willingness to pay for goods and services of given prices and quality. An understanding of these preferences and willingness to pay can be sought through research studies. However, such research studies have limitations and may not provide service providers with information comparable to that revealed through the workings of a competitive market as a basis on which to make sound investment decisions. An alternative to research studies is to create a market price through the establishment of a contestable market.

The introduction of FRC for water and wastewater of the sort developed in the electricity and gas markets of Eastern Australia would require significant investments in establishing a contestable market. These investments would include establishing the market rules and a mechanism by which customers could switch retailers, an approach to dealing with the failure of a retailer, and other administrative matters.

The cost of introducing a comprehensive fully contestable retail market is likely to be substantial. An indication of likely benefits and costs can be gauged by considering developments in other industries. In Australia, FRC has been introduced most recently in the Queensland electricity and gas industry. Energex, the electricity network business responsible for implementing the contestable market, has made a pass-through claim to the Queensland Competition Authority of $82.7 million.[81] Similarly, Allgas and Envestra, the gas network businesses in Queensland, have made claims for $23.1 million and $20.9 million respectively.[82]

In Western Australia, the Office of Energy (**OoE**) is currently undertaking a review of the retail electricity market.[83] One of the key elements of the review is an assessment of the benefits and costs of implementing FRC for electricity in Western Australia. The OoE is releasing an issues paper in late November 2007 and seeking comments before releasing a draft recommendations paper in early January 2008. A final recommendations paper is expected by late February 2008. The analysis contained in these reports will also give an indication of the likely cost to be incurred in establishing a regime similar to that which would be needed for establishing a fully contestable retail market for water and wastewater.

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[81] www.qca.org.au/electricity/cost%5Fpass%2Dthrough%5Fapplications/frc-energex.php

[82] www.qca.org.au/gas/cost_pass-through_applications/AllGas.php and www.qca.org.au/gas/cost_pass-through_applications/Envestra.php

[83] www.energy.wa.gov.au/2/3240/64/electricity_ret.pm

On balance, the Authority considers it is inappropriate to consider the introduction of comprehensive fully contestable retail market at this time given:

- the lack of a detailed benefit-cost analysis;
- the likely magnitude of expenditure necessary in establishing a contestable market;
- uncertainty surrounding the number of potential market entrants; and
- demand for a contestable market.

Rather, a more prudent approach would be to refrain from making a decision on the appropriateness of comprehensive FRC regime for water and wastewater until such time as a detailed benefit-cost analysis can be undertaken. It would be valuable for the analysis to be informed by experiences in other industries and jurisdictions, especially any decisions that follow on from the OoE's current review. As such, it is appropriate that the analysis be completed in, say, five years.

Similarly, there may be value in allowing a degree of contestability for wastewater services at this time given a possible need for such contestability if a third party access regime is to be able to deliver recycled water. The appropriateness of such contestability could be considered on a case-by-case basis as access terms and conditions agreed upon. The Authority will consider this matter further prior to the release of the Final Report.

While it may currently be premature to introduce a comprehensive contestable market, there is value in allowing large industrial customers the opportunity to select an alternative supplier should one be able to offer a preferable product to that offered by the Corporation. Allowing large customers to choose their supplier would increase further the price signals in the market and may allow for the development of innovative sources. In the first instance, the costs associated with introducing contestability would be met by the supplier (it would be inappropriate for all consumers to pay for the establishment of a contestable market given the uncertainty surrounding potential market entrants and demand for a contestable market). It is envisaged that the supply arrangements may be undertaken via bilateral contracts thereby avoiding the need for the development of a contestable market. However, it is envisaged that should sufficient interest for a contestable market exist, the completion of a review in, say, 5 years, would reconsider this approach. The Authority will give further consideration between its Draft and Final Report to the threshold (size) at which contestability should be introduced between the Draft and Final Report. Table 3.2 shows that 47 per cent of annual non-residential water sales is by customers using more than 50,000 kL.

Table 3.2 Non residential annual water usage

Annual Water Use (kL)	Number of Meters	Total Consumption (ML)	Total Consumption %
< 5,000	16,809	8,847	28
5,001 – 10,000	390	2,704	9
10,001 – 20,000	171	2,383	8
20,001 – 30,000	59	1,448	5
30,001 – 50,000	27	1,026	3
> 50,000	68	14,608	47

Source: Water Corporation

Draft Recommendation and Finding

13) Retail contestability is premature for small customers at this time. However, to facilitate third party access and the potential use of recycled water, contestability should be considered on a case-by-case basis.

14) Retail contestability should be introduced for large customers.

Water usage pricing

Despite the introduction of a contestable market for customers (excluding large customers) being judged premature at this time, it may be possible to develop an alternative way of providing both consumers and investors with the price signals necessary to create a more efficiently operating market. To gain an appreciation for this, consider the operation of a contestable market. In the operation of a contestable market, the price of a good can be represented by three elements: the cost of production, the cost of depletion (i.e. a cost associated with consuming a good now such that it cannot be consumed at a later date), and the cost of externalities.

If the price of water were determined in a contestable market, the price would rise in times of shortage, representing the fact that the water was being consumed and would therefore not be available for later use. In a fully functioning market, the rise in price would be such that it would avoid the need for non-price restrictions. Conversely, price would fall when water was plentiful.

A market-determined price has two effects. First, consumers are exposed to prices which signal the true cost of their consumption, including any opportunity cost imposed on the system. Second, water providers receive information about whether consumers are willing to pay more for water and as such receive guidance on whether to invest in additional (more expensive) sources.[84]

In the absence of a contestable market, there have been significant advances in the way in which water prices can been set. Historically, water prices were either charged on a fixed annual basis or determined under a 'rates-based' approach. The price charged bore no relationship to the volume of water used. In addition, the revenue raised typically bore little resemblance to the cost of providing the service.

The introduction of water meters allowed customers to be charged on the basis of usage. Prices were also set to reflect more accurately the cost of service provision. However, prices were typically set with little reference to the effect of consumption on future water supplies and therefore did not take into account the depletion of supplies.

To address this shortcoming, regulators including the Authority, the ESC and IPART have adopted Long Run Marginal Cost (**LRMC**) pricing for usage charges.[85] Under a LRMC

[84] The incentive of a water utility to invest in additional sources is unrelated to price. Rather, a regulated business has an incentive to invest in capital projects as long as they are considered prudent and efficient by the regulator/government as it will then receive a return on and of the investment. The decision to invest, and the regulator/government's decision to approve the investment, occurs without any detailed knowledge of consumers willingness to pay.

[85] It should be noted that the reference to LRMC pricing in this context is different to the theoretical concept of LRMC. Theoretical LRMC refers to a situation where all factors of production are variable in the production

pricing approach, water prices are calculated with reference to the costs likely to be incurred in developing additional water sources due to a change in demand.[86] The purpose of this is to, at least some extent, replicate the outcomes of a market where price would equilibrate at a point that reflects not only the cost of production but also the value of current consumption, including the impact of this consumption on future supply.

A possible improvement on LRMC pricing is 'scarcity-based' pricing, or a hybrid that has a scarcity-based component. Under scarcity-based pricing, prices are set with specific reference to not only the direct cost of production but also actual storage levels (and potentially externalities), effectively incorporating into the assessment the opportunity cost of current consumption. Pricing on this basis would tend to lie below LRMC for much of the time, but to rise above LRMC at times when the system is stressed, and especially as this translates into a higher likelihood of needing to trigger new infrastructure investment. Prices would rise gradually as storage levels fell. The rise in price would reduce demand and also contribute to a financial reserve that reflects the change in the expected cost of future supply augmentation – providing scope for avoiding the need to implement water restrictions. However, following inflows to dams, prices would fall to reflect the falling opportunity cost of consumption and the falling expected cost of future supply augmentation.

On this point, it is relevant to note a recent recommendation contained in the National Water Commission assessment of the implementation of the National Water Initiative. Recommendation 3.2.4 called for 'pricing regulation that encourages more flexible or market-driven pricing approaches to emerge in response to water scarcity'.[87]

Scarcity-based pricing would not need to apply to all customers. Rather, the water utility (in this instance the Corporation) could offer customers a range of possible price plans. The range of plans could include:

- a scarcity-based approach where customers could consume as much as they wished as long as they were willing to pay the scarcity-based price. The price would be relatively low in times when water is plentiful but relatively higher during times of drought, and might apply only to volumes above some determined socially appropriate base level of supply;
- a 'locked-in' price for all consumption determined independently of storage levels. This price would likely be at a premium to the average price determined under the scarcity based approach as it would reflect the guarantee of supply at the given price; and
- the purchase of a given entitlement, say 250 kL per year, at a relatively reduced price but with significant penalties should consumption exceed this amount. This plan is analogous to the current arrangements where restrictions (instead of price) are used to limit consumption during times of shortage. It would even more closely approximate drought pricing, as was used for a period in Gladstone in Queensland.

Under this approach, customers would be provided with price signals that more accurately reflect the true cost of consumption – or would pay a premium to insure the system

of a given quantity. LRMC pricing in the sense that regulators have adopted is actually an incremental cost associated with the introduction of additional sources of supply.

[86] There are two commonly adopted approaches to the calculation of LRMC, the perturbation and average incremental cost. While the methodologies differ, both attempt to reflect the cost of bringing online additional sources.

[87] National Water Commission, *National Water Initiative – First Biennial Assessment of Progress in Implementation,* August 2007.

against their demands at times when water was scarce. In addition, customers' choice of plan as well as their actual consumption would provide the market with greater guidance regarding their willingness to pay for additional sources. In a real sense, these pricing arrangements would invite water users to compete against proponents of new supply projects to deliver more cost effective elements into the portfolio of procurement and demand management options. Even small consumers could, through their choice of pricing structure and willingness to moderate consumption in response to price signals offer competitive demand bidding as part of the total supply-demand mix.

Draft Recommendation and Finding

15) There is merit in exploring the introduction of scarcity based pricing to improve price signals for customers regarding the true cost of their consumption and producers regarding potential investment opportunities.

4 Regional and Remote Areas

4.1 Aim

This Chapter investigates the provision of water and wastewater services in regional and remote areas of Western Australia. For the purposes of this report, the Authority will classify regional and remote areas as all those that are not connected to the IWSS. The aim of this Chapter is to undertake an assessment of the current arrangements and determine whether or not there are possible improvements which could be made in the delivery of various water and wastewater services.

4.2 Description of Current Arrangements

As discussed in section 2.1.1, the Corporation is the dominant provider of water and wastewater services in regional and remote areas of the State. The Corporation provides potable water supplies, non-potable water supplies, sewerage services, irrigation services and drainage services throughout the State.

Other significant service providers include the Bunbury Water Board, which trades as Aqwest, and the Busselton Water Board. These two boards provide potable water supplies in their respective areas. In addition, Hamersley Iron and the Rottnest Island Authority provide potable water supplies. Various regional and remote shires provide non-potable and sewerage services. Table 2.3 provided a list of all licence holders.

In the submissions received and the Authority's analysis of the regional and remote areas, two key issues emerged. These related to:

- the scale and scope of regional and remote operations; and
- contestability of Community Service Obligation (**CSO**) payments.

4.3 Economies of Scale and Scope

The analysis undertaken by ACIL Tasman investigated the economies of scale and scope that exist in the water and wastewater industry.[88] Relevant findings in regard to regional and remote areas include:

- The minimum efficient scale for a water business appears to be in the order of 125,000 connections. The number of connections in regional and remote areas range from approximately 25,000 to 70,000.

- The minimum efficient scale for wastewater appears to be approximately 100,000. The number of connections in regional and remote areas range from approximately 10,000 to 60,000.

- There may be cost savings from the establishment of a multi-utility, i.e. a water/wastewater and electricity utility servicing regional and remote areas.

[88] ACIL Tasman (2007), *Size and Scope Economies in Water and Wastewater Services.*

- There appears to be little benefit from combining water with wastewater operations, although potential synergies may increase with the emergence of wastewater recycling opportunities. However, there appears to be little lost from combined water and wastewater operations.

- There may be cost savings from a reconfiguration of operations in the Bunbury/Busselton area.

The findings of the ACIL Tasman analysis indicate that the size of the regional and remote areas are below the minimum efficient scale for water and wastewater utilities. Table 4.1 below shows the numbers of connections the Corporation has in each of the areas.

Table 4.1 Corporation Regional and Remote Connections (2005-06)

	Goldfields & Agricultural	Great Southern	Mid West	North West	South West
Water	40,123	30,103	34,578	26,599	72,838
Wastewater	11,844	16,521	13,437	22,905	61,448

Source: Water Corporation 2005-06 Annual Report

There is little prospect of any of the areas growing significantly in the foreseeable future to reach the minimum efficient scale. Rather, the existence of a minimum efficient scale significantly greater than any one of the areas identified indicates that there may be economies of scale and scope from a single entity having responsibility for the combined management and operation of all of the areas. This may be due to shared management and head office operations across the various areas. This point is consistent with the ACIL Tasman finding that there may be cost savings from the establishment of a multi-utility (a water/wastewater and electricity utility servicing regional and remote areas). It was suggested that Horizon Power may be the appropriate entity to take over regional and remote water and wastewater operations in the area where Horizon Power operated currently. This matter is discussed in further detail below.

The remaining relevant matters raised in the ACIL Tasman report relate to Aqwest and the Busselton Water Board. The finding that there appears to be little benefit from combining water with wastewater operations supports the current water only structure of the water boards. However, the findings that there may be cost savings from a reconfiguration of operations in the Bunbury/Busselton area deserves further investigation. This matter is addressed below.

The possible creation of a multi-utility and a further investigation of Aqwest and the Busselton Water Board are now discussed.

4.3.1 Multi-Utility

Horizon Power provides electricity services to regional and remote consumers in all of Western Australia except the South West. The ACIL Tasman report flagged the possibility of separating the regional and remote water and wastewater services from the Corporation and transferring these to Horizon Power in its current area of operation, thus creating a regional and remote water/wastewater and electricity multi-utility. ACIL Tasman noted the following:[89]

[89] ACIL Tasman (2007), *Size and Scope Economies in Water and Wastewater Services,* p43.

> A key rationale for reconfiguring the provision of essential services in remote parts of Western Australia is that a utility management team is likely to be focused on areas of potential growth or where the bulk of the market is located. Issues associated with small markets that are distant from head office may be difficult to deal with, time consuming and expensive.
>
> At the same time, it is crucial that remote areas receive adequate attention and resources. A utility with small, remote markets as its 'core business' may be better placed to realise economies of scope by addressing similar problems and needs across many small communities.

ACIL Tasman identified quantitative support for the concept of a multi-utility with economies of scope in the order of 16 per cent to 22 per cent identified in one study.[90] In addition, the report noted the existence of multi-utilities in other areas, such as the Northern Territory and England.

The benefits from the transfer of water and wastewater to Horizon Power and the creation of a multi-utility would depend on the extent to which unnecessary duplication exists in the Corporation and Horizon Power operating areas. The ACIL Tasman report identified that there may be opportunities for cost reduction due to:[91]

- the need for both organisations to employ local maintenance staff in isolated areas to maintain all services, including meter reading. If these staff are currently under-utilised and are willing, there may be scope for sharing their services across both organisations;
- combining responsibilities in one organisation may yield productivity improvements through better coordination. For example, time spent on travel to reach productive worksites may be reduced;
- reductions in fixed cost through sharing of local depots and offices;
- sharing management of billing information. This could also extend to local authority billing information;
- combining management functions in regional and remote offices; and
- the possibility of increased specialisation in some staff for tasks with overlapping skill sets such as trenching for underground power and pipe excavation.

Improvements in customer service might also be realised by:

- providing a single point of contact for land developers and builders; and
- maintaining a larger pool of service personnel available to respond to faults and emergencies. A larger internally trained workforce may also help provide a substitute for low quality outsourced labour services in some remote locations.

However, the report also identified that there are differences in providing water and electricity services and that there may therefore be little efficiency gains from combining scheme planning and electricity engineering. In addition, potential problems may exist in attempting to transfer or recruit staff to Karratha (the head office of Horizon Power).

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[90] Piacenza, M. and Vannoni, D., *Choosing among alternative cost function specifications: an application to Italian multi-utilities,* Economics Letters 82, 2004, pp415-422

[91] ACIL Tasman (2007), *Size and Scope Economies in Water and Wastewater Services,* p47.

The report also noted that the potential efficiencies would need to take into account the extent to which services are currently outsourced. 'Boundary' issues were also identified as a potential problem.

ACIL Tasman concluded that:[92]

> There do appear to be opportunities in the businesses working together to share resources for the maintenance of isolated towns. However, complete amalgamation of the country water business with the Horizon electricity business may only yield a marginal improvement in cost saving. The main test is whether the cost of separation of the centralised water function exceeds the savings in the amalgamation of the maintenance functions.

The submission from the Department of Water noted the possible creation of a dedicated regional service provider and the possible creation of a multi-utility. The submission stated:

> The re-structure of regional electricity supply/services in Western Australia was based on a model of horizontal separation and offers a template for water reform through the amalgamation of regional electricity and water services. The Department encourages the Authority to investigate this service delivery model in detail in the Inquiry. The establishment of such a utility would not only introduce the opportunity for competition in the provision of CSO payments and other water programs but through a dedicated regional service provider offer the prospect of improved service standards and greater efficiency. A further prospective benefit would be the water industry having greater diversity and capacity for competition in other areas. (Department of Water submission, p33)

The Corporation submitted that it has given some consideration to the potential for a regional multi-utility in Western Australia as part of its 2006 review of water industry structure:

> Due to the geographical spread and regional growth of Western Australia, a number of regional options were considered including a regional multi-utility and an integrated South West water utility (water and wastewater). The potential benefits were not viewed as sufficiently significant to warrant further consideration as part of the review.
>
> The key synergies in the management of remote water and wastewater schemes were assessed to be maximised by maintaining the current link with Perth and the Integrated Water Supply Scheme. The loss of these synergies would be greater than those gained by linking with Horizon Power.
>
> The potential synergies with Horizon Power's remote electricity operations have not been abandoned. The Corporation is working with Horizon to identify savings and improve services such as sharing depots and personnel in remote locations.
>
> Reflecting the importance of electricity to service continuity, the water services business is already linked in an operational sense to electricity. The Water Corporation's operations centre is linked with Western Power's, allowing instantaneous warning and response to any power outage.
>
> (Corporation submission, p6)

The Authority considers there to be potential opportunities from the further investigation of the creation of a multi-utility based on a transfer of water and wastewater assets from the Corporation to Horizon Power. As an indication that the benefits may be significant, the Authority understands that the Corporation and Horizon Power are already in discussions as to how they may be able work together more closely to reduce costs. This also indicates that an amalgamation might not be necessary. There may also be significant

[92] ACIL Tasman (2007), *Size and Scope Economies in Water and Wastewater Services,* p48.

costs involved in the transfer of assets and responsibilities and the establishment of such a combined entity. As such, the Authority will undertake further analysis of this possibility between the release of the Draft and Final Report. The Authority is seeking comments on such an approach.

Finding

16) There may be potential significant cost savings from the creation of a multi-utility by transferring the Corporation's water and wastewater assets to Horizon Power in its area of operation. However, further investigation prior to the release of the Final Report is required before any definitive conclusions can be made.

4.3.2 Aqwest and Busselton Water Board

ACIL Tasman stated that, given the conclusions from their literature review, it is worthwhile considering whether efficiency improvements could be realised by facilitating mergers between utilities operating in the South West. There are currently three utilities providing services in the regions:

- Aqwest provides water supply in Bunbury, except for Dalyellup, Eaton and Australind;
- Busselton Water Board provides water supply in the town of Busselton, Port Geographe, Siesta Park and Wonnerup; and
- the Corporation provides water supply to all other towns and wastewater services to all towns.

The Corporation has a regional administrative office in Bunbury, major operational depots in Mandurah, Bunbury, and Busselton, and a number of smaller depots in other areas.

Table 4.2 shows the relative size, in terms of connection numbers, of the three operations.

Table 4.2 South West Water Connections (2005-06)

	Aqwest	Busselton	Water Corp
Connections	14,739	9,020	72,838

Source: Aqwest, Busselton Water Board and Water Corporation

Based on a preliminary analysis of cost data, the water boards appear to be approximately one third more costly on an average operating cost per kilolitre basis than the Corporation in neighbouring (and subsequently comparable) areas. Likewise ACIL Tasman noted that:[93]

> there is much duplication of effort and duplication of facilities between these 3 organisations within the south west area of Western Australia.

[93] ACIL Tasman (2007), *Size and Scope Economies in Water and Wastewater Services*, p51

However, ACIL Tasman noted also:

> there appears to be no compelling imperative to change the structure of the water industry in the South West. All operations are perceived to be highly successful and enjoy the confidence of the communities they serve.[94]

In any possible reconfiguration of an industry in the pursuit of efficiency, the transition costs must be considered carefully. The Authority is also conscious that the legislative reforms being progressed currently by the Department of Water will allow the water boards to operate outside their current areas. As such, there will be less restriction on the growth in scale of the water boards should they wish to expand their operations. However, it is likely that the opportunities for growth will be restricted to greenfields operations.

A preferable outcome to the Authority recommending a reconfiguration of the industry would be to change the operating and legislative arrangements under which the boards operate to allow them the flexibility to pursue alternative configurations. By allowing this flexibility, the boards would have the incentive to pursue alternative configurations if they considered there to be benefits from doing so. However, the Authority understands that under the proposed legislative changes, there will be no allowance for the water boards to merge. As such, there may be a need for legislative changes to allow the merger of the boards should they wish to do so.

Finding

17) There may be potential significant cost savings from the reconfiguration of water and wastewater services in the Bunbury and Busselton areas. However, further investigation prior to the release of the Final Report is required before any definitive conclusions can be made.

4.4 Community Service Obligation Payments

4.4.1 Current Arrangements

A CSO arises when a government specifically requires a public enterprise to carry out activities relating to outputs or inputs which the enterprise would not elect to do on a commercial basis, and which the government does not require other businesses in the public or private sectors to generally undertake, or which the enterprise would only do commercially at higher prices.

In the context of water, CSOs are necessary due to the uniform pricing policy which requires that consumers throughout the State face the same price for water. The cost incurred in service provision varies across the State. By requiring a uniform tariff, the revenue received from some areas is insufficient to cover costs associated with service provision. In these instances, a CSO is paid by the Department of Treasury and Finance on behalf of Government to the service provider to cover the costs incurred in excess of revenue. CSOs are also paid in other instances such as revenue concessions for pensioners.

[94] ACIL Tasman (2007), *Size and Scope Economies in Water and Wastewater Services*, p51.

The arrangement in place regarding CSO payments is described by the Department of Water in its submission as follows:

> CSOs paid to a service provider are intended to compensate for the provision of these loss-making services. Under current legislative arrangements the only water service provider eligible for CSO payments is the Corporation and the Corporation receives approximately $350m per year under a formal agreement with the Government administered by the Department of the Treasury and Finance. (Department of Water submission, p32)

The Corporation's Statement of Corporate Intent for 2006-07 estimates the breakdown of the CSOs it receives as:[95]

- Non-commercial country services $232 million
- New or changed CSOs [for new services] $24 million
- Revenue concessions $80 million
- Infill sewerage program $32 million

4.4.2 Legislative Reform

The Department of Water is currently undertaking a major water law reform project. In its submission on the Issues Paper, the Department stated that:

> The proposed legislation will specifically recognise community service obligations and enable these to be provided to all licensed service providers. (Department of Water submission, p15)

The Department of Water argues that:

> Competition for the payments from alternative service providers offers the opportunity to increase value for money, although in practice this outcome will depend on a) the existing level of efficiency b) the existence and willingness of alternative service suppliers c) the independence and transparency in the process of payment allocations and d) ongoing assessment and governance of the arrangements. (Department of Water submission, p32)

With respect to competition for CSO payments, the Department of Water argues that:

> Payments of the order of $350m per year are large enough for the public to want to get value for money and under current arrangements there are no incentives for this to occur. (Department of Water submission, p32)

Under the legislation, the Minister will be given the authority to regulate prices for all licensed service providers. It is expected that the proposed legislation will go before Parliament in November 2007. However, it may be delayed until early 2008.

4.4.3 Submissions

There was much support in submissions for CSOs to be made contestable.

The Department of Treasury and Finance stated that:

[95] Department of Water submission, p32.

> [C]onsideration could be given to provide CSOs to nongovernment organisations providing water or wastewater services to a country town, where it is not in the commercial interest of a private business to provide these services otherwise. The benefits of this might be that a private business is more efficient in delivering the services, resulting in lower costs and therefore a reduction in CSOs over time. (Department of Treasury and Finance submission, p16)

The Department of Treasury and Finance also recognised that:

> Payment of CSOs to private businesses, that do not pay dividends or income tax equivalents to the State Government, would therefore result in lower net payments to the Government from Government owned businesses. However, the benefits of competition that have been outlined earlier in this paper (such as an improvement in the allocative efficiency of government funding of essential community services) should compensate for this reduction in net payments to Government. (Department of Treasury and Finance, p16)

The Chamber of Commerce and Industry stated the following:

> CCI acknowledges that equity issues need to be addressed in remote and regional areas where the cost of providing water can be higher than in the Perth metropolitan region. In this context, CCI also acknowledges the importance of Community Service Obligation (CSO) payments.
>
> The financing of the CSO should be equitable, transparent and achieved in a way that has the least impact on competition and economic efficiency. The CSO should be provided in the form of a subsidy provided to an operator or water supplier. Access to subsidies should be contestable, with contracts awarded to those operators able to fulfil the Government's CSO at the lowest cost. Where subsidies are provided to operators in non-contestable markets (such as in remote or regional areas where monopoly suppliers may exist), they should be audited carefully and reviewed regularly. (Chamber of Commerce and Industry submission, p4)

The Goldfields Esperance Development Commission supported retention of the uniform tariff policy and the making of CSO payments available to all service providers and not just the Corporation.

> The issues of uniform tariffs and Community Services Obligations (CSO) were part of an inquiry undertaken by the ERA in 2006. The Commission supports the policy of uniform pricing based upon the need for transparency in the method used for determining water prices. It also supports CSO payments being provided to all water service providers in Western Australia and not just to the Water Corporation. (Goldfields Esperance Development Commission submission, p8)

Similarly, Rio Tinto welcomed the proposed legislative changes that would make CSOs available to licensed service providers.

> RTIO considers that a way of encouraging private sector participation in the provision of water services (particularly in regional areas) is ensuring that CSO payments are available to the private sector.
>
> CSOs are a requirement to provide a service at a reduced rate or less than the cost of provision. Historically, services that have attracted a CSO payment have been provided by the Water Corporation. The provision of services in regional areas is generally at a greater cost than provision of the similar services to the Perth metropolitan area. The continued application of the uniform pricing policy will most often mean that the provision of services to regional areas will be at a loss. The availability of CSO payments to the private sector will therefore be essential to ensuring the private sector can participate in the Western Australian market on an equal footing with the incumbent providers.
>
> This situation was identified by the National Competition Policy legislation reviews of water industry legislation and the competitive neutrality reviews of the Water Boards. The

> recommendations of these reviews were partially addressed in the Water Legislation Amendment (Competition Policy) Act 2005 and will be fully implemented with the proposed Water Corporation (Amendment) Bill, planned for introduction to Parliament in late 2007.
>
> In terms of encouraging competitive outcomes, it is feasible that competition for the right to provide a loss making service (that would attract a CSO payment) could potentially enable the provision of this service at the least cost to Government, as well as achieve some dynamic efficiencies.
>
> Provisions enabling CSO payments to be made available to the private sector are to be included in the proposed Water Services Bill, currently being drafted. RTIO understands that it is proposed that the availability of CSO payments to the provision of a particular service will be able to be specified within an Operating Licence.
>
> RTIO welcomes the proposed legislative changes that would make CSO payments available to the private sector. However, there remains a need to define a clear process for accessing CSO payments.
>
> (Rio Tinto Iron Ore submission, p4-5)

The Corporation argued that it:

> [c]urrently manages provision of a large proportion of 'uneconomic' services as a Community Service Obligation. The Corporation utilises competition in the procurement of construction, operations and maintenance, energy and chemicals in delivering these services, and is compensated for losses through CSO payments from Government.
>
> The Water Corporation takes the role of supplier of last resort. New services to small communities are essential services but are not attractive business opportunities and tend to take up a disproportionate amount of management time.
>
> The Water Corporation has chosen not to participate in competitive processes for new schemes in the past as these were not attractive from a purely commercial point of view. The Coral Bay water and wastewater schemes are a good example. The Corporation has then been asked to step in when the competitive process failed as essential services were not being delivered.
>
> (Corporation submission, p.vii)

The Community and Public Sector Union argued that the existing CSO arrangements whereby the Corporation has taken responsibility for service provision had proved to be effective. The submission stated that there had been experiences of using contractors and consultants in the provision of services in remote areas, such as aboriginal communities, and that this had resulted in a fragmented and ad-hoc approach to service provision.

> The existing Community Service obligation payment has proven to be an effective vehicle that is subject to annual scrutiny by State Treasury.
>
> Due to the vast geographical distances, there is great difficulty in sourcing and keeping competent workers which means there is a need for a well resourced utility to remunerate employees and maintain currency of training and technology. There are stringent Performance Indicators for attending leaks and bursts and meeting the Australian Drinking Water Guidelines …
>
> Water Corporation also needs to bear in mind the sensitivities of Aboriginal Communities and should consult with representatives of these communities.
>
> In the mid 1980's the State and Federal Government were so concerned with the state of assets and the lack of standards being applied to WA's remote Aboriginal Communities that they directed the then Water Authority to take over both maintenance and Capital works for remote communities throughout the State. This was a direct result of many years of utilizing various consultants and contractors as a low cost solution, which produced an

> ad-hoc and fragmented approach to ensuring even the basic water, sewer or plumbing standards were applied to the remote communities.
>
> With Water Authority involvement structure and standards were applied to remote communities which resulted in asset improvement and forward planning for sustainable growth and scheme improvements in liaison with other utility agencies and Community and Regional Councils. This resulted in real on the ground quality of life improvements for remote community residents.
>
> Around 1997/98 State and Federal governments under the COAG arrangements saw fit to revert again to the private section for maintenance and capital management as a potential cost saving. This involved using select consultants to manage the funding and expenditure aspects of the Capital budget and a number of contractors throughout the State to undertake maintenance requirements. How well this has worked could be questioned as there is hearsay evidence that many communities appear to be receiving a much lower level of service, and the delivery cost of the service is more than likely higher than under the Water Authority/Corporation management.
>
> Recently water quality and health related issues have been identified as a concern in remote communities, and we believe the Water Corporation may in the near future be requested to again take up management of various aspects of water related services to remote communities.
>
> (Community and Public Sector Union submission, pp2-3)

4.4.4 Discussion

There is widespread support for making the payment of CSOs available to entities other than the Corporation. The proposed legislative reforms being developed by the Department of Water will allow CSOs to be paid to all licensed service providers. However, the question of contestability is different to that of simply allowing CSOs to be paid to all licensed service providers.

The Department of Treasury and Finance is responsible for the payment of CSOs. As such, the onus of introducing competition in their payment falls on the Department. The Department of Treasury and Finance notes that:

> the current CSO policy would have to be revised by the DTF to allow payment of CSOs to private businesses on a case-by-case basis. This revised CSO policy could be similar to the policy that operates in Queensland.
>
> In Queensland, CSOs can be paid to private businesses as well as government owned commercial businesses. The Queensland Treasury prepared a paper in 1999 Community Service Obligations: A Policy Framework, which provides guidance on the broad aspects of the CSO policy.
>
> To qualify as a CSO, a product or service must be purchased by the Queensland Government, through the relevant Department(s) from an appropriate commercial business entity. While, in many instances, CSOs will be provided by Government-owned entities (e.g. Government Owned Corporations, Commercialised Business Units), there is also scope for such products or services to be provided by entities owned by other governments or private sector suppliers. However, this is ultimately a matter for the Government and it should be considered on a case-by-case basis, consistent with achieving the key objectives of the Queensland Government's CSO policy guidelines.
>
> (Department of Treasury and Finance submission, p17)

The Authority considers that an approach similar to that adopted in Queensland, where the government agency responsible for making the payment assesses the most appropriate manner in which to procure the service on a case-by-case basis, is likely to be appropriate for the provision of CSO payments in Western Australia. In the circumstances, the Authority considers that it is appropriate that the Department of

Treasury and Finance develop its own procedures related to the payment of CSOs. The procedures should explicitly allow for the payment of CSOs to non-government entities.

Draft Recommendation and Finding

18) Proposed legislative reforms being undertaken by the Department of Water will enable the payment of Community Service Obligations (CSO) to all licensed service providers. The Department of Treasury, the agency responsible for the payment of CSOs, should develop a policy perhaps similar to that in operation in Queensland to explicitly allow for the payment of CSOs to non-government entities.

APPENDICES

Appendix 1: Terms of Reference

INQUIRY INTO COMPETITION IN THE WATER AND WASTE WATER SERVICES SECTOR

TERMS OF REFERENCE

I, ERIC RIPPER, Treasurer, pursuant to section 32(1) of the *Economic Regulation Authority Act 2003* (the ERA Act), request that the Economic Regulation Authority (the Authority) undertake an inquiry into, and provide advice on possible competitive enhancements for the delivery of water and wastewater services, with a view to making recommendations for providing these services in the most efficient, effective and sustainable way.

Key areas of focus will include:

- enhancing the efficiency of future water source procurement (and other significant capital investment) processes, including issues associated with current market structures and mechanisms, such as competitive tendering models, and determining the trigger conditions for committing to the acquisition of a new source;
- opportunities for enhanced competition by introducing third party access regimes to existing water and waste water-related infrastructure, including identifying appropriate principles and mechanisms to implement efficient and effective regimes; and
- other reforms to the water and wastewater market which may enhance competition, including the establishment of water trading mechanisms and the benefits, costs and issues associated with them (e.g. inter-regional trades, market dominance and water hoarding) and arrangements for community service obligations paid by the State Government to service providers.

In conducting the inquiry and developing recommendations, the Authority is to have regard to:

- the roles and responsibilities of participants in the industry, both Government and private sector recognising that certain services (e.g. water transmission and distribution) have strong natural monopoly characteristics;
- approaches taken in other jurisdictions;
- the costs and benefits of alternative industry structures, including transitional costs that may be incurred in changing to a new structure;
- any impacts, including service provision, operational or financial impacts, on existing asset owners and operators; and
- any impact of these reforms on the Government's social, economic and environmental policy objectives, including ensuring environmental and social criteria are taken into account in market structures, tendering processes and access regimes; commitments to the *National Water Initiative* and the Government's response to *A Blueprint for Water Reform in Western Australia* compiled by the Water Reform Implementation Committee.

In undertaking the inquiry, the Authority is to recognise section 26 of the Act, which requires the Authority to have regards to:

- the need to promote regulatory outcomes that are in the public interest;
- the long-term interests of consumers in relation to the price, quality and reliability of goods and services provided in relevant markets;
- the need to encourage investment in relevant markets;
- the legitimate business interests of investors and service providers in relevant markets;
- the need to promote competitive and fair market conduct;
- the need to prevent abuse of monopoly or market power; and
- the need to promote transparent decision making processes that involve public consultation.

The Authority will release an issues paper as soon as possible after receiving the reference. The paper is to facilitate public consultation on the basis of invitations for written submissions from industry, government and all other stakeholder groups, including the general community.

A draft report is to be made available for further public consultation on the basis of invitations for written submissions.

A final report is to be completed by no later than 31 March 2008.

ERIC RIPPER MLA
DEPUTY PREMIER: TREASURER:
MINISTER FOR STATE DEVELOPMENT

Appendix 2: Western Australian Legislative and Institutional Reforms to the Water Sector

The institutional and legislative framework that governs water and wastewater management in Western Australia is in the midst of a reform process.

The first element of the reforms relate to water services reforms. With regard to these reforms, the Department of Water provided the following in its submission on the Issues Paper.

> In summary, the following Acts are included in the water services reform process:
>
> - *Water Agencies [Powers] Act 1984*;
> - *Country Areas Water Supply Act 1947*;
> - *Country Towns Sewerage Act 1948*;
> - *Land Drainage Act 1925*;
> - *Metropolitan Water Authority Act 1982*;
> - *Metropolitan Water Supply, Sewerage and Drainage Act 1909*;
> - *Rights in Water and Irrigation Act 1914*;
> - *Water Corporation Act 1995*;
> - *Water Boards Act 1904*; and
> - *Water Services Licensing Act 1995*.
>
> It is intended that the 10 existing water-service related acts will be replaced by two - a '*Water Corporations Act*' that will cover the governance of Government owned water utilities and a '*Water Services Act*' that will set out the provisions for regulating and providing water services that will apply to all utilities.
>
> The primary focus of water service legislation reform is the modernisation and streamlining of a range of water service Acts that have been introduced and amended over the past 100 years. Most of this legislation, although subsequently amended, was put in place at a time before corporatised or private sector participation in the water industry was considered possible.
>
> As recommended by the National Competition Review of the *Water Board Act 1904*, the new legislation will:
>
> - remove barriers to competition imposed by that Act. The Bunbury and Busselton Water Boards are to be brought under a water corporations Act which will enable them to provide the full range of water services and operate outside their currently constrained areas of operation. The existing arrangements for extending provisions to new entrants to the water services industry will be streamlined and simplified;
> - specifically recognise Community Service Obligations and enable these to be provided to all licensed service providers;
> - give the Minister authority to regulate prices for all licensed
> - service providers; and
> - strengthen the capacity of the Economic Regulation Authority to undertake audits and investigations into water service providers.
>
> (Department of Water submission, pp 14-15)

The second element of the reforms relates to water resources reform. In its submission on the Issues Paper, the Department of Water noted the following:

> In relation to water resource management legislation, part of the legislative reform programme is the *Water Resources Legislation Amendment Bill 2006.* The Bill has been

passed by the Legislative Assembly and is before the Legislative Council in the current Session.

The Bill:

- abolishes the Water and Rivers Commission by repealing the *Water and Rivers Commission Act 1995* and makes necessary consequential amendments to various Acts;
- establishes the Water Resources Council to facilitate representative engagement in water resource management, water use and conservation across a wide range of people;
- allows the Minister to establish advisory committees to advise the Minister on the administration of water legislation;
- establishes a Water Resources Ministerial body through which the Minister can exercise statutory functions that are more conveniently undertaken by a body corporate, such as dealings in land, property and assets. The Commission's freehold land will be transferred to this Ministerial body;
- requires the Minister administering the Water Corporation to consult with the Minister for Water Resources before approving the statement of corporate intent and the strategic development plan for the Corporation;
- enables the Minister for Water Resources to direct the Water Corporation and the Bunbury and Busselton Water Boards to have regard for the general policy of the Government relating to water resources. Also, the Bill enables the Minister for Water Resources to obtain information relating to water resource management; and
- sets out the functions of the Minister, providing a formal basis for cooperation and information exchange between the water resource manager and water service providers.

Further and more significant legislative change is anticipated to occur in 2008 through dedicated water resources legislation. The legislation will consolidate and reform the law of water resource management. It will incorporate certain legislative amendments proposed under the *Water Resources Legislation Amendment Bill 2006* and replace the water resource management provisions of the:

- *Rights in Water and Irrigation Act 1914* [RiWI Act];
- *Metropolitan Water Supply, Sewerage and Drainage Act 1909* and *Metropolitan Water Authority Act 1982*;
- *Country Areas Water Supply Act 1947*;
- *Land Drainage Act 1925*;
- *Waterways Conservation Act 1976*; and
- *Water Agencies [Powers] Act 1984*.

The consolidated water resources legislation will address:

- statutory requirements for water resource management;
- water entitlements;
- water management planning;
- water sharing;
- water trading;
- volumetric meter charging regimes; and
- water allocation licensing.

(Department of Water submission, pp 15-16)

Appendix 3: Water Corporation, AQWEST and Busselton Water

Water Corporation

The Corporation is a statutory corporation operating under the *Water Corporation Act 1995*. The Corporation was established as a commercially focused utility on 1 January 1996 following a restructuring of the water industry that also saw the roles of water resource manager (now the Department of Environment) and regulator (now the Authority) separated from the functions of the utility. The Corporation is governed by a Board of Directors acting in accordance with Corporations Law, and the Board is accountable to the Minister responsible for the *Water Corporation Act 1995*.

The Corporation is a vertically integrated water and wastewater business. It was established in 1995 and given the task of providing "sustainable water services to make Western Australia a great place to live and invest".[96] Prior to the creation of the Corporation, water and wastewater services were provided directly by the Western Australian Government. In undertaking the tasks associated with water and wastewater services, the Corporation must comply with the relevant health and environmental regulations.

The prices the Corporation charges for its services are determined by the Western Australian Government. In making its final determination of prices, the Government takes into account advice that is provided to Government through public processes by the Authority.

During the 2005-06 financial year, the Corporation had revenues of approximately $1.4 billion (including $340 million from the Western Australian Government for the provision of community service obligations) and an after-tax profit of $474 million. A dividend of $362 million was paid to the Western Australian Government, the Corporation's owner.[97]

AQWEST

Bunbury Water Board, trading as AQWEST is a statutory authority established under the *Water Boards Act 1904*. The Bunbury Water Board was established in 1905 and was operated in association with the Bunbury local government authority until 1997 when it was re-formed as a separate entity.

AQWEST provides potable water services to the Bunbury-Wellington region, including water sourcing, treatment, distribution and retailing operations. Water is sourced from the Yarragadee aquifer through 13 production bores and supplied to about 14,000 connections through 332 kilometres of water mains. About 72 per cent of water produced is supplied to residential customers and the remaining 28 per cent is supplied to non-residential customers. AQWEST does not provide wastewater services, which in AQWEST's region of operation are provided by the Corporation.[98]

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[96] www.watercorporation.com.au/C/company_index.cfm?uid=6135-9990-9046-5900

[97] Water Corporation Annual Report 2006 p44.

[98] ERA (November 2005), *Final Report on the Inquiry on Urban Water and Wastewater Pricing,* p117.

During 2005-06, AQWEST had total revenues of approximately $8 million and an after-tax profit of approximately $2 million.[99]

Busselton Water

Busselton Water Board, trading as Busselton Water, is a statutory authority established under the *Water Boards Act 1904*. The Busselton Water Board was established in 1906. Busselton Water is governed by a Board of Directors appointed by the Minister for the Environment and acting under powers created by the *Water Boards Act 1904*.

Busselton Water provides a potable water service to the town of Busselton and to surrounding areas, including water sourcing, treatment, distribution and retailing operations. Water is sourced from the Yarragadee aquifer through 8 production bores and supplied to about 8,700 connections through 232 kilometres of water mains. About 82 per cent of water produced is supplied to residential customers and the remaining 18 per cent supplied to non-residential customers. The business has an employee workforce of around 23 full-time-equivalent staff. Busselton Water does not provide wastewater services, which in Busselton Water's region of operation are provided by the Corporation.[100]

During 2005-06, Busselton Water had total revenues of approximately $7 million and an after-tax profit of approximately $2 million.[101]

[99] AQWEST Annual Report 2006 p20.

[100] ERA (November 2005), *Final Report on the Inquiry on Urban Water and Wastewater Pricing,* p151.

[101] Busselton Water Annual Report 2006, Financial Statements p2.

Appendix 4: Waterwise Rebates

Demand management can take many forms in addition to restrictions. For example, the following items are eligible currently for rebates aimed at reducing water consumption:

- swimming pool covers;
- greywater re-use systems;
- rain sensors;
- subsurface irrigation systems;
- washing machines rated 4 'stars' (4.5 'stars' from January 2008) or better;
- waterwise garden assessments;
- domestic rainwater tanks with a capacity of 600 litres or greater;
- domestic garden bores; and
- flow regulators rated 3 'stars' or better.

The rebates paid for washing machine and garden bores account for around 74 and 17 per cent, respectively, of the value of rebates paid. In term of water savings, washing machines and garden bores account for around 30 and 60 per cent, respectively.[102] Individually, a number of these programs may save relatively small amounts. However, on a collective basis the uptake of all product rebates could be saving up to 5 GL per year in water consumption.[103]

The level of rebates offered in Western Australia are in some cases lower than that on offer in other Australian jurisdictions. The following table compares the various rebates on offer.

Table A1 Current Value of Waterwise Rebates in Western Australia and Elsewhere

Rebated product	Western Australia ($)	Eastern States[104] ($)
Washing Machine	150	150 - 200
Pool Cover	100	0 - 200
Rainwater tank	50-600	200-1500
Garden Bore	300	0
Greywater system	500	0 - 500
Dual flush toilet	0	50 -150

Source: Economic Regulation Authority

Since the program inception in February 2003, products have been added (e.g. pool covers) or removed (e.g. shower heads) from the list of rebated products, reflecting an assessment of the relative benefits of that product rebate.

Increasing the rebates in line with other jurisdictions may result in additional water savings. Estimating the potential impact of the rebate program involves a number of assumptions regarding water savings per product, asset life of the product and the uptake rate due to the rebate.

[102] Auditor General for WA 2006, Public Sector Performance Report 2006.

[103] Assumes 100 per cent of the product take-up was due to the rebate, that is, assumes all persons who applied for a waterwise rebate only purchased the water saving product because of the rebate.

[104] Victoria, New South Wales, Queensland and South Australia.

Assuming the continuation of existing rebates, based on past rebate trends, the potential rebates in 2008 (up to 40,000) could add another 1 GL to water savings, giving a total of 6 GL of water savings in 2008. The Authority has undertaken preliminary evaluation of the impact of increasing the value of rebates for washing machines, pool covers and rainwater tanks. Preliminary estimates indicate that increasing rebates to the levels of other jurisdictions could increase water savings to 1.5 GL of water per year, thereby giving 6.5 GL of potential water savings in 2008.

Estimating the cost per kilolitre of water saved by an increased rebate program requires an assumption to be made regarding the uptake rate of the product due to the rebate. A conservative assumption is that 50 per cent of the uptake is due to the rebate program (that is, the other 50 per cent of customers would have bought the product regardless). Given the estimated 1.5 GL of savings in 2008, 50 per cent of these savings or 0.75 GL could be attributed to the rebate program for that year. The estimated program cost for 2008 would be in the order of $6.7 million. Annualising this cost (given the assumed product asset life and water savings) results in the cost of the water under a revised rebate program being around $1.12 per kilolitre.

The Authority acknowledges that the cost of water saved is sensitive to the key assumption regarding uptake rates. The Auditor General noted that:[105]

> [t]he cost of water saved is difficult to estimate because of the unreliable key assumption, but analysis by the Auditor General suggests that the rebate program is cost-effective relative to new water sources such as desalination.

It should be noted that increasing rebates for bores is problematic with some areas experiencing stress due to bore use. In these areas it would be inappropriate to provide rebates for additional bores. The Authority understands that the Department of Water is in the process of removing rebates for bores in areas experiencing stress.

Other potential savings could result from rebates on measures such as house or business 'tune-up' programs. Under the program a registered plumber (or equivalent) would undertaken an audit of the household/business and replace faulty fixtures such as taps as well as provide advice on more efficient water use. However, the impact of such a program in terms of additional water savings has not being quantified.

[105] Auditor General for WA 2006, op. cit.

Appendix 5: Competition Principles Agreement Sections Relating to Third Party Access

Access to Services Provided by Means of Significant Infrastructure Facilities

6.(1) Subject to subclause (2), the Commonwealth will put forward legislation to establish a regime for third party access to services provided by means of significant infrastructure facilities where:

(a) it would not be economically feasible to duplicate the facility;

(b) access to the service is necessary in order to permit effective competition in a downstream or upstream market;

(c) the facility is of national significance having regard to the size of the facility, its importance to constitutional trade or commerce or its importance to the national economy; and

(d) the safe use of the facility by the person seeking access can be ensured at an economically feasible cost and, if there is a safety requirement, appropriate regulatory arrangements exist.

(2) The regime to be established by Commonwealth legislation is not intended to cover a service provided by means of a facility where the State or Territory Party in whose jurisdiction the facility is situated has in place an access regime which covers the facility and conforms to the principles set out in this clause unless:

(a) the Council determines that the regime is ineffective having regard to the influence of the facility beyond the jurisdictional boundary of the State or Territory; or

(b) substantial difficulties arise from the facility being situated in more than one jurisdiction.

(3) For a State or Territory access regime to conform to the principles set out in this clause, it should:

(a) apply to services provided by means of significant infrastructure facilities where:

(i) it would not be economically feasible to duplicate the facility;

(ii) access to the service is necessary in order to permit effective competition in a downstream or upstream market; and

(iii) the safe use of the facility by the person seeking access can be ensured at an economically feasible cost and, if there is a safety requirement, appropriate regulatory arrangements exist; and

(b) reasonably incorporate each of the principles referred to in subclause (4) and (except for an access regime for: electricity or gas that is developed in accordance with the Australian Energy Market Agreement; or the Tarcoola to Darwin railway) subclause (5).

There may be a range of approaches available to a State or Territory Party to incorporate each principle. Provided the approach adopted in a State or Territory access regime represents a reasonable approach to the incorporation of a principle in subclause (4) or (5), the regime can be taken to have reasonably incorporated that principle for the purposes of paragraph (b).

(3A) In assessing whether a State or Territory access regime is an effective access regime under the Trade Practices Act 1974, the assessing body:

(a) should, as required by the Trade Practices Act 1974, and subject to section 44DA, not consider any matters other than the relevant principles in this Agreement. Matters which should not be considered include the outcome of any arbitration, or any decision, made under the access regime; and

(b) should recognise that, as provided by subsection 44DA(2) of the Trade Practices Act 1974, an access regime may contain other matters that are not inconsistent with the relevant principles in this Agreement.

(4) A State or Territory access regime should incorporate the following principles:

(a) Wherever possible third party access to a service provided by means of a facility should be on the basis of terms and conditions agreed between the owner of the facility and the person seeking access.

(b) Where such agreement cannot be reached, Governments should establish a right for persons to negotiate access to a service provided by means of a facility.

(c) Any right to negotiate access should provide for an enforcement process.

(d) Any right to negotiate access should include a date after which the right would lapse unless reviewed and subsequently extended; however, existing contractual rights and obligations should not be automatically revoked.

(e) The owner of a facility that is used to provide a service should use all reasonable endeavours to accommodate the requirements of persons seeking access.

(f) Access to a service for persons seeking access need not be on exactly the same terms and conditions.

(g) Where the owner and a person seeking access cannot agree on terms and conditions for access to the service, they should be required to appoint and fund an independent body to resolve the dispute, if they have not already done so.

(h) The decisions of the dispute resolution body should bind the parties; however, rights of appeal under existing legislative provisions should be preserved.

(i) In deciding on the terms and conditions for access, the dispute resolution body should take into account:

(i) the owner's legitimate business interests and investment in the facility;

(ii) the costs to the owner of providing access, including any costs of extending the facility but not costs associated with losses arising from increased competition in upstream or downstream markets;

(iii) the economic value to the owner of any additional investment that the person seeking access or the owner has agreed to undertake;

(iv) the interests of all persons holding contracts for use of the facility;

(v) firm and binding contractual obligations of the owner or other persons (or both) already using the facility;

(vi) the operational and technical requirements necessary for the safe and reliable operation of the facility;

(vii) the economically efficient operation of the facility; and

(viii) the benefit to the public from having competitive markets.

(j) The owner may be required to extend, or to permit extension of, the facility that is used to provide a service if necessary but this would be subject to:

(i) such extension being technically and economically feasible and consistent with the safe and reliable operation of the facility;

(ii) the owner's legitimate business interests in the facility being protected; and

(iii) the terms of access for the third party taking into account the costs borne by the parties for the extension and the economic benefits to the parties resulting from the extension.

(k) If there has been a material change in circumstances, the parties should be able to apply for a revocation or modification of the access arrangement which was made at the conclusion of the dispute resolution process.

(l) The dispute resolution body should only impede the existing right of a person to use a facility where the dispute resolution body has considered whether there is a case for compensation of that person and, if appropriate, determined such compensation.

(m) The owner or user of a service shall not engage in conduct for the purpose of hindering access to that service by another person.

(n) Separate accounting arrangements should be required for the elements of a business which are covered by the access regime.

(o) The dispute resolution body, or relevant authority where provided for under specific legislation, should have access to financial statements and other accounting information pertaining to a service.

(p) Where more than one State or Territory access regime applies to a service, those regimes should be consistent and, by means of vested jurisdiction or other cooperative legislative scheme, provide for a single process for persons to seek access to the service, a single body to resolve disputes about any aspect of access and a single forum for enforcement of access arrangements.

(5) A State, Territory or Commonwealth access regime (except for an access regime for: electricity or gas that is developed in accordance with the Australian Energy Market Agreement; or the Tarcoola to Darwin railway) should incorporate the following principles:

(a) Objects clauses that promote the economically efficient use of, operation and investment in, significant infrastructure thereby promoting effective competition in upstream or downstream markets.

(b) Regulated access prices should be set so as to:

(i) generate expected revenue for a regulated service or services that is at least sufficient to meet the efficient costs of providing access to the regulated service or services and include a return on investment commensurate with the regulatory and commercial risks involved;

(ii) allow multi-part pricing and price discrimination when it aids efficiency;

(iii) not allow a vertically integrated access provider to set terms and conditions that discriminate in favour of its downstream operations, except to the extent that the cost of providing access to other operators is higher; and

(iv) provide incentives to reduce costs or otherwise improve productivity.

(c) Where merits review of decisions is provided, the review will be limited to the information submitted to the original decision-maker except that the review body:

(i) may request new information where it considers that it would be assisted by the introduction of such information;

(ii) may allow new information where it considers that it could not have reasonably been made available to the original decision-maker; and

(iii) should have regard to the policies and guidelines of the original decision-maker (if any) that are relevant to the decision under review.

Appendix 6: Summary of Approaches to Third Party Access Pricing

Cost-based approaches can be used to determine access charges on the basis of the sum of costs incurred by the incumbent in providing access. These approaches may differ depending on the types of costs covered by the access charge (e.g. short-run or long-run costs, or any contributions towards shared network costs).

Retail-minus (or 'top-down') approaches to access pricing start with the retail prices of the contestable services and subtract from them the cost of providing the contestable services. Retail-minus approaches may differ in the way in which they calculate the costs of the contestable services.

Cost- Based Approaches

Short Run Marginal Cost (SRMC)

Access prices can be set on the basis of the increased short-run costs to the access provider of providing access to the new entrant, such as the costs of additional pumping and direct connection costs. Access prices set on this basis would be very low if there is spare capacity on the system, but could potentially be very high if capacity is constrained and additional investment in infrastructure is required.

Long Run Marginal Cost (LRMC)

Access prices could also be set on the basis of the long run marginal costs of providing access, including the investment in, or accelerated development of, the network assets associated with the contestable service. IPART compared LRMC-based access with other approaches (ECPR and building block approaches – see below) in its assessment of access to the Sydney water and wastewater infrastructure. IPART estimated the LRMC access charges based on the LRMC of network capacity, plus the incremental costs of providing access, but excluding any contribution by the entrant to the shared costs on the network and any avoidable costs of access.

LRMC-based access charges could vary by location, and could therefore be used to provide locational price signals to new entrants. However, retail prices are generally uniform over a geographic area, based on an average LRMC for the network. Location-based access charges, when retail prices are uniform, could lead to 'cherry picking', whereby new entrants provide services only to high-cost customers. This could result in the incumbent being unable to recover some legitimately incurred costs. In order to avoid cherry picking, a single average LRMC would need to be used to set access charges.

LRMC-based access charges have been used in other industries, e.g. access prices for new water sources for embedded generation in electricity[106] and the use of Total Service Long Run Incremental Cost by the ACCC in telecommunications pricing.[107]

[106] Example cited in IPART (October 2005), *Investigation into Water and Wastewater Service Provision in the Greater Sydney Region: Final Report.*

[107] ACCC (July 1997), *Access Pricing Principles: Telecommunications – a Guide.*

LRMC plus Joint Costs

Access charges based on SRMC or LRMC exclude contributions by the entrant towards shared costs on the network, which can in some circumstances lead potentially to under-recovery of legitimately incurred joint costs by the incumbent. This can be addressed by adding to the LRMC access charge a component of the shared network costs attributable to the contestable service.

Building Blocks

Building block approaches calculate access charges on the basis of the new entrant's share of the average costs of access provision incurred by the incumbent (capital costs plus operating costs plus a rate of return on assets).

The ability for a new entrant to compete under a building block access regime will depend on the comparison between average costs (incurred by the incumbent) and marginal costs (likely to be faced by the new entrant). IPART found that for the provision of water services a building block approach could prevent entry to efficient entrants, because the resulting access charge could be too high to allow a sufficient margin between the new entrant's costs and the retail price.[108] This is because the access price is based on the new entrant's share of the incumbent's average costs, and the incumbent must recover this from its customers as well as its own costs. As the new entrant's water costs are likely to be close to marginal cost of water, and higher than the average water purchase costs of the incumbent, the new entrant's retail price would be higher than that of the incumbent. In order to compete, the new entrant would need to be able to provide water at less than the LRMC of water.

In relation to the provision of wastewater services, IPART found in Sydney there was more headroom for potential entrants than for water services, as the access charge based on average costs allowed a more substantial margin below the retail price.

Access charges determined using a building blocks approach are likely to be more stable than LRMC-based access charges, because average costs change more slowly than LRMC. In addition, the methodology is better understood and more familiar to industry, although some of the cost allocation assumptions may be open to dispute.

Services Sydney initially proposed a building blocks approach in its submission to the ACCC regarding the pricing methodology for access to Sydney Water's infrastructure. Building blocks-based access charges have also been used in pricing access to electricity networks, although the electricity industry, unlike the water industry, is structurally separated into generation, transmission, distribution and retail activities.

[108] IPART (October 2005), op.cit.

Retail-Minus Approaches

Efficient Component Pricing Rule (ECPR)

Under the Efficient Component Pricing Rule (**ECPR**), sometimes referred to as the Baumol-Willig rule, the access price is set equal to the average incremental cost of access, plus the opportunity cost foregone by the incumbent (i.e. the profits foregone by the access provider when the new entrant supplies customers which would have been supplied by the access provider). The ECPR access price can be determined using the incumbent's retail tariff, and subtracting from it the incremental costs of providing access (taking into account that the access provider will avoid some costs by no longer having to provide the service). Assuming that the retail price is regulated and reflects the efficient costs of service provision, an ECPR access price allows new entrants who have lower costs than the incumbent to profitably enter the market.

IPART recommended an ECPR-based access charge for the pricing of access to Sydney Water's water and wastewater infrastructure, determined as follows:[109]

Access Charge (ECPR)	=	Sydney Water's retail tariff
	+	incremental cost to Sydney Water of providing access
	–	costs avoided by Sydney Water by providing access.

A key point about the ECPR methodology is the use of *avoided costs* – the costs that the access provider would actually avoid by providing access. Avoided cost is a more short-term concept than *avoidable cost*, which are the costs which would be avoided by the access provider in the long run if it were to cease to provide the service (see the retail-minus methodology recommended by the ACCC below). Incremental costs of providing access includes facilitation costs such as those associated with interconnection and calculating the access charges.

IPART found that for the provision of water services in Sydney, an ECPR access charge was less than a building blocks access charge, since the avoided cost of providing water services is dominated by the long run marginal cost of water supply, which is higher than the average cost of water supply. The avoided costs of water supply were also high relative to average retail tariffs. For wastewater services, however, the avoided costs estimated by IPART were low (primarily treatment and disposal costs), resulting in an ECPR access charge which was higher than a building blocks access charge.

An advantage of ECPR access charges is that they are compatible with uniform retail tariffs over a geographical area (postage stamp pricing). Since the main avoided cost is the long run marginal cost of water, which is geographically uniform, access charges would also be uniform over that area, avoiding the problems of cherry picking of customers by new entrants which could arise under a building blocks approach. Further, setting ECPR access charges does not require the unbundling of water and wastewater tariffs where this is the case.

ECPR access charges also involve lower administrative costs than building block access charges, as there is no need to calculate different access prices for different parts of the network.

[109] IPART (October 2005), *Investigation into Water and Wastewater Service Provision in the Greater Sydney Region: Final Report.*

ACCC Arbitration – Services Sydney vs Sydney Water

A retail-minus approach was recommended by the ACCC in its recent arbitration ruling on the access dispute between Services Sydney and Sydney Water, using the following methodology:[110]

Access Charge (Retail-Minus) = Sydney Water's retail tariff
+ incremental cost to Sydney Water of providing access
– Sydney Water's avoidable costs of providing access.

The distinction between the retail-minus approach recommended by the ACCC and the ECPR approach used by IPART is the use of *avoidable costs* to estimate the margin below the retail price. Avoidable costs are the costs that would be avoided in the long run if the incumbent were to cease to provide the service that would be provided by the new entrant. Since avoidable costs are higher than avoided costs, which are short term in nature, access prices under the retail-minus approach would be lower than access prices under the ECPR approach. The use of avoidable costs, rather than avoided costs, is consistent with the setting of retail tariffs, which are also determined on a long-run basis.

Avoidable costs can be calculated using a building block approach, as the sum of the capital costs (return on and of capital) and operating expenditure of providing the contestable service. The initial value of the asset base required to deliver the contestable service is adjusted over time to allow for efficient capital expenditure, depreciation and disposals of assets.

Once estimated, avoidable costs are then allocated across customers according to an appropriate cost driver. The ACCC arbitration report ruled that the avoidable costs associated with treatment and disposal of sewage be allocated on the basis of customers' per kL of dry weather flows or volume discharged, and avoidable retail costs on a per customer basis.

Any inconsistency between the structure of access charges and the structure of the retail tariff would create an incentive for new entrants to cherry pick low cost customers. Uniform access charges, reflecting uniform retail tariffs, contain an implicit contribution to the postage stamp pricing which underpins the retail tariffs. However, the ACCC determined that including a contribution to postage stamp pricing in access charges would result in only a small distortion to the efficient use and investment in the sewerage network, due to the low price elasticity of demand for water.

The ACCC has also used a retail-minus approach in the pricing of telephone services.[111]

[110] ACCC (19 July 2007), *Arbitration Report: Access Dispute Between Services Sydney Pty Ltd and Sydney Water Corporation.*

[111] ACCC (November 2006), *Final Determination and Explanatory Statement: Pricing Principles and Indicative Prices – Local Call Service, Wholesale Line Rental and Public-Switched Telephone Network.*