Western Australia

Economic Regulation Authority

Inquiry on Urban Water and Wastewater Pricing

ISSUES PAPER

22 July 2004

www.era.wa.gov.au

HOW TO MAKE A SUBMISSION

Submissions on any matters raised in this Issues Paper or in response to any matters in the Terms of Reference should be in written form and electronic form (where possible) and addressed to:

Inquiry on Urban Water and Wastewater Pricing
Economic Regulation Authority
Level 6 Governor Stirling Tower
197 St Georges Terrace
PERTH WA 6000

Email: watersubmissions@era.wa.gov.au
Fax: (08) 92131999

Submissions must be received by **Friday 3 September 2004**.

In general, submissions from interested parties will be treated as in the public domain and placed on the ERA website. 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 ERA's submissions policy, see the ERA website.

Further information regarding this inquiry can be obtained from:

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1 INTRODUCTION

The Treasurer has asked the Economic Regulation Authority, which is independent of government, to undertake an inquiry into the prices for water and wastewater in urban Western Australia.

The purpose of the inquiry is to inform government's decisions on the level and structure of water prices in the 2006-07 financial year (prices for the Water Corporation, Aqwest and Busselton Water are set by the Minister for the Environment during the budget process). The Treasurer has indicated that this inquiry will ensure "accountability and transparency" in the way water prices are set[1].

The terms of reference (Attachment 1) state that the inquiry will only include services to urban areas. The focus will be on Perth, Bunbury and Busselton. A representative sample of other cities and towns will be considered for the purpose of determining whether the uniform tariff is set at an appropriate level.

The water service providers that are covered by the inquiry include the Water Corporation, Aqwest and Busselton Water. The inquiry will not cover other water service providers, rural water prices or the pricing of drainage, trade-waste and developers' contributions.

This will be the first independent inquiry into water pricing in Western Australia. The request is in accordance with section 32(1) of the *Economic Regulation Authority Act 2003,* which allows for the Treasurer to refer to the Authority for an inquiry any matter related to a regulated industry (such as the water industry).

The matters that the Treasurer has requested the Authority consider in undertaking the inquiry include:

- the efficient cost of providing water and sewerage services;
- the standards of service that apply, including standards of quality, reliability and safety;
- the need to encourage investment in the water industry;
- water supply demand management;
- the protection and development of future water sources;
- ecologically sustainable development; and
- the social impact of the recommendations.

In undertaking the inquiry, the Authority is cognisant of section 26 of the *Economic Regulation Authority Act 2003*, 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;

[1] Treasurer's media statement, 16 June 2004.

- 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 invites interested parties to consider the terms of reference and the issues discussed in this paper and prepare a submission to the inquiry.

2 REVIEW PROCESS

The decision making process that the Authority will follow in arriving at pricing recommendations is demonstrated in the chart on the next page. The approach involves first considering the water supply and demand situation and why government regulates the price of water. The Authority will then consider how water service providers can be encouraged, in the absence of competition, to operate efficiently. Consideration will be given to the revenue requirements of each water service provider and how this should translate into pricing structures. If the initial recommendations on pricing are likely to have adverse impacts on, for example, social and environmental outcomes, the pricing recommendations will be reconsidered.

The Authority's pricing recommendations will be informed by the following public consultation process.

- This Issues Paper calls for submissions on the matters in the terms of reference (submissions are due by Friday 3 September 2004).

- A Methodology Paper will be published in October 2004, which will present the Authority's decision on the methodology that will be used to arrive at each service provider's revenue requirement. The Methodology Paper will call for submissions from service providers on their recommended prices using the methodology and members of the public will be invited to comment on the service providers' submissions.

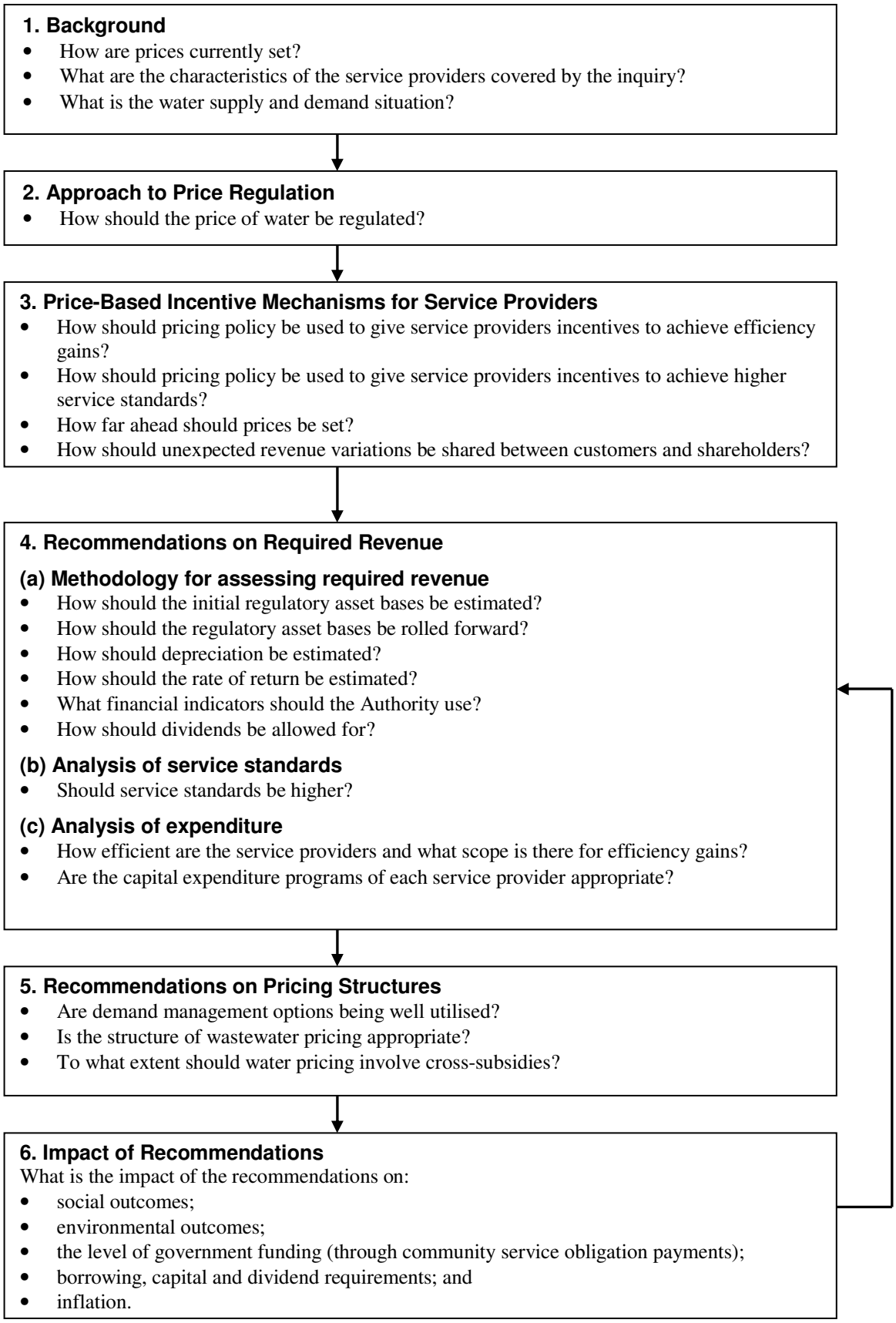
- The Draft Report will be published by 18 March 2005. The Draft Report will present the initial findings of the inquiry and will call for submissions on the Draft Report.

- Public forums will be held in Perth, Bunbury and Busselton in April 2005 to discuss the Draft Report.

- The Final Report will be published by 12 August 2005.

An important part of the review process is the publication of a methodology paper in October 2004. That paper, which will draw on information obtained in submissions, will present the methodology that will be used to determine each water service provider's required revenue.

Decision Making Process for the Pricing inquiry



3 BACKGROUND

3.1 How Are Prices Currently Set?

3.1.1 The Price Setting Process

The Minister for the Environment has the statutory authority to approve charges that are proposed by the Water Corporation, Aqwest and Busselton Water.

- The Minister's authority to set the Water Corporation's tariffs is accorded by section 41 of the *Water Agencies (Powers) Act 1984*; and

- The Minister's authority to set Aqwest's and Busselton Water's tariffs is accorded by section 92 (4) of the *Water Boards Act 1904*.

During the Budget round each year the Water Corporation, through the Minister for Government Enterprises, and Aqwest and Busselton Water, through the Minister for the Environment make submissions to government on their proposed prices for the following year. The Department of Treasury and Finance considers all pricing proposals and provides advice to the Treasurer while the Office of Water Policy considers the proposals by Aqwest and Busselton Water and provides advice to the Minister for the Environment. The submissions are then considered by the Expenditure Review Committee (a sub-committee of Cabinet), and are subsequently considered by Cabinet and included in the Budget. The Minister for the Environment then approves the By-laws that allow the Water Corporation, Aqwest and Busselton Water to implement the new charges.

The *Economic Regulation Authority Act 2003* provides for the Treasurer to refer to the Authority for an inquiry into "prices and pricing policy in respect of goods and services provided" in the water industry. The current inquiry will provide advice to the Treasurer (as well as be tabled in Parliament) for the purposes of setting water and wastewater prices in the 2006-07 Budget.

The Authority's role is therefore advisory only and not deterministic.

The following sections explain the current structure of water and wastewater tariffs in Western Australia. The actual tariffs for 2003-04 can be found in Attachment 2.

3.1.2 Water Tariffs

3.1.2.1 Residential Water Tariffs

There are two components of residential water tariffs:

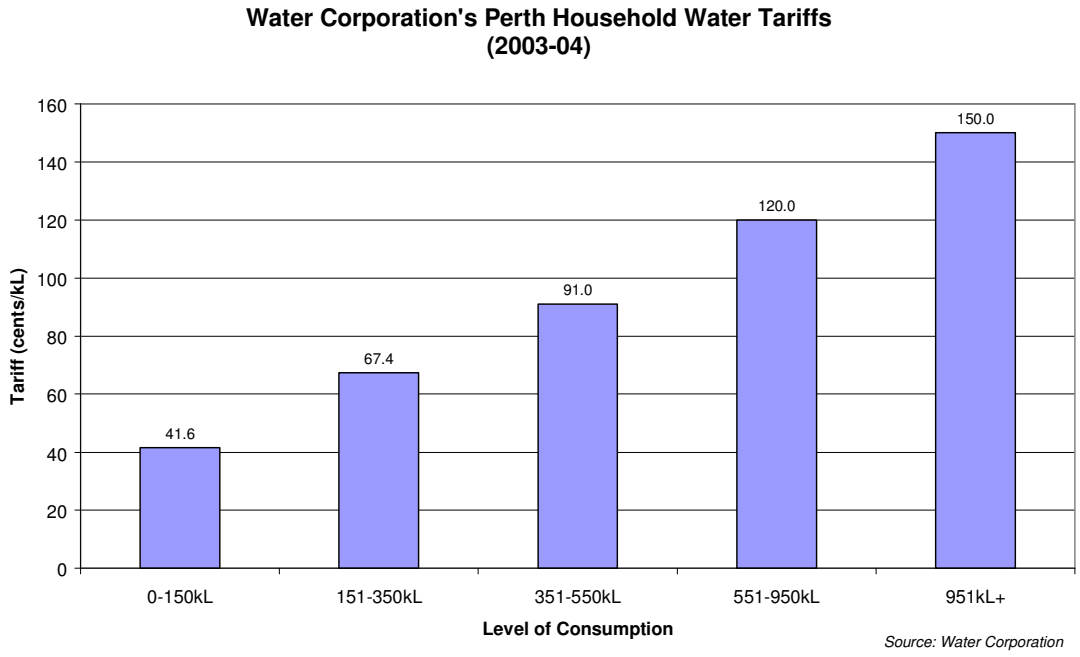
- a usage charge, which increases in steps as additional water is consumed; and

- a fixed service charge, which has the purpose of recovering the fixed costs associated with water service provision.

A characteristic of the existing tariff structure is the lower rate for water usage up to 150kL per annum (41.6cents/kL), which is funded by a higher rate for water usage above 550kL per annum (e.g. $1.20/kL from 551kL to 950kL) [2].

[2] The 150kL free allowance was replaced in 1993.

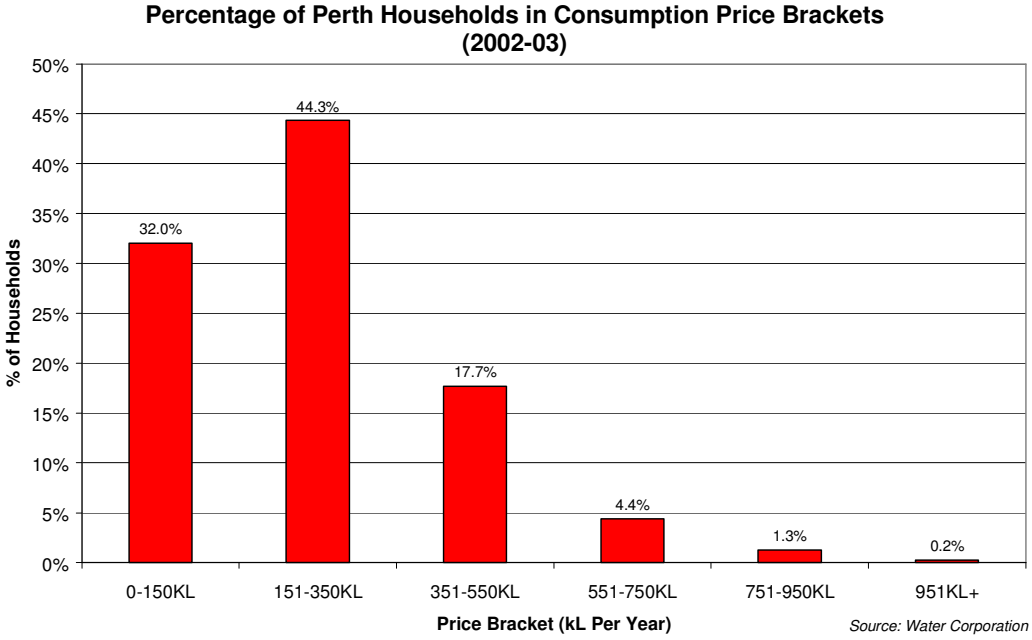
The progressive tariff scale for Water Corporation's Perth residential customers is shown in the following chart.



Another characteristic of the existing tariff structure is the uniform tariffs for water usage up to 350kL per annum (the average household usage in Perth under the current water restrictions is 260kL), which is intended to provide all consumers in towns throughout Western Australia that are serviced by the Water Corporation with the same charge. The uniform tariff is funded by a subsidy from government (called a Community Services Obligation payment or CSO).

The following chart shows that 76% of residential customers in the Perth metropolitan area are charged the same uniform tariff structure as exists throughout the State, because they consume less than 350kL per annum[3].

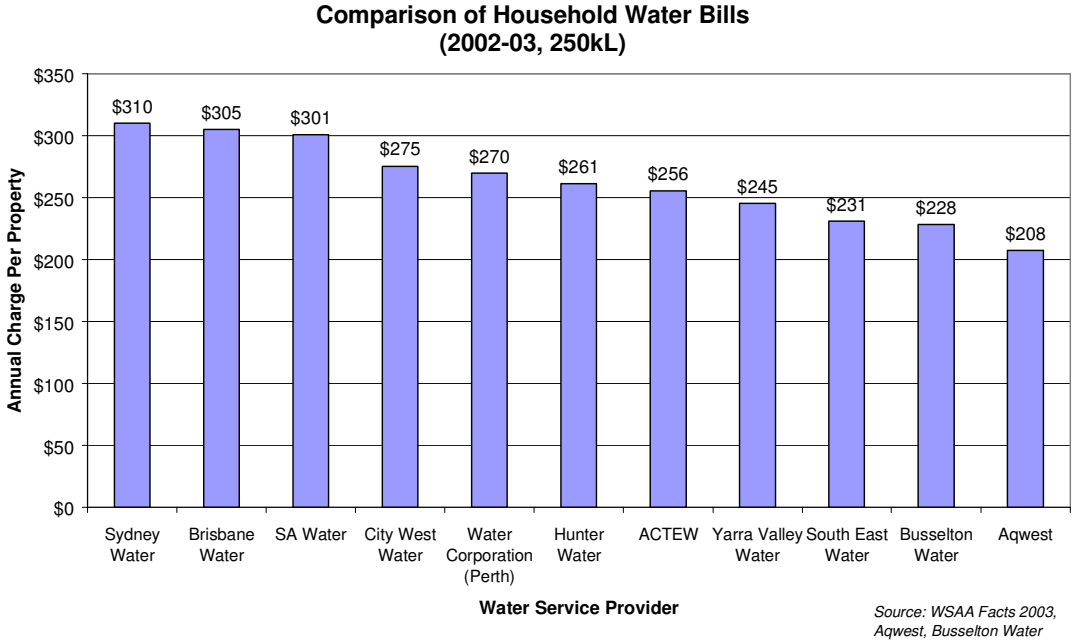
[3] The chart shows the percentage of households that have their highest component of use in each of these brackets (all customers use the 0-150kL component).



The Water Corporation's residential water tariffs differ between Perth and country towns for usage above 350kL. Special (lower) tariffs for usage between 350kL and 650kL apply to residential properties in the North of the State (generally above the 26th parallel). Households in other towns are charged at a higher rate than households in Perth for usage above 450kL (they are charged slightly less for usage between 350kL and 450kL). The different regional rates reflect the cost of water supply to each area.

Concession card holding customers may be eligible for rebates of up to 50% of their annual fixed service charge and may also be eligible for a concession on their water usage charges.

The following chart shows the price of water in Perth, Bunbury and Busselton compared to the price charged by other water service providers in Australia (for households using 250kL per annum in 2002-03).

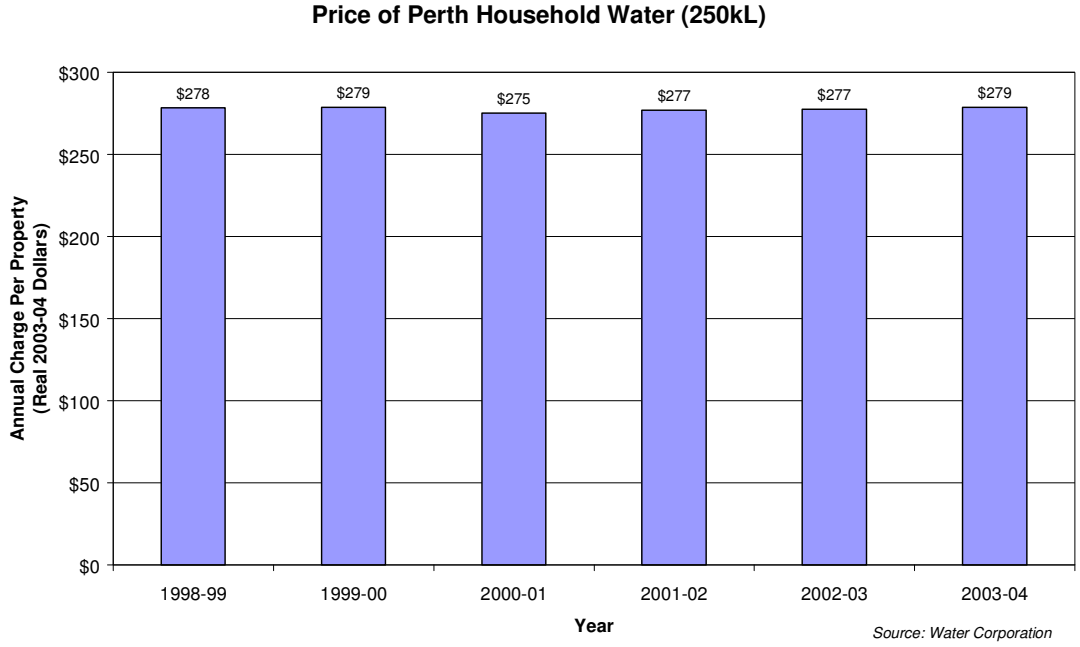


Source: WSAA Facts 2003, Aqwest, Busselton Water

Residential water tariffs differ significantly between Perth, Bunbury and Busselton, which is mainly the result of lower fixed service charges in Busselton and even lower fixed service charges in Bunbury (the usage charges are similar between the three service providers).

The following chart shows that the price of residential water for Perth households (in real 2003-04 prices) has remained relatively constant over the past six years, because prices have increased in line with the inflation rate[4]. There will be a decrease in real prices in 2004-05 because residential water prices will not be adjusted by inflation this year.

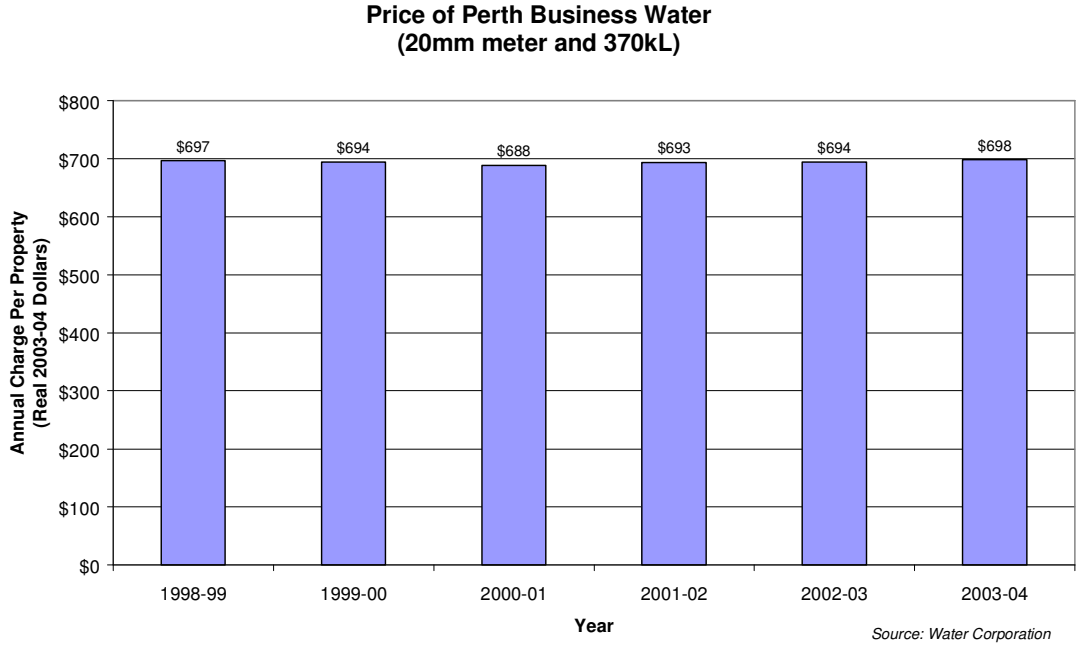
[4] The inflation rate used to adjust prices has generally been the annual change in the General Price Index (GPI), which is the annual percent change in the Perth Consumer Price Index based on the preceding September year.

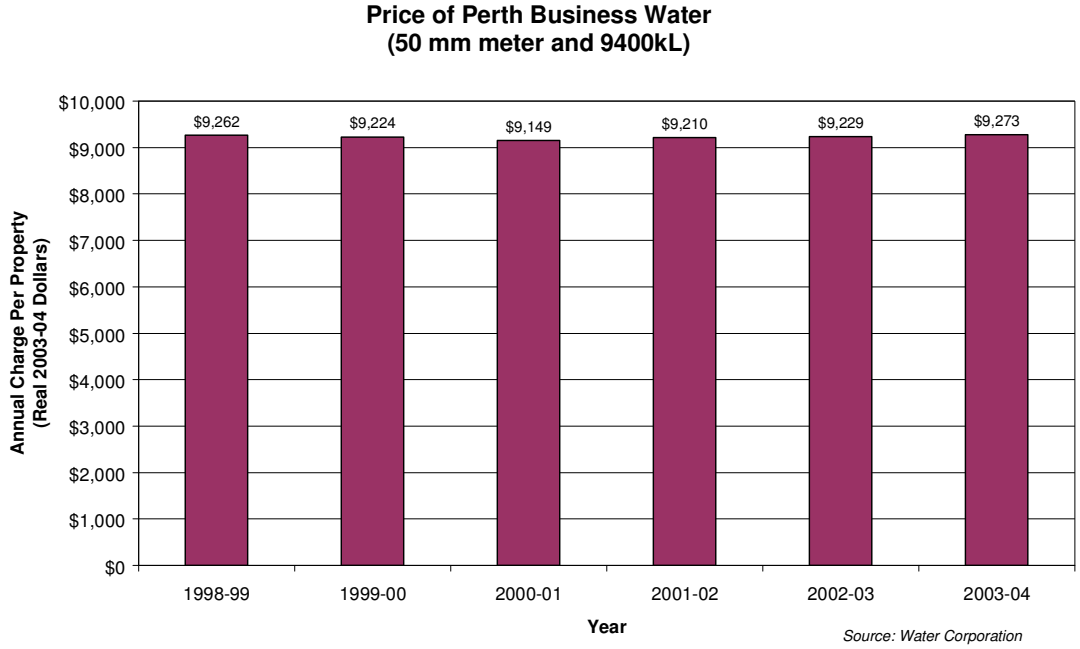


3.1.2.2 Commercial Water Tariffs

For commercial customers in Perth, the fixed charge is based on the capacity of the water service meter provided and relates to the flow capacity of the service. Customers pay a usage charge for their water usage.

The following charts show commercial water tariffs have remained relatively constant over the last six years (after allowing for inflation).





The Water Corporation's commercial water customers elsewhere in the State pay the same fixed service charges as customers in Perth. However, their usage charges differ depending on the location of their town or area.

Commercial water customers in Bunbury are charged a flat rate per kilolitre for all usage in excess of an allowance, which is set in relation to the gross rental value (GRV) of the property[5].

Commercial water customers in Busselton are charged a flat rate per $ of GRV.

Aqwest and Busselton Water will phase in service-based charges for commercial customers over five years (from 1 July 2005).

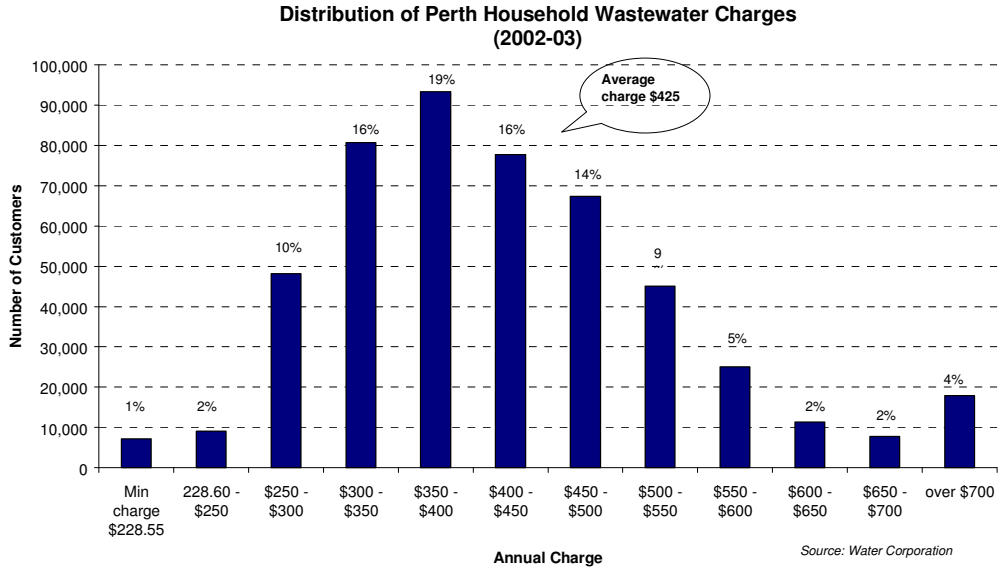
3.1.3 Wastewater Tariffs

3.1.3.1 Residential Wastewater Tariffs

Wastewater charges for the Water Corporation's residential customers are based on the GRV of the property. There are three tiers of rates in the dollar of GRV and a minimum charge applies (the actual charges are provided in Attachment 2).

The distribution of charges for Perth households is shown in the following chart.

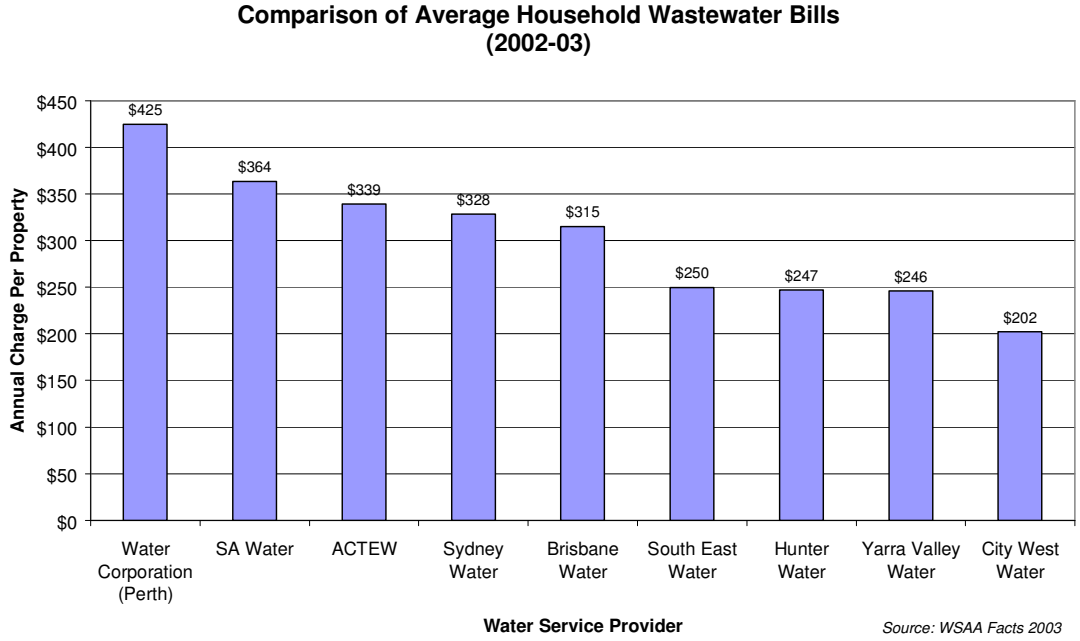
[5] The Gross Rental Value (GRV) of a property is the gross annual rental that the property might reasonably be expected to realise if let on a tenancy from year to year (Department of Land Information, "Valuer General's Rating and Taxing Values", August 2003).



The tariffs are set independently for each of the Water Corporation's country town wastewater services, depending on the costs of providing the service[6]. There is a cap on country residential sewerage charges (of $599 per annum), which does not apply to Perth customers.

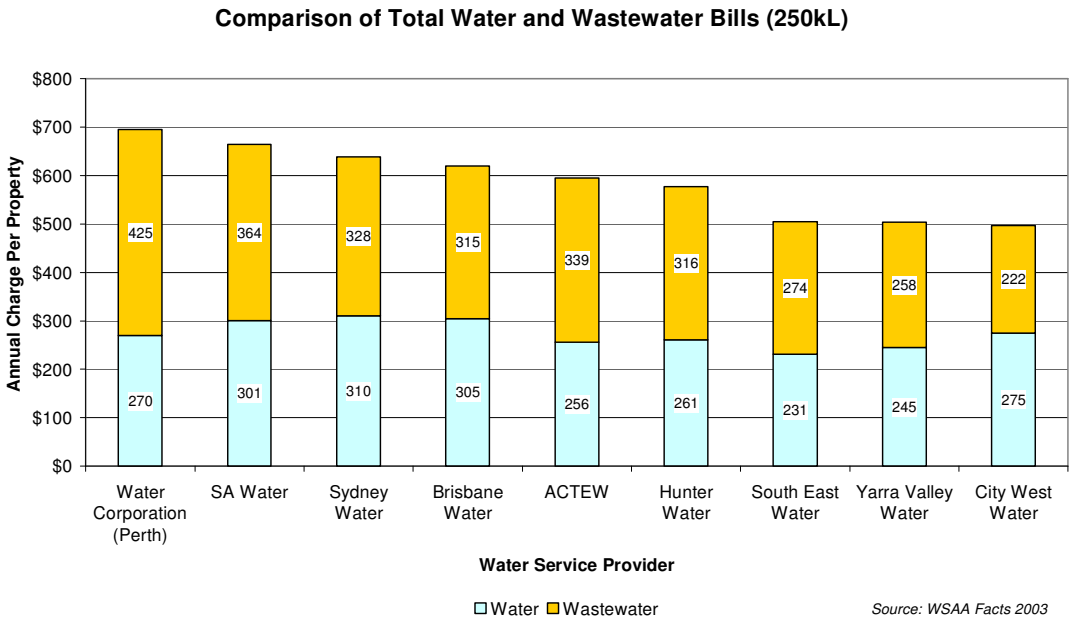
Concession card holders are eligible for rebates on their sewerage charges (as they are for water charges).

The following chart shows that the average annual household wastewater bill for Perth households is significantly higher than the average amounts charged by other water service providers around Australia.



[6] The maximum rate is 12c per $ of GRV.

The higher wastewater charge in Perth contributes to Perth households having the highest average annual total water and wastewater bills of comparable water service providers, as is shown in the following chart.



South Australian Water Corporation also uses property values as the basis for charging for wastewater, and has the second highest total water and wastewater bill. The other water service providers shown in the chart base their wastewater charges on either a flat fee or two part tariffs (with a fixed charge and an estimated usage charge)[7].

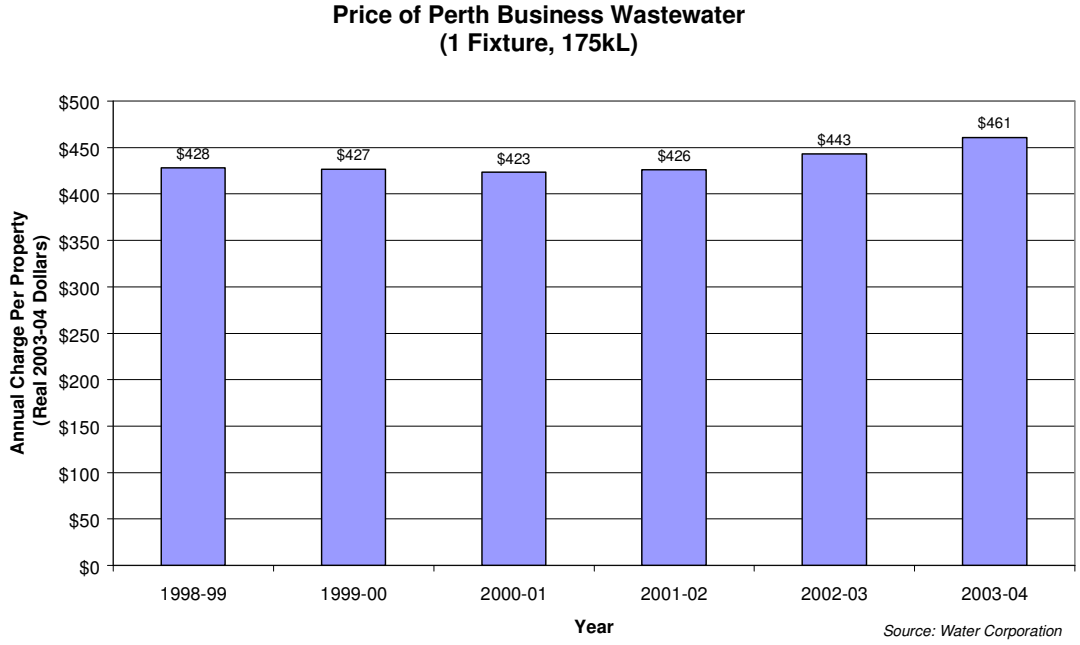
3.1.3.2 Commercial Wastewater Tariffs

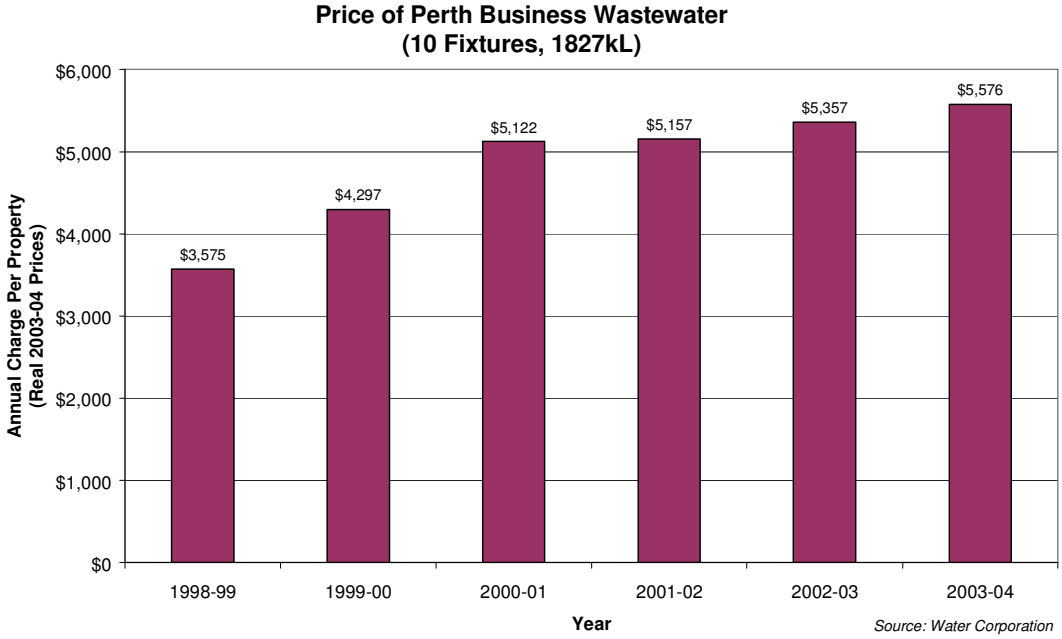
The commercial wastewater tariff consists of a fixed service charge, based on the number of major sewerage fixtures (toilets and urinals) and a usage charge, based on the assessed volume of wastewater discharged into the Water Corporation's sewerage system.

This charging structure is replacing the old system of GRV-based charging, which is being phased-out to make way for a more cost reflective basis of charging.

The following charts show that commercial wastewater tariffs have increased over the last two years due to the transition to the new charging system.

[7] Sydney Water Corporation, Brisbane Water and ACTEW base their wastewater charges on a fixed charge, while Hunter Water Corporation, South East Water Limited, Yarra Valley Water Limited and City West Water Limited use two-part charges.





The Government decided in 2003 to apply the new system of commercial wastewater charging across all commercial customers throughout the State. The Water Corporation has commenced the phase-in of the new system.

3.1.4 Uniform Tariff Policy

Successive governments have sought to remove differences in charges between residential customers in Perth and regional areas. The Water Corporation's residential customers, wherever they live in the State, are now charged uniform prices for fixed service charges and for water usage charges up to 350kL. However, differences still

exist for wastewater charges, with different rates in the dollar of GRV applying for each town serviced by the Water Corporation.[8]

Differences in residential water tariffs also exist between Perth, Bunbury and Busselton. While the usage charges up to 350kL are similar, the fixed service charges in Bunbury and Busselton are significantly lower than in Perth (Attachment 2 provides the actual rates).

3.1.5 Community Service Obligations Policy

Prices are reduced by the State's Community Service Obligations policy. Under this policy, government compensates the Water Corporation for undertaking activities that are not commercially viable, such as providing uniform tariffs. The 2004-05 Budget includes $273.6 million for CSO payments to the Water Corporation, which comprise:

- $180.5 million for country losses ($149.7 million for water, $13.8 million for sewerage, $7.2 million for drainage, $8.6 million for irrigation, $1.2 million for other);
- $68.4 million for revenue concessions ($35.3 million for water, $30.7 million for sewerage, $2.5 million for drainage); and
- $24.6 million for infill sewerage.

The $273.6 million CSO payment to the Water Corporation in 2004-05 is almost exactly offset by an expected $275.5 million dividend payment to government for that year, although there is no direct relationship between these payments. (Note that the State government is expecting to receive $146 million in income tax equivalent payments from the Water Corporation in 2004-05.)

Aqwest and Busselton Water do not receive CSO payments. However, Aqwest and Busselton Water do get rebates from the State Revenue Office for the concessions they give to customers who are eligible for State Seniors' Cards (although these rebates are a small portion of the total concessions provided, e.g. Aqwest advised that in 2002-03 it provided $236,000 worth of concessions to its customers and it received $6,000 in rebates). In addition, Homeswest provides concessions on water bills to its concession card holding customers who are also customers of Aqwest.

[8] Country sewerage has a lower minimum charge ($220 per year compared to $236 for Perth) and the charge is capped at $599 per year. This cap does not apply to the 8% of Perth residential sewerage customers that pay more than $599 per year.

3.2 What Are The Characteristics Of The Service Providers Covered By The Inquiry?

In Western Australia, most water services are provided by public sector organisations[9]. Private sector involvement tends to be limited to arrangements comprising contracts of service and the out-sourcing of certain business activities such as information technology, design, maintenance, billing and construction.

The Water Corporation is the largest service provider and holds approximately 97 per cent of the market share in nearly all market segments. The other service providers comprise water boards, local government authorities, cooperatives and private enterprise including a mining company.

The water service providers that are covered by the inquiry include the Water Corporation, Aqwest and Busselton Water.

The Water Corporation was established on 1 January 1996 under the *Water Corporation Act 1995*, replacing the Water Authority of Western Australia. The Water Corporation's asset base comprises 244 water treatment plants, 103 dams and reservoirs, 705 bores, 28,862km of water mains, 96 wastewater treatment plants, 11,928 km of sewers and 2,767km of drains. In 2002-03 the Water Corporation abstracted 140GL of groundwater from production bores and accessed 75GL of water from its dams and reservoirs. In that year, the Water Corporation provided potable water services to 1,426,000 customers, received wastewater from 1,232,000 customers and earned total revenue of $1,131 million[10].

Busselton Water and Bunbury Water Board (Aqwest) were established under the *Water Boards Act 1904*. Busselton Water was licensed under the *Water Services Coordination Act 1995* in October 1996 and Aqwest was licensed in January 1997.

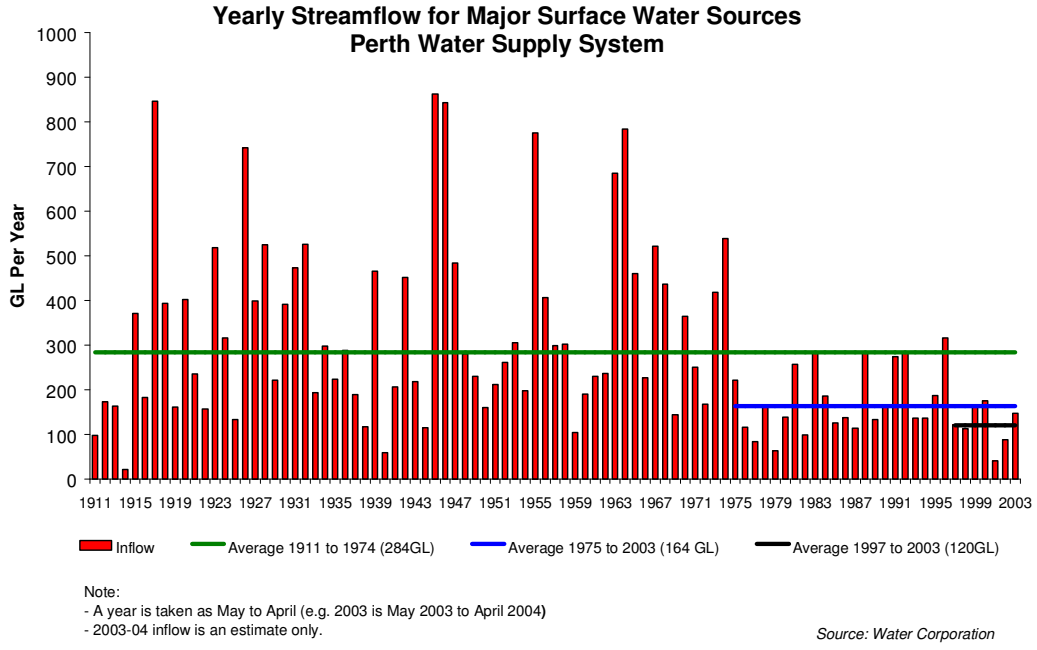
Aqwest provides potable water services to the City of Bunbury area. It serves a population of 32,000 people via 14,500 service connections. Water is sourced from the Yarragadee Aquifer. Aqwest's asset base comprises 13 bores, 6 treatment plants, 4 elevated service reservoirs (total storage capacity is 116,000 m^3) and 332km of pipes. Total abstraction is around 7GL per year. Its total revenue in 2002-03 was $7.2 million[11].

Busselton Water provides potable water services to 8,000 service connections in Busselton and the adjoining areas. In 2002-03, Busselton Water extracted 3.6GL of water from the Leederville and Yarragadee aquifers using eight production bores. Water is treated using five treatment plants and the water is delivered to customers using 222 km of water mains. Its total revenue in 2002-03 was $3.4 million[12].

[9] Mining companies provide some services in remote areas. Local government authorities provide water and sewerage services in some areas. Irrigation cooperatives have taken over the provision of water delivery in Kununurra, Carnarvon, Waroona, Harvey, Collie and Preston.
[10] Source: Water Corporation.
[11] Source: Aqwest.
[12] Source: Busselton Water.

3.3 What Is The Water Supply And Demand Situation?

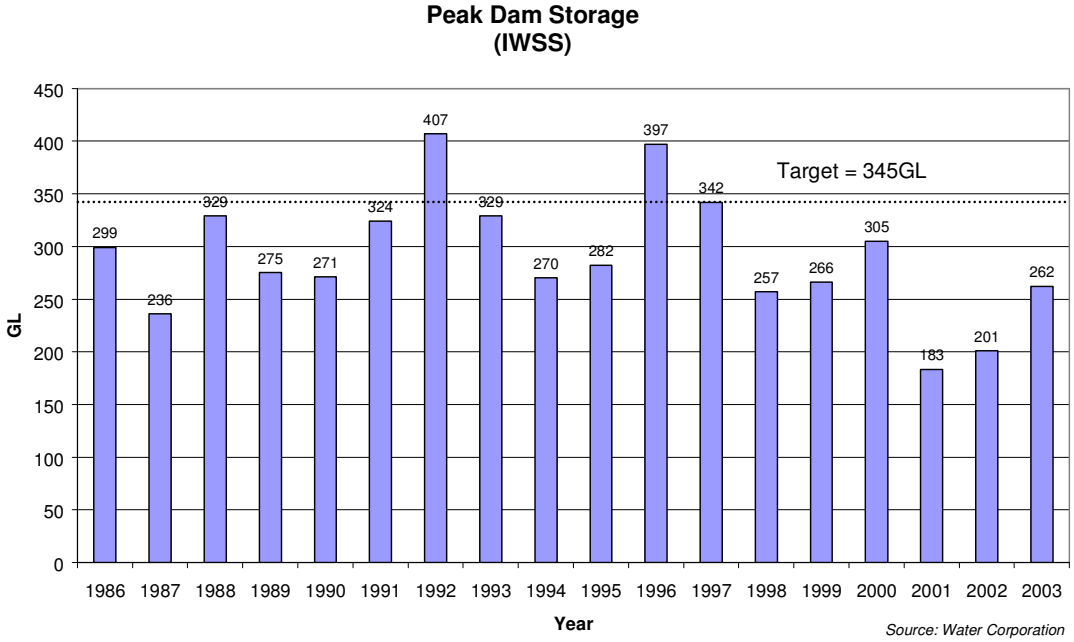
As shown in the following chart, the average annual stream-flow for the last 29 years has been 58% of the long-term average for Perth's water supply system. The chart also shows that the stream-flow over the last seven years has been a further 27% below the 29-year average.



The chart shows that Perth has not had a winter of rain that delivers 250–300GL of water into the dams for 7 years (and 600-800GL stream-flow for 29 years). The stream-flow in 2003 was just below the average 29-year level.

Dam Storage

The following chart shows the storage of the dams at the end of winter over time compared to the target of 345GL (which the Water Corporation has indicated is the level at which water restrictions would be changed to either three days per week or lifted entirely).



After being at 305GL at the end of the winter rains in 2000 and reducing to 183GL at the end of the winter of 2001, dam storage has gradually recovered to 262GL at the end of winter in 2003. If the rainfall this year is similar to last year, the dam storage will be around 310GL at the end of the 2004 winter.

Groundwater

The Water Corporation has responded to the reduced inflows by doubling the source capacity of the Integrated Water Supply Scheme (IWSS)[13], including increasing abstraction from the Gnangara and Jandakot Mounds to the extent that groundwater now comprises 50% of the Integrated Water Supply Scheme. The Water Corporation accounts for approximately 30% of the draw on Perth groundwater.

The Environmental Protection Authority (EPA) has expressed concern that the current abstraction of groundwater from the Gnangara and Jandakot Mounds by both public and private users is not sustainable, although the Water Corporation has complied with its licences (and has also turned off bores in environmentally sensitive areas).[14]

The EPA's analysis was the subject of an audit report to the Minister for the Environment on compliance by the Water and Rivers Commission with the environmental conditions applying to groundwater abstraction from the Gnangara Mound[15]. Although the majority of non compliances have been small, the EPA considers there have been declines in vegetation health, serious threats to some cave fauna and extreme concern over the possible acidification of some wetlands[16].

[13] The IWSS supplies water to Perth, Mandurah, Pinjarra and the Wheatbelt and Goldfields areas.
[14] More than 30 of the Water Corporation's bores on the Gnangara Mound have been turned off to protect nearby ecological values.
[15] Environmental Management of Groundwater Abstraction from the Gnangara Mound July 2000 - June 2003 Triennial Report, Environmental Protection Authority, June 2004.
[16] The Water and Rivers Commission is currently preparing a review of the environmental conditions that apply to both Jandakot and Gnangara Mounds, mainly because of the level of breaches of conditions and will, in due course, submit this to the EPA for their consideration.

The Government's response to the groundwater situation includes a $6 million program to meter private users of bores on the Gnangara Mound.

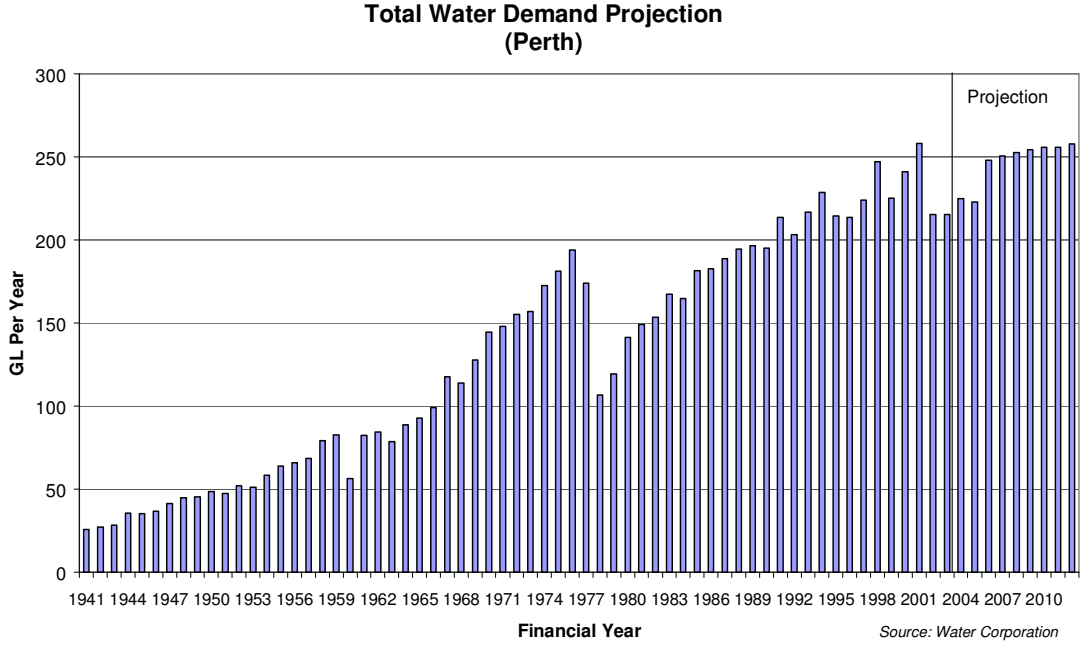
In addition to concern over the amount of groundwater that can be abstracted on a sustainable basis, future water supply options for Perth depend on whether the stream-flow will continue the 7-year trend or the 29-year trend.

Scenario 1: The 29-year Trend Continues

If it is assumed that the 29-year climate and stream-flow sequence continues and the State Water Strategy target of 155KL per capita is achieved by 2012, the Water Corporation estimates that current supply capacity exceeds the amount that is expected to be demanded over the next eight years.

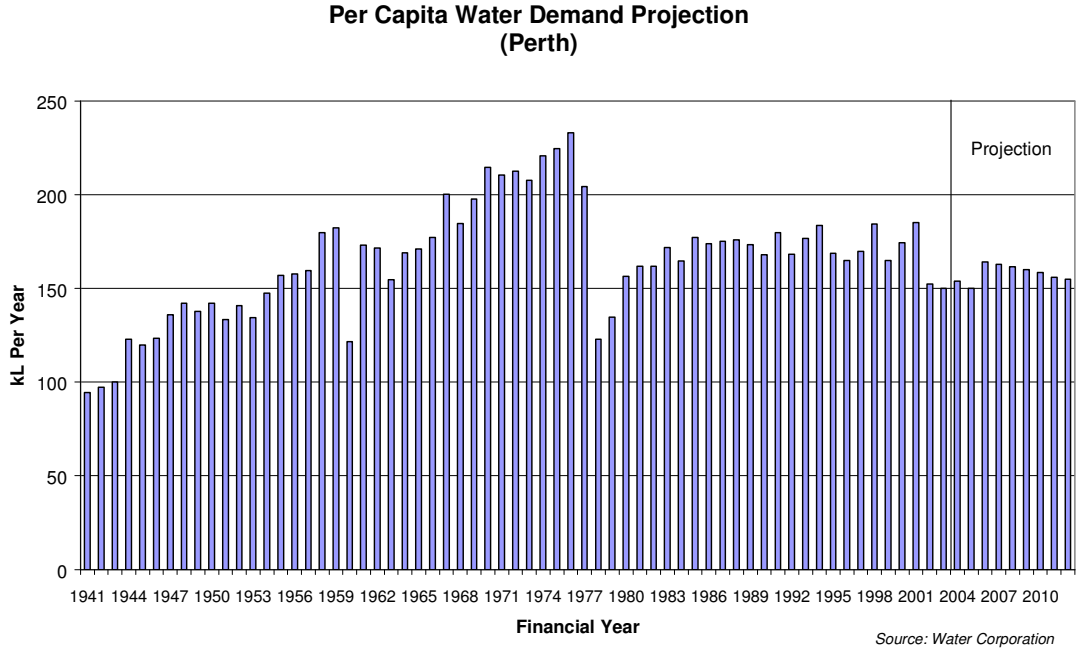
Under this scenario, the increase in water supply would be achieved by options such as water trading, demand management, catchment management, Wellington Dam redevelopment and water recycling for industrial applications. According to the Water Corporation, no new major supply sources would be needed under this scenario.

The projected demand for the Perth metropolitan area under this scenario is shown in the following chart[17].



The projection on a per capita basis is shown in the following chart.

[17] This chart assumes two day per week water restrictions continue until 2005-06. Water restrictions were imposed for the (financial year) periods 1957-60, 1969, 1974, 1978-79 and since 1994.



Scenario 2: The 7-year Trend Continues

If it is assumed that the 7-year climate and stream-flow sequence continues, current supply capacity is below the forecast of demand that is presented in the chart above. Two-day per week watering restrictions would continue and a full sprinkler ban would be a possibility.

Under this scenario the Water Corporation has advised that a major boost of reliable and secure supply capacity would be required.

The Water Corporation is considering two substantial water source projects to meet projected demand: a 45GL seawater desalination plant to be located at Kwinana and a pipeline to transport water from bores located south of Nannup which would tap into the South West Yarragadee Aquifer. According to the Water Corporation, both would be required within the next ten years.

The Water Corporation has indicated that the desalination plant is capable of delivering a reliable and secure supply capacity in a short time-frame (24 months). The EPA has concluded that the proposal will not cause adverse impacts on the marine water quality and biota of Cockburn Sound as long as certain conditions, commitments and procedures are imposed (e.g. related to the emissions of nitrogen and saline water into Cockburn Sound).

The South West Yarragadee groundwater scheme would not be ready for a decision to proceed until late 2005 (the Water Corporation is conducting an $8 million project to establish the sustainable annual yield from the aquifer)[18].

The Water Corporation has estimated that the cost of the 45GL per annum Kwinana desalination plant is $50 million per annum. This is made up of $24 million in operating costs and $26 million in capital costs. By comparison, the estimated cost of

[18] The Water and Rivers Commission is currently completing a groundwater management plan for the area including the South West Yarragadee proposal.

the South West Yarragadee project is $38 million per annum. This is made up of $10 million in operating costs and $28 million in capital costs[19].

According to the Water Corporation, the desalination plant would require a 6.1% across the board increase in the charge for all services or a 13.5% increase in the total charge for water. The comparative figures for the South West Yarragadee project are 4.7% and 10.3%.

A further option, recently presented by Harvey Water, is to convert the irrigation channels between Waroona and Dardanup to underground pipes, at a total cost of $250 million and then make the water savings available for the IWSS. Harvey Water estimates that this option would save about 50GL of water[20].

Security of Water Supply

An important consideration in assessing future water source options is the assumption about system security, or the buffer between supply and demand. According to the Water Corporation, if the desalination plant is constructed it would be used to reduce reliance on groundwater and return peak dam capacity to the target of 345GL (the level where two day per week water restrictions would not be needed). If the desalination plant is constructed and stream-flow returns to the 29-year trend, then the desalination plant will allow more rapid recovery of dam levels to provide added security of supply and the capacity would gradually be used to service growth in demand.

The Authority is particularly interested in seeking submissions on the level and frequency of water restrictions that should be incorporated into future supply planning. Currently, it appears that consumers in Perth are accepting two day per week water restrictions, and perhaps they are doing so in return for lower water bills. A survey in 2002 by the CSIRO Australian Research Centre for Water in Society showed that 75% of respondents considered it acceptable to limit sprinkler use to two days per week[21]. Further, over 85% of respondents supported the imposition of regular water restrictions to encourage people to use less water (only 12.5% were in favour of having water restrictions in times of drought only).

Water Supply and Demand in Bunbury and Busselton

In comparison to Perth, Bunbury and Busselton do not have water supply problems.

Aqwest is licensed to access 9GL of water per annum with a further 2GL on hold for future allocation as necessary. At present, abstraction is around 7GL per annum. Aqwest's current treatment capacity is 40,000kL per day. The maximum daily demand for the past year was 36,000kL. Combined with storage of 116,000kL, demand is easily met, and Aqwest expects the current arrangements will cope with growth for the next five years.

Busselton Water's abstraction licences enable it to abstract 18GL of water per annum, which is significantly in excess of its current abstraction of 3.6GL.

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[19] In net present value terms, the cost of the desalination plant is $1.11/kL and the cost of the South West Yarragadee project is $0.85c/kL.

[20] Harvey Water Media Release, 10 June 2004. Harvey Water estimates that the cost of this option is $0.50c/kL.

[21] B.E. Nancarrow, J.D. Kaercher, M. Po, Community Attitudes to Water Restrictions Policies and Alternative Sources: A Longitudinal Analysis 1988-2002.

Are the demand projections (in the charts above) for the IWSS reasonable?

What level of security should be incorporated into future supply (i.e. what level and frequency of water restrictions is acceptable?)

What is the most efficient future water source option for meeting the projected demand?

4 APPROACH TO PRICE REGULATION

4.1 Why Regulate The Price Of Water?

In Western Australia, the price of water is currently being regulated (through government setting the price) for the following purposes:

- To provide a reasonable return on the assets employed (including ensuring they have the capacity to invest to maintain their long term capital base and viability). The provision of water distribution is a capital-intensive process that is typically undertaken by one organisation in a city or region. Whenever there is only one organisation it is not constrained by the threat of other organisations taking business away. It could price above the level that would be achieved in a competitive market.

- To ensure that the amount of water that is required for basic needs is affordable. As water is essential for life, the price of the quantity of water that is required for basic needs may not be affordable if it is set at a profitable level.

  - Water usage below 150kL per annum is provided at a discount, which is funded by having higher prices for usage above 550kL per annum.

  - Customers who live in lower valued properties pay less for their wastewater. The subsidy is funded by higher charges to customers who live in more highly valued properties (there are three tiers of rates in the dollar of GRV). There is no relationship between the cost of service and the price paid.

  - Pensioners and concession card holders are given discounts of up to 50% off their water bills. Government contributes to the costs of these discounts by providing subsidies to water service providers[22].

- To treat customers throughout Western Australia consistently. Customers throughout Western Australia are charged the same amount for usage up to 350kL. The Water Corporation receives a subsidy to provide water services to parts of Western Australia where the costs of service provision would otherwise exceed the revenue.

[22] The subsidies are mainly paid to the Water Corporation. The subsidies received by Aqwest and Busselton Water are discussed further in the paper.

- To promote the conservation of water. In theory, government would not normally be required to intervene in water pricing to balance supply and demand because the water service provider should be proposing that prices are set at a level that reflects the costs associated with developing additional water sources (marginal cost pricing, which should also include the environmental costs of developing additional water sources). In times of unexpected low rainfall, however, government may increase prices for a specified period to send customers a signal about the cost of bringing on a more expensive source so that customers can choose to adopt water conservation measures as a more cost-effective alternative. For example, water prices for very high levels of usage (above 550kL) were increased as part of the State Water Strategy as a way of reducing demand for water. However, for equity reasons, governments generally prefer restrictions on watering rather than higher prices.

There are other ways that governments can regulate prices that have not, as yet, been introduced in Western Australia. For example, the ACT Government has imposed an environmental charge on water consumers[23]. The charge includes an amount for catchment management costs, a component to reflect scarcity of water and a component for environmental costs[24]. In addition, the Victorian Government has recently announced that it will require each water service provider to pay environmental contributions (based on a percentage of their revenue) to fund environmental projects with the expectation that the cost would be passed on to consumers[25].

Through the State Water Taskforce, the Western Australian Government investigated a proposal that would have seen providers (and consequently consumers) contribute to the cost of water resource management[26]. Under the proposal, licensed water users (e.g. water service providers, mining companies, industry, irrigators, local government) would have paid either an administrative fee for their licence or make a contribution to the cost of water resource management (such as catchment and environmental protection, monitoring, planning, licensing and water allocation). It was decided that the cost of licensing and management would continue to be met by general taxpayers and licences would remain free[27]. Licence fees are currently levied in all other Australian States and Territories.

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[23] The CoAG pricing principles require "externalities" to be incorporated into water pricing. The notes to the pricing principles indicate, however, that "externalities" means "environmental and natural resource management costs attributable to and incurred by the water business." In other words, if the environmental costs are not incurred by the water service provider, then according to CoAG they do not need to be incorporated into prices.

[24] The water abstraction charge is currently 20 cents per kilolitre.

[25] Victoria Government (June 2004), White Paper, *Securing Our Water Future Together*. The environmental contributions will amount to $225 million over four years.

[26] To protect their investments in their water supply services, some water service providers contribute to investigations (e.g. the South West Yarragadee), water source protection and monitoring.

[27] In the 2004-05 Budget, the Water and Rivers Commission was provided with about $17 million for these purposes. In 2003, the Office of Auditor General found that funding for water resource management had declined by 33% in real terms between 1998/99 and 2002/03. As a consequence, there were a number of management risks which needed to be addressed by government. The Commission has just completed a report detailing what changes would be required to manage the state's water resources to an acceptable standard. This report is being considered by the Minister for Environment before a recommendation is made to government.

Is it appropriate to use water pricing to achieve all of the purposes that are outlined above? Would it be more efficient to use other approaches to achieve these purposes?

Is it appropriate to use water pricing to achieve other purposes, such as environmental objectives or water resource management?

5 PRICE-BASED INCENTIVE MECHANISMS FOR SERVICE PROVIDERS

5.1 How Can Pricing Policy Be Used To Give Service Providers Incentives To Achieve Efficiency Gains?

The governing legislation of the Water Corporation, Aqwest and Busselton Water indirectly allows government to influence the operational efficiency of each provider through the price setting process. Until recently, government has not used the price setting process to achieve efficiency gains (prices have generally been allowed to increase by the inflation rate). However, in 2004-05 prices were not increased for the Water Corporation's residential customers.

Government has used budget approval processes to approve efficiency improvement targets for the Water Corporation. Government is also able to influence the Water Corporation's operational efficiency through the payment methodology for Community Service Obligations (which reduce on a per-connection basis each year).

The most common approach used by Australian water regulators to achieve efficiency gains is to set price caps which are adjusted each year by the inflation rate and an explicit efficiency factor[28]. For example, if the expected inflation rate for the coming year is 3% and the efficiency factor is 1% then prices would be allowed to increase by 2%. If the water service provider makes efficiency gains in excess of the efficiency factor, its actual profits will be higher than allowed in the rate of return component of the revenue requirement. These higher profits would be retained by the provider until the next price agreement or for a fixed period[29].

The efficiency factor is determined at the start of each pricing period following an assessment of the appropriateness of the provider's proposed operating expenditure (as discussed in the section below).

In setting the price cap, consideration must be given to whether the cap is applied to individual prices or to a basket of prices (in which case it would be a weighted average price cap). The disadvantage with the tariff basket approach is that it needs to be reassessed if the tariff structure changes or if new tariffs are added during the regulatory period.

An alternative to capping prices is capping revenue. This approach recognises that it may be more appropriate for water service providers to increase their profitability by reducing costs rather than by selling more water. An incentive regime could be implemented by reducing the projected revenue stream (which incorporates growth in connections) by an annual efficiency factor.

The interesting aspect of revenue caps is that it provides for changes in prices to move in tandem with changes in usage. For example, if water service providers were permitted to adjust prices to maintain revenue, it could result in a situation whereby water service providers were allowed to increase prices when watering restrictions are

[28] For example, IPART uses individual price caps and the ESC has indicated a preference for the price cap approach rather than the revenue cap approach (ESC, May 2004, "Economic Regulation of the Victorian Water Sector: Approach to Pricing", Workshop Discussion Paper).

[29] An option is for the efficiency savings to be retained for a fixed period (e.g. five years), regardless of when in the regulatory period the savings are made.

introduced. The price increase and the watering restriction would work together to reduce demand.

The disadvantages with revenue caps include greater price volatility and the reduced incentives water service providers have to expand services to new customers.

How can pricing policy be used to give water service providers incentives to achieve efficiency gains?

5.2 How Far Ahead Should Prices Be Set?

Currently in Western Australia, prices are set by the Minister for the Environment on an annual basis. Water regulators generally set prices over a much longer period so that providers have incentives to achieve efficiency gains (longer periods also reduce the costs of regulation). A period that is too long, however, may not be effective because of the difficulty associated with setting an appropriate price path that relies on uncertain revenue and expenditure projections.

The Independent Pricing and Regulatory Tribunal of New South Wales (IPART) has recently reduced its regulatory period from four years to two years given the uncertainties associated with the lack of rain. The Essential Services Commission (ESC) in Victoria has set its initial regulatory period at three years, although it has indicated that it might then like to move to a five year period. The Office of Water Services (OfWAT) in the United Kingdom sets a five year price path.

Given the uncertainty in Western Australia about whether the lower rainfall over the last six years is signalling a drier ongoing weather pattern, and the possibility of a significant water source project, it may be prudent to set the initial price period at two to three years.

How far ahead should prices be set?

5.3 How Should Unexpected Revenue Or Expenditure Variations Be Shared Between Customers And Shareholders?

In the event of unforeseen events impacting on a service provider's revenue or expenditure, a decision needs to be made about how this variation should be shared between customers and shareholders.

It should be noted that investment in a substantial new resource project would not be counted as an unexpected variation because it would typically have been incorporated into the capital works program. A good example of an unexpected variation in revenue would be the ending of watering restrictions because restrictions are set on an annual basis depending on winter rainfall[30].

Regulators tend to adjust prices at the end of the regulatory period on the grounds of practicality (IPART and ESC do this). This means that shareholders bear the risk over the price period and then consumers are charged higher prices over the next price period.

An alternative is to build into the revenue requirement an explicit amount that reflects the uncertainty of expenditure forecasts. Another approach is to adjust prices within

[30] The Water Corporation estimates that the two day per week watering restrictions reduced their revenue by about $45 million. This amount is unlikely to be fully recovered because of behavioural shifts in consumption.

the regulatory period, following a brief review, whenever an event that has a significant impact on expenditure occurs.

How should unexpected revenue variations be shared between customers and shareholders?

5.4 How Can Pricing Policy Be Used To Give Service Providers Incentives To Achieve Higher Service Standards?

The incentive regimes, as discussed above, can be designed to give providers an incentive to achieve efficiency gains but these does not necessarily give them incentives to achieve improvements in service standards. Indeed, a risk associated with incentive regulation is that providers may seek to achieve efficiency gains by compromising service standards (although the licensing system and associated auditing arrangements should protect consumers against deterioration in service standards).

It is understood that service providers currently identify ways to improve service standards and present these to government for consideration as part of the budget or strategic process (which for the Water Corporation involves the production of a Statement of Corporate Intent and Strategic Development Plan[31]). These proposals would be built into the required revenue path if the service providers can demonstrate that the improvements will benefit customers, that customers are prepared to pay for the enhancement of services and that the proposal is the most efficient way of enhancing service levels.

It may be appropriate to use financial incentives to encourage improvements in service standards. An approach that is used by OfWAT in the United Kingdom is to make an explicit allowance for improvements in standards as part of the price cap, in the same way as an efficiency factor is incorporated. Service providers would then make lower profits if they do not make the agreed improvements in standards and would make higher profits if they exceed the agreed improvements in service standards.

How can water pricing be used to give water service providers incentives to achieve improvements in service standards?

5.5 Should The Price Setting Approach Differ Between Service Providers?

In considering the detailed matters above, it is important to consider whether the price setting approach should differ between service providers.

In comparison to the Water Corporation, Aqwest and Busselton Water:

- are substantially smaller organisations;
- provide potable water services only;
- do not pay dividends to government (however, they do pay tax equivalent payments to the State government);

[31] The Statement of Corporate Intent is a one year ahead public document that is tabled in Parliament. The Strategic Development Plan is a five year ahead planning document that is agreed with the Minister for Government Enterprises each year and is not made public.

- do not have any requirements to prepare strategic documents such as the Statement of Corporate Intent and Strategic Development Plan; and
- do not receive Community Services Obligation payments from government for the concessions provided to pensioners and seniors.

Should the price setting approach that is applied to Aqwest and Busselton Water be different to the approach applied to the Water Corporation?

6 RECOMMENDATIONS ON REQUIRED REVENUE

6.1 Methodology for Assessing Required Revenue

The reference requires the Authority to take into account the pricing guidelines of the 1994 Council of Australian Governments (CoAG) water reform agreement (as set out in the appendix to Attachment 1).

Two important pricing principles set out in the CoAG water reform agreement are as follows:

1. To avoid monopoly rents, a water business should not recover more than the operational, maintenance and administrative costs, externalities, taxes or TERs (tax equivalent regime), provision for the cost of asset usage and cost of capital, the latter being calculated using a weighted average cost of capital (this principle provides the upper bound revenue requirement).

2. To be viable, a water business should recover, at least, the operational, maintenance and administrative costs, externalities, taxes or TERs (not including income tax), the interest cost on debt, dividends (if any) and make provision for future asset refurbishment/replacement. Dividends should be set at a level that reflects commercial realities and stimulates a competitive market outcome (this principle provides the lower bound revenue requirement).

The CoAG pricing principles are often described as conforming with the building-block approach to determining required revenue.

The following discussion seeks comments on the application of the CoAG pricing principles to water pricing in Western Australia.

6.1.1 How Should The Initial Regulatory Asset Base Be Estimated?

The value of the regulatory asset base is used as the basis for determining the revenue required to maintain the asset base and give shareholders a return on their investment.

The regulatory asset base includes all assets that are needed for the provision of the services specified in the legislation and to the standards specified in the operational and resource licences. This includes current assets (including working capital) and non-current assets.

There are many approaches to valuing assets.

- An economic value approach, which values an asset according to its future revenue generating capacity, or alternatively the revenue received from selling the asset; and

- A cost-based approach, which values an asset according to the cost of replacing the asset to meet the required service level in the most efficient way possible (and generally by allowing for the age of the asset).

The terms of reference indicates that the CoAG pricing principles should be followed when valuing assets, which state:

> "The deprival value methodology should be used for asset valuation unless a specific circumstance justifies another method."

The deprival value methodology draws on both of the two approaches above. If a firm were "deprived" of an asset, it would lose the future revenue generating capacity of that asset. In these circumstances a firm could be expected to be willing to spend money to replace the asset so as to give consumers the level of service that they had previously experienced. However, the firm would want to ensure that it only spends as much as it needs to on the replacement asset, and would not spend more than the future revenue generating capacity of the asset[32].

The Water Corporation values its assets based on their written down replacement cost. Where this amount is greater than its "recoverable amount", the asset is written down to its recoverable amount, which is based on the assets future revenue generating capacity.

Aqwest and Busselton Water do not use the deprival value method. However, they do value their assets on the basis of the accounting standard AASB 1041, which incorporates the concept of "fair value" for the valuation of specialised assets. The "fair value" of an asset is the estimate of its current market price[33]. The National Competition Council has accepted that, given the relatively small size of the Boards' operations, the application of the accounting standard AASB 1041 achieves a similar outcome to the deprival method.[34]

An issue for the Authority, therefore, is how asset values should be determined taking the CoAG principles into account.

How should the value of initial regulatory asset bases be set taking the CoAG pricing principles into account?

6.1.2 How Should The Regulatory Asset Base Be Rolled Forward?

The regulatory asset base is generally rolled forward by adding 'prudent' capital expenditure and by taking into account depreciation, the disposal of and any redundancy in assets. This is a straightforward matter when setting the asset base for each year of the first price period (because all of the capital expenditure is assessed to be prudent, otherwise it would not be included). However, in considering the asset base for the next period, consideration will need to be given to any variations in capital expenditure from that projected in the first period and the treatment of depreciation as a result of that variation in capital expenditure.

In regard to estimating depreciation for the price period, there are two general approaches. The first approach allocates the cost of the asset over its estimated useful economic life (a cost-based approach). The second approach estimates an annuity that reflects the costs of replacement and maintenance in accordance with a long-term asset management plan (a renewals approach).

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[32] Specifically, the deprival value is defined as the lesser of the depreciated optimised replacement cost and the economic value of the asset. The depreciated optimised replacement cost is the cost of replicating the required service potential of the assets in the most efficient way possible, from an engineering/economic perspective, while allowing for the age of the existing asset through depreciation. The economic value is the maximum of the asset's net present value of net realisable value.

[33] AASB 1041 defines "fair value" as "the amount for which an asset could be exchanged, or a liability settled, between knowledgeable willing parties in an arms length transaction."

[34] National Competition Council, 2003 NCP Assessment, p 5.6.

The CoAG guidelines suggest that an annuity approach should be used to determine the medium to long-term cash requirements for asset replacement/refurbishment where it is desired that the service delivery capacity is maintained.

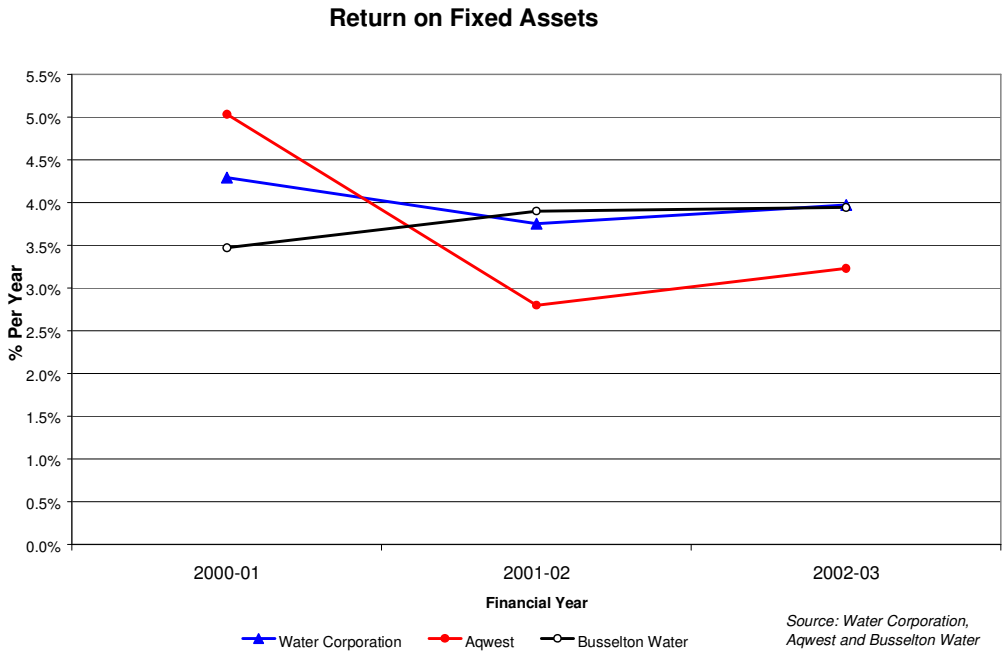
Currently, the Water Corporation calculates the depreciation of property, plant and equipment using straight-line depreciation over the estimated useful life of an asset, with an allowance for residual values where appropriate (a cost-based approach). The asset lives are estimated on the basis of commercial and technical obsolescence and normal wear and tear, and are reviewed from time to time.

How should the regulatory asset base be rolled forward and in particular how should depreciation be valued?

6.1.3 How Should The Rate Of Return Be Estimated?

6.1.3.1 Recent Performance

The following chart shows the return on assets that has been achieved by each of the three water service providers over the past three years[35].



The chart shows that the rates of return for each of the service providers have not exceeded 4% over the last two years. The rates of return for the three service providers are also lower than their stated targets (4.4% for the Water Corporation[36], 4% for Aqwest and 5% for Busselton Water). The Water Corporation's lower rate of return since 2001-02 can be partly attributed to the reduced revenue resulting from two day per week watering restrictions (according to the Water Corporation the reduced revenue amounts to about $45 million per annum). The Water Corporation's Statement of Corporate Intent anticipates a 3.9% return on fixed assets for 2003-04.

[35] The Water Corporation's return on fixed assets is calculated as real pre-tax operating profit before interest and developers' contributions divided by fixed assets excluding developer contributed assets (both the take-over assets and the cash contributions).

[36] The Water Corporation's target return on fixed assets of 4.4% assumes a 6% return for assets acquired since 1995-96 and 4% for assets acquired before that date.

6.1.3.2 Methodology for Estimating the Target Rate of Return

The CoAG guidelines make reference to the use of the weighted average cost of capital (WACC). The WACC is calculated by determining the return on equity and the return on debt, and taking the average of these where each is weighted according to their relative contributions.

The after tax WACC is calculated as follows:

$$WACC = (r_e * E / V) + (r_d * D / V)$$

where

r_e = expected after tax return on equity;

r_d = cost of debt;

D = market value of debt;

E = market value of equity; and

V = E + D.

The parameters that are used to calculate the return on debt are as follows.

- Gearing ratio (D/V). Typically, regulators use a gearing ratio that is regarded as representative of similar businesses in the market. Regulators throughout Australia have tended to use the same ratio (60%) across the different utility industries (IPART, Queensland Competition Authority (QCA), Australian Competition and Consumer Commission (ACCC) and the Essential Services Commission (Victoria) (ESC)). Only one of these decisions was in relation to a water business (IPART's determination for Sydney Water).

What gearing ratio should be used?

- Cost of debt margin. The cost of debt margin is typically referred to as the margin above the risk free rate and is reflective of the credit ratings and debt margins of comparable businesses. Recent regulatory decisions have used debt margins ranging from 90 basis points to 160 basis points.

What cost of debt margin should be used?

The most widely used approach for determining the return on an asset is the capital asset pricing model (CAPM). The CAPM formula is as follows:

$$r_i = r_f + \beta_i(r_m - r_f)$$

where

r_i = expected return on an asset;

r_f = risk free rate of return;

β_i = asset beta, which is a measure of how the changes in returns of a firm are related to changes in returns to the market as a whole.

r_m = return on the market portfolio as a whole;

$r_m - r_f$ = market risk premium.

Key issues are:

- Post-tax or pre-tax return on assets. Some regulators use pre-tax (such as IPART and ESC) while other regulators use post-tax (such as ACCC and QCA). The advantage of using pre-tax is that it is simpler because there is no need to estimate the projected tax payments. The use of pre-tax does however require the regulator to decide whether the statutory or effective tax rate should be used. The advantage of using post-tax is that it more completely represents the actual returns to the business.

What are the pros and cons of adopting a pre-tax versus post-tax approach? If pre-tax is recommended, which tax rate should be used (an effective tax rate or the statutory tax rate?).

- Real versus nominal return. Regulators generally use the real return because it it can simplify the treatment of inflation. A nominal rate can result in the service provider carrying the inflation risk.

What are the pros and cons of adopting a real versus nominal approach?

- Risk free rate. The most common rate used by regulators is the 10 year Commonwealth bond rate (IPART, ESC, O*ff*GAR[37], ORAR[38] and QCA). It is appropriate to smooth out the volatility in the bond rate by taking a 20 day average (although ACCC use 40 days).

What risk free rate should be used?

- Market risk premium. This is the difference between the return on the market portfolio and the risk free rate. The most common market risk premium used in recent determinations by regulators is 6.0% (ACCC, QCA, O*ff*GAR, ORAR and ESC).

[37] O*ff*GAR is the Office of Gas Access Regulation, which is now part of the Economic Regulation Authority.
[38] ORAR is the Office of Rail Access Regulation, which is now part of the Economic Regulation Authority.

What level of the market risk premium should be used?

- Equity beta. Beta is a measure of how the changes in returns of a water service provider are related to changes in returns to the market as a whole. The recent determinations by IPART for a water business assumed an equity beta range of 0.65 - 0.90, which reflects the view that water utilities are likely to have less risk than the market as a whole.

What level of the equity beta should be used?

6.1.4 What Financial Indicators Should The Authority Use?

The second CoAG pricing principle provides a methodology for ensuring providers' legitimate business interests are accounted for, which is also a requirement under section 26(d) of the *Economic Regulation Authority Act 2003*. The second COAG pricing principles says that:

> "To be viable, a water business should recover, at least, the operational, maintenance and administrative costs, externalities, taxes or TERs (not including income tax), the interest cost on debt, dividends (if any) and make provision for future asset refurbishment/replacement. Dividends should be set at a level that reflects commercial realities and stimulates a competitive market outcome."

IPART complements its rate of return analysis by considering a range of financial indicators that provide information on each water service provider's:

- ability to service debt[39];
- ability to repay debt[40]; and
- ability to finance investment from internal sources[41].

IPART considers that cash-flow indicators are particularly important because they are less subjective than indicators derived from estimates such as asset values and depreciation[42].

What financial indicators should the Authority use in assessing the ongoing viability of each water service provider?

[39] For example, IPART uses EBITDA Interest Cover, which is (earnings before interest, tax, depreciation and amortisation excluding capital contributions) / net interest; Funds from Operations Interest Coverage, which is (pre-tax funds flow + net interest) / net interest; Pre-tax Interest Coverage, which is (earnings before interest and tax – capital contributions) / net interest.

[40] For example, IPART uses Funds Flow Net Debt Payback, which is (debt-cash assets)/(net profit after tax + depreciation + tax expense – tax paid); Debt Gearing, which is (debt-cash assets) / (regulatory value of fixed assets + working capital).

[41] For example, IPART uses Internal Financing Ratio, which is (net profit after tax – capital contributions + depreciation – dividends payable / net capital expenditure); Net Cash Flow / Capital Expenditure, which is (funds from operations – dividends)/ (capital expenditure net of capital contributions).

[42] IPART, Determination 4, 2003 (Sydney Water Corporation), p21.

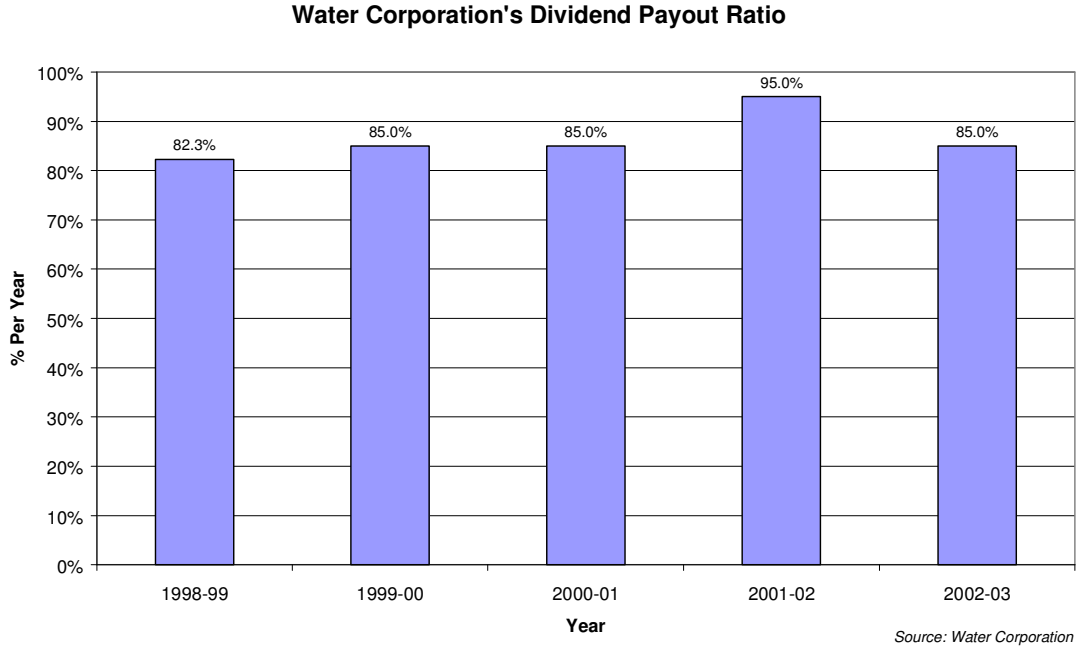
6.1.5 How Should Dividends Be Allowed For?

The CoAG water reform agreement (clause 3(a)) states:

> "Dividends, where provided are to be set at a level that reflects commercial realities and stimulates a competitive market outcome….."

CoAG's concern was that dividend payout ratios that exceed 100% of after tax profits can impact on the service provider's financial resources to the detriment of service standards and the long-term sustainability of service provision.

The actual dividend payout ratio for the Water Corporation over the past five years has been less than 100%, as shown in the following chart.



The Water Corporation Board's current dividend policy is to pay 85% of after tax profit (including developers' cash contributions) as dividends.

The Water Corporation's dividend payout ratio needs to be considered within the context of its capital structure. As the Water Corporation's gearing ratio is 12.6%, it is unlikely that the Government's dividend policy is putting at risk the Corporation's ability to meet its required levels of service standards.

The water boards' legislation does not require them to pay dividends to government (although they do pay tax equivalent payments, which amounted to $0.811 million in 2002-03 for Aqwest and $0.090 million for Busselton Water)[43]. Aqwest and Busselton Water do not receive CSO payments although Aqwest received $6,000 in rebates from government in 2002-03 for providing concessions to its customers with a Seniors concession card.

Is the level of the Water Corporation's dividend payout ratio and gearing ratio appropriate?
Should Aqwest and Busselton Water be required to pay dividends to government?

[43] Western Australian Government, 2004-05 Budget.

6.2 Analysis Of Service Standards

6.2.1 Are Standards Set At An Appropriate Level?

The terms of reference requires the Authority to consider "whether additional resources are needed to meet the required standards of quality, reliability and safety".

Standards that apply to water service providers are currently set by the Authority in each service provider's operating licence, by the Water and Rivers Commission in each service provider's resource licence and by the CEO of the Department of Environmental Protection[44] in licences to emit, such as for the disposal of wastewater.

6.2.1.1 Compliance with standards set by the Economic Regulation Authority

The level of service standards are set in operating licences by the Economic Regulation Authority under section 24(1) of the *Water Services Coordination Act 1995*.[45] All operating licences specify a range of standards to be met by the utility. Some of these standards relate to product quality, such as the drinking water quality standards. Others relate to service quality, such as water pressure and flow, service interruptions, complaints handling and response to customer calls.

The drinking water standards that are included in the operating licence are those that comply with the National Health and Medical Research Council and Australian Water Resources Council's guidelines for drinking water quality in Australia. In the case of the Water Corporation, the drinking water standards are agreed in a Memorandum of Understanding between the Department of Health and the Water Corporation. Similar arrangements are being developed between the Department of Health and Aqwest and the Department of Health and Busselton Water.

An audit of each provider's compliance with the operating licence is conducted every two years and a report is provided to the Minister for the Environment[46]. As an input into the operational audit, the Department of Health carries out a drinking water quality audit of the Water Corporation (every two years) in relation to the terms and conditions of the memorandum of understanding between these two organisations. Similar audits will in the future be carried out with the water boards when Memorandums of Understanding are developed.

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[44] The Department of Environmental Protection is becoming the Department of Environment on 1 July 2004 and will be formally merged with the Water and Rivers Commission as soon as legislative changes pass through Parliament.

[45] Note that section 24(2) of the *Water Services Coordination Act 1995* states that the terms and conditions of licences may include provisions relating to any matter provided for by Schedule 1. Part (j) (ii) of Schedule 1 states that such provisions may include quality and performance standards to be met by the licensee, except to the extent regulations prescribe standards of performance. As no regulations for this purpose have been set, the standards that currently apply are those that are set by the Economic Regulation Authority. In terms of drinking water standards, the legal requirement for a provider to comply with these standards is provided for in the operating licence, although there is also a Memorandum of Understanding between the Water Corporation and the Department of Health.

[46] Section 37(1) of the Water Services Coordination Act 1995 requires every licensee to undergo an operational audit every two years by a pre-approved independent expert and provide this to the Authority. Section 37(3) of the Water Services Coordination Act 1995 requires the Authority to present to the Minister a report on each operational audit within one month of its receipt.

The table on the next page shows a selection of standards that are included in the operational licences of the Water Corporation, Aqwest and Busselton Water. The table also provides the performance outcomes that were achieved in 2002-03 in relation to each standard.

The most recent operational audit results indicate that:

- The Water Corporation exceeds the minimum requirement in seven auditable areas, meets the minimum requirement in 30 areas and does not meet the minimum requirement in one area (the area of non-compliance relates to the requirement of the licensee to notify customers of their right of referral to the Coordinator (now the Authority) in the event that their complaint is not resolved within 21 days);

- Aqwest meets the minimum requirements in 14 areas (it did not exceed any requirements or fail any requirements); and

- Busselton Water exceeds the minimum requirement in one auditable area, meets the minimum requirements in 12 areas and was non-compliant in one area (in providing the Authority with performance indicators about their drinking water interruptions, leaks and bursts, emergency response and responsiveness to customer complaints).

In regard to the drinking water standards, the Water Corporation complies with the 1996 Drinking Water Guidelines for its services in Perth and in towns with a population greater than 1000 people. The Water Corporation is to comply with the 1996 Guidelines in all other localities by 1 January 2006, including meeting nitrate standards for a number of towns in the Mid West, Goldfields and Agricultural regions (which means that water supplied in these towns is not currently recommended for children less than three months of age)[47]. Aqwest and Busselton Water are finalising Memorandums of Understanding with the Department of Health to achieve the 1996 Guidelines.

[47] The towns include Cue, Meekatharra, Mt Magnet, Nabawa, New Norcia, Sandstone, Wiluna, Yalgoo, Laverton, Leonora and Menzies.

Examples of Service Standards in the Operational Licences of the Water Corporation, Aqwest and Busselton Water				
Explanation of standard	**Example of target**	**Performance outcome 2002-03 – Water Corporation**	**Performance outcome 2002-03 – Aqwest**	**Performance outcome 2002-03 – Busselton Water**
Drinking water should be safe for human consumption.	At least 95% of analyses meet the requirement for thermo-tolerant coliforms.	100% metro; 100% country	100%	100%
Customers should have suitable water pressure and flow.	On a rolling 12 month basis, at least 99.8% of customers should not experience a water flow of less than 20 litres per minute.	99.95%	100%	100%
Customers should not experience unreasonable interruptions in their drinking water service.	On a rolling 12 month basis, at least 75% of connected properties in the Perth and country urban areas shall not experience a complete interruption of supply (no flow), exceeding 1 hour.	86.2%	95.8%	99.8%
Customers should not experience a wastewater overflow on their property which results from any failure of sewerage assets.	On a rolling 12 month basis, at least 99.8% of customers will not experience a wastewater overflow on their property.	99.9%	NA	NA
Telephone calls to the 'Customer Enquiry 13' telephone numbers should be answered in a timely manner.	At least 70% of calls will be answered within 20 seconds, with no more than 5% of calls abandoned after 5 seconds, measured on a monthly basis.	78.1% (2.1% of calls were abandoned after 5 seconds)	NA	NA
Complaints should be resolved in a timely manner.	90% of customer complaints shall be resolved within 21 days.	97.3%	90.9%	99.1%

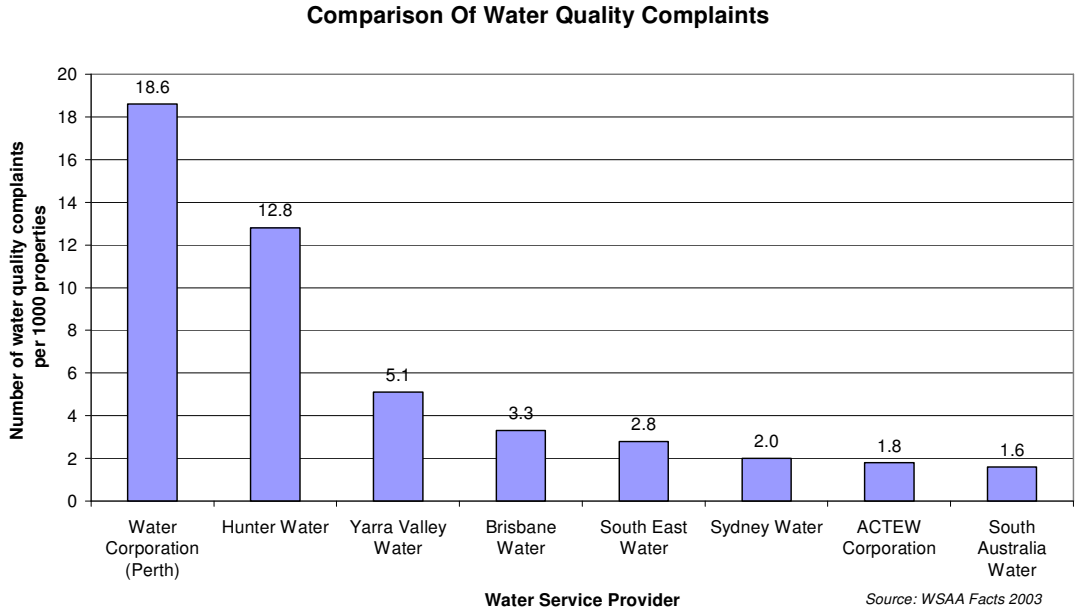
6.2.1.2 Customers Perception of Water Service Standards

A recent survey sponsored by the (then) Office of Water Regulation indicated that the overall satisfaction level with water services (the proportion of respondents who rate their service as either good or very good) was 88% for Perth residential customers, 85% for Perth commercial customers, 93% for Bunbury customers and 96% for Busselton customers.

Although the standards in the operational licence define the quality of the water service that customers should expect to receive, only a minority of customers are aware of these standards. The survey indicated that 45% of Perth residential customers "know nothing" about their water supplier's minimum standards of service[48].

25% of respondents indicated they had "issues/concerns with the water supply", which included concerns about the "bad taste" of water (7% of respondents), "dirty" water (6%), "high chlorine" (5%), "water pressure" (4%) and "bad smells" (3%).

The following chart shows that the number of water quality complaints received by the Water Corporation in 2002-03 was significantly higher than the number of complaints received by other water service providers in Australia.



The higher number of complaints received by the Water Corporation may be attributable to the higher level of groundwater in use in Perth than in other major cities, which can result in complaints particularly about the colour of the water ("dirty water").

Are the standards of service in the operating licences appropriate? Are customers willing to pay for higher standards than they currently receive? If so, to what extent and in relation to which standards or services?

[48] 2003 Water and Sewerage Customer Satisfaction Survey, Office of Water Policy, January 2004. A total of 1200 customers were interviewed by telephone.

6.2.1.3 Compliance with standards set by the Water and Rivers Commission

The Water and Rivers Commission issues licences to water service providers to use water from water sources operated in natural catchment areas proclaimed under the *Rights in Water and Irrigation Act 1914*. These licences contain conditions for the storage and diversion of water from rivers and groundwater for consumption by households, industry and rural activities. The Commission has the authority under section 5C(1)(d) of the Act to grant or refuse to grant licences and to set the terms, conditions and restrictions that are included in the licence.

In approving a management plan and in issuing a license, the Board of the Water and Rivers Commission considers the economic and social benefits that may derive for water used in different ways (including *in-situ* use) as well as the environmental impacts of any diversion[49].

The Minister for the Environment can, on the advice of the Environmental Protection Authority, set conditions on the Water and Rivers Commission (where there are multiple water users) or on water service providers (where there is a single major user) required for projects in environmentally sensitive areas. For example, the Minister for the Environment has set Ministerial Conditions on the Water and Rivers Commission in relation to the management of abstraction by both public and private water users from the Gnangara and Jandakot Mounds.

Each year the Water and Rivers Commission can adjust the amount extracted from individual bores operated by water service providers to meet the environmental conditions, even if the licensed amount is not being exceeded in these areas. Each of the water service providers currently comply with their licence conditions although the time to meet some conditions has needed to be extended.

Are there any issues not already identified in relation to the management of water resources in environmentally sensitive areas that should be considered by the Authority in this inquiry?

6.2.1.4 Compliance with standards set by the CEO of the Department of Environmental Protection

The CEO of the Department of Environmental Protection has the authority under section 57 of the *Environmental Protection Act 1986* to award licences to emit from premises and to make the licence subject to terms and conditions. In practice, the conditions that are associated with significant environmental impacts are generally set by the Minister for the Environment.

For example, water service providers require licences to dispose of treated wastewater and biosolids from wastewater treatment plants.

The CEO of the Department can appoint inspectors to ascertain whether the terms and conditions of the licence are being complied with. Each of the water service providers has complied with the conditions of their licences.

[49] In setting annual amount available to be taken by water service providers, the Water and Rivers Commission Board takes into account the impact on employment and businesses of more severe water restrictions on water-dependent industries (e.g. nurseries, swimming pool manufacturers, lawn mowing contractors) and on the public (e.g. loss of gardens and lawns) as well as any likely benefits to the environment. The EPA is largely constrained to considering environmental impacts.

Are there any matters for consideration by the Authority relating to the standards that are required in licences issued by the CEO of the Department of Environmental Protection?

6.3 Analysis Of Expenditure

6.3.1 How Efficient Are The Water Service Providers And What Scope Is There For Further Efficiency Gains To Be Achieved?

The CoAG pricing principles include the following principle:

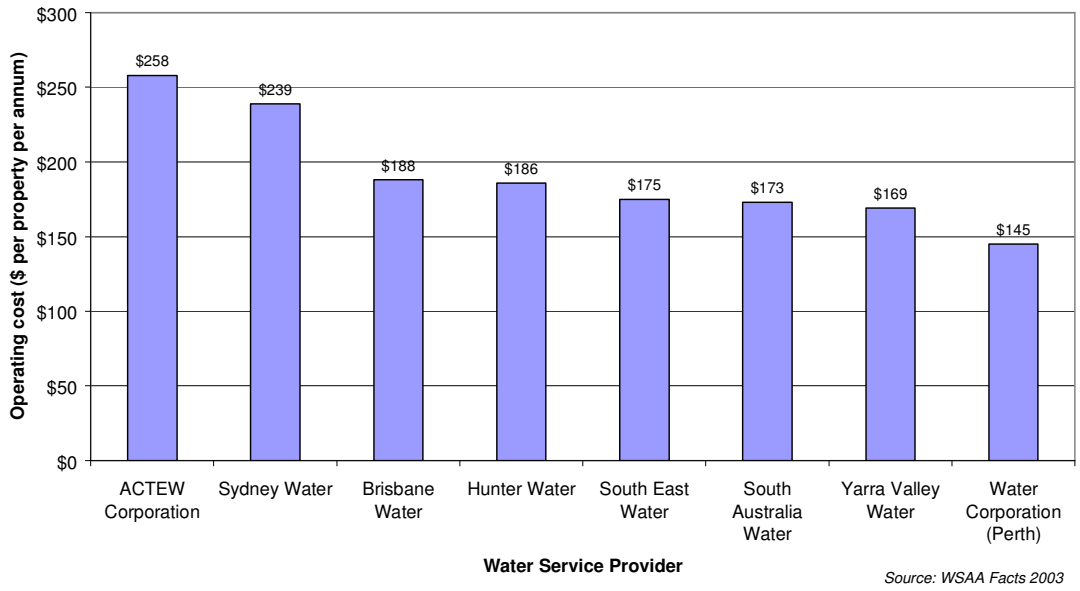
> "…economic regulators (or equivalent) should determine the level of revenue for a water business based on efficient resource pricing and business costs. Specific circumstances may justify transition arrangements to that level."

The Authority is intending to recruit consultants to examine the efficiency of the water service providers' operations, identify major cost drivers and recommend efficient cost levels consistent with maintaining service delivery capacity. The consultants will consider each agency's operating expenditure against industry best practice benchmarks and historical performance.

The following charts show that the Water Corporation's operating expenditure appears to compare favourably to other water providers in Australia (for the 2002-03 financial year). However, care must be taken in making these comparisons because of the differing service obligations, water source expenses and density of customers (the Authority will be carefully analysing this issue over the course of the inquiry).

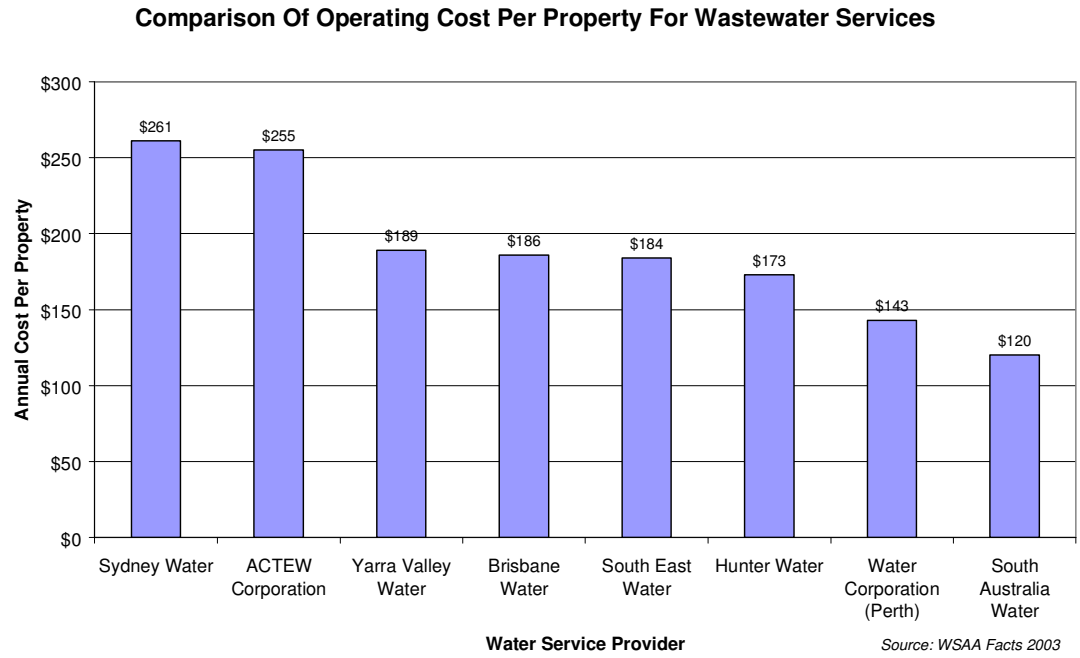
The first chart below compares the Water Corporation's operating cost per property for water supply services.

Comparison Of Operating Cost Per Property For Water Services

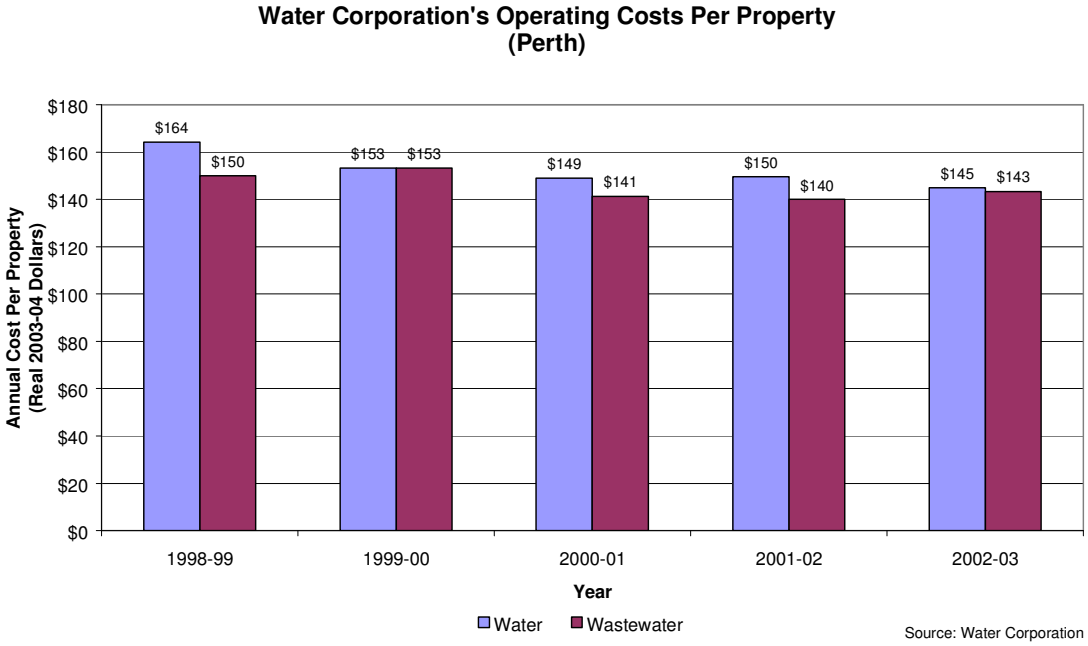


Source: WSAA Facts 2003

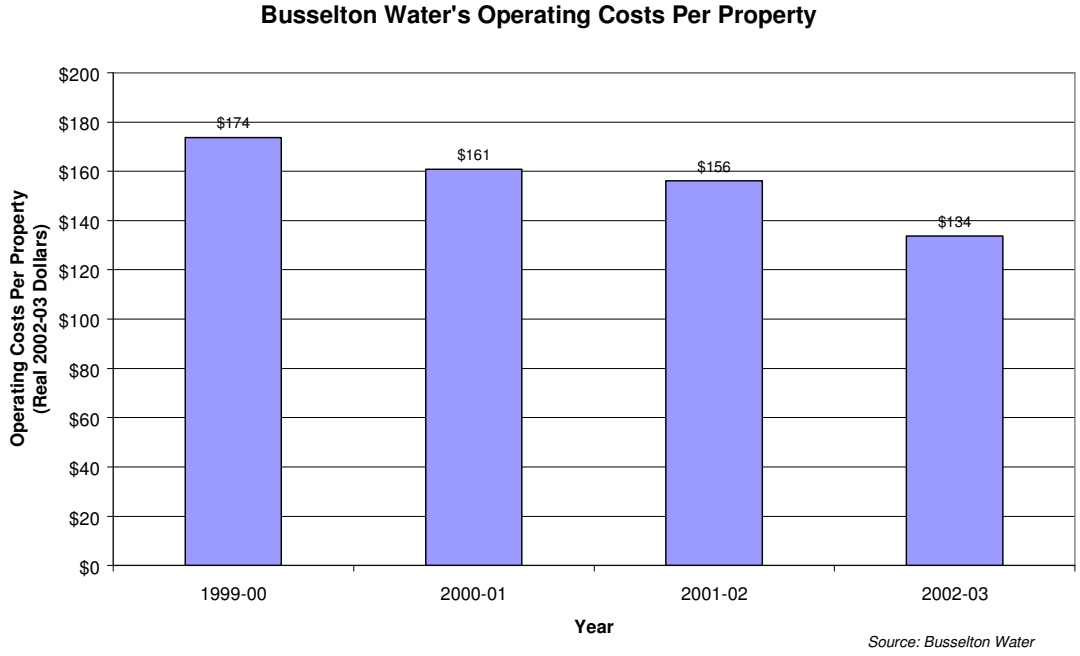
The following chart compares the Water Corporation's operating cost per property for wastewater services with other service providers.

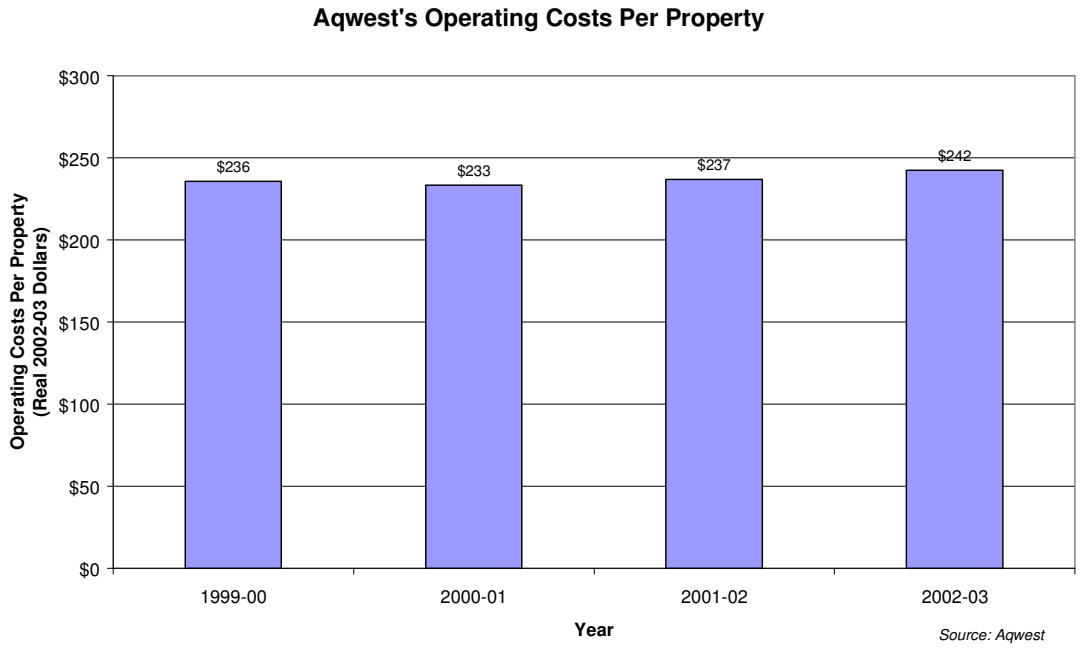


The Water Corporation's operating costs per property have declined over the past five years, as is shown in the following chart.



Operating costs per property have also been trending down for Busselton Water and remaining relatively constant for Aqwest, as shown in the following charts.





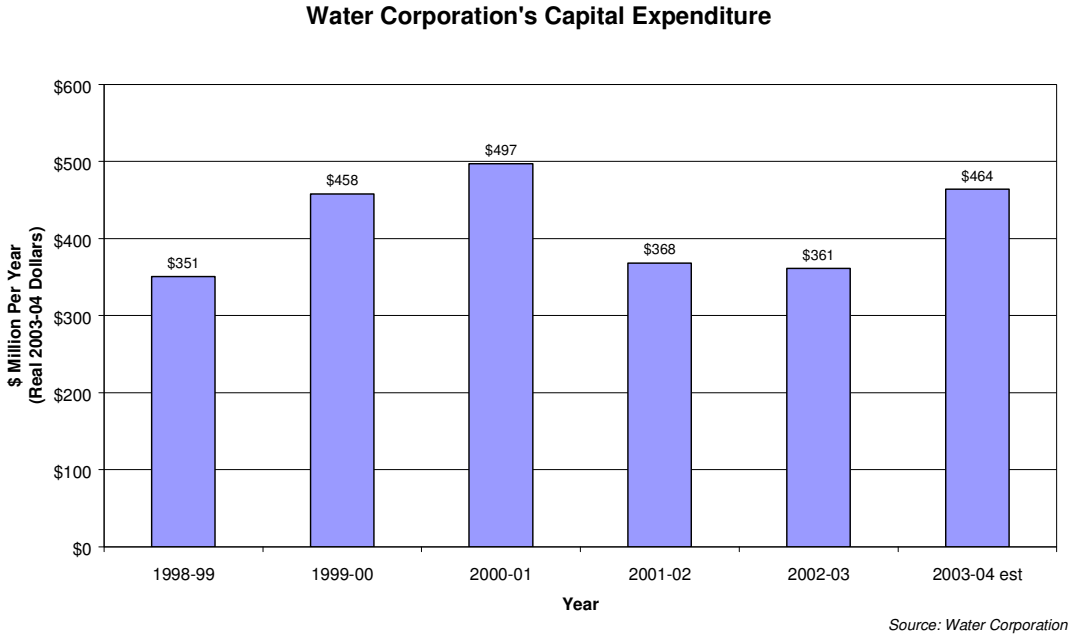
How efficient are each of the water service providers' operations?

What opportunities are there for efficiency gains to be made?

6.3.2 Are The Capital Expenditure Programs Of Each Service Provider Appropriate?

The Authority is intending to recruit consultants to examine, among other things, each provider's current and projected capital expenditure to identify the expenditure that should be included in the asset base that is rolled forward each year.

The Water Corporation's actual capital expenditure for the seven years to 2002-03 and the estimates for 2003-04 and 2004-05 are shown in the following chart[50].



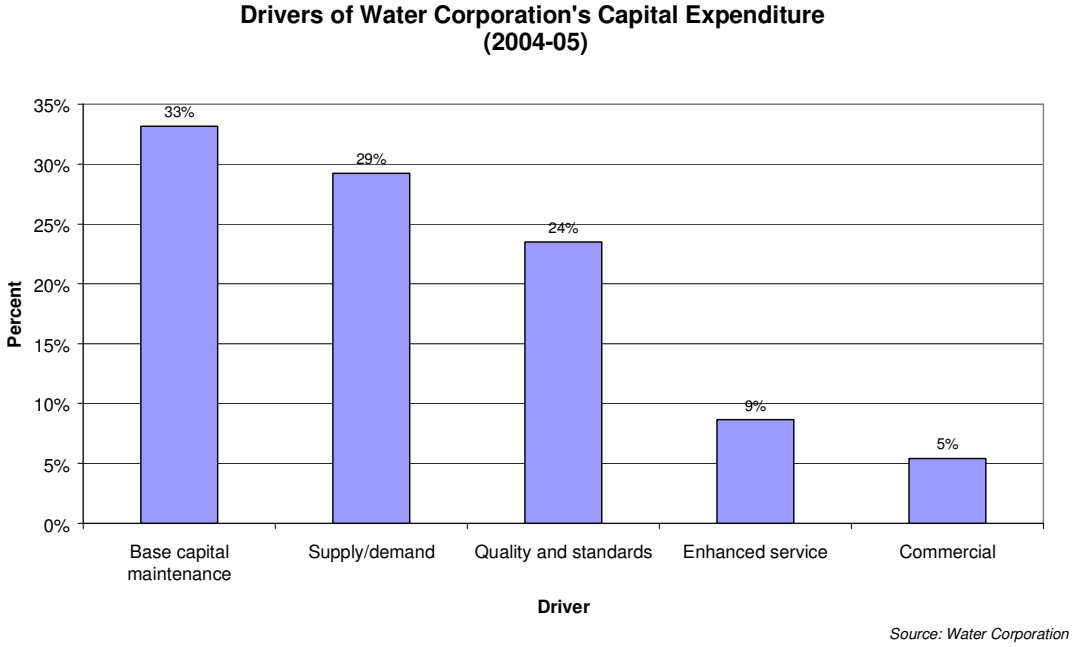
The Water Corporation classifies its capital investment expenditure according to the following drivers[51]:

- Base capital maintenance (for example, the Flora Street pressure main is being replaced at a cost of $1.6 million; the total expenditure in this category for 2004-05 is estimated at $112.9 million);
- Supply/demand (for example, the Subiaco Wastewater Treatment Plant is being upgraded to meet demand at a cost of $7.6 million; total expenditure in this category for 2004-05 is estimated at $99.5 million);
- Enhanced service (for example, the Samson Brook Water Treatment Plant is being constructed at a cost of $20.5 million; the total expenditure in this category for 2004-05 is estimated at $29.5 million);
- Quality and standards (for example, the South Coast Reservoir No. 2, which services Albany, is being covered to address problems associated with algae and birds fouling the reservoir at a cost of $1.3 million; the total expenditure in this category for 2004-05 is estimated at $80.0 million); and

[50] The capital expenditure in this chart includes capital expenditure that will not be considered as part of this inquiry, such as expenditure on drainage.
[51] Source: Water Corporation.

- Commercial programs (for example, a seawater system and desalination plant are being constructed on the Burrup Peninsular to provide industry with seawater cooling, wastewater disposal and high quality industrial water at a total cost of $83.8 million; the total expenditure in this category for 2004-05 is estimated at $18.4 million).

The relative importance of each of these drivers is shown in the following chart:



Source: Water Corporation

Aqwest's capital expenditure program for 2004-05 is $1.4 million and comprises:

- $0.7 million to upgrade water treatment plants;
- $0.4 million for replacement of infrastructure in the mains distribution networks; and
- $0.2 million for mains subdivision.

Busselton Water's capital expenditure program for 2003-04 is $0.4 million which is mainly for the ongoing replacement of mains and the addition of new services.

In many parts of Australia, the return on capital has been insufficient to prevent the decline in asset value and quality. As a result there are more equipment failures, spillages and leaks that would be preferred (WSAA).

Are the capital expenditure programs of each service provider appropriate?

6.4 Are There Any Other Matters That The Authority Should Consider In Making Revenue Recommendations?

There are likely to be other issues that the Authority should take into account when considering how much revenue each service provider should be allowed to earn. For example, what assumptions should be made about debt recovery practices and how should this be funded?

What other matters should the Authority consider in making recommendations on required revenue?

7 RECOMMENDATIONS ON PRICING STRUCTURES

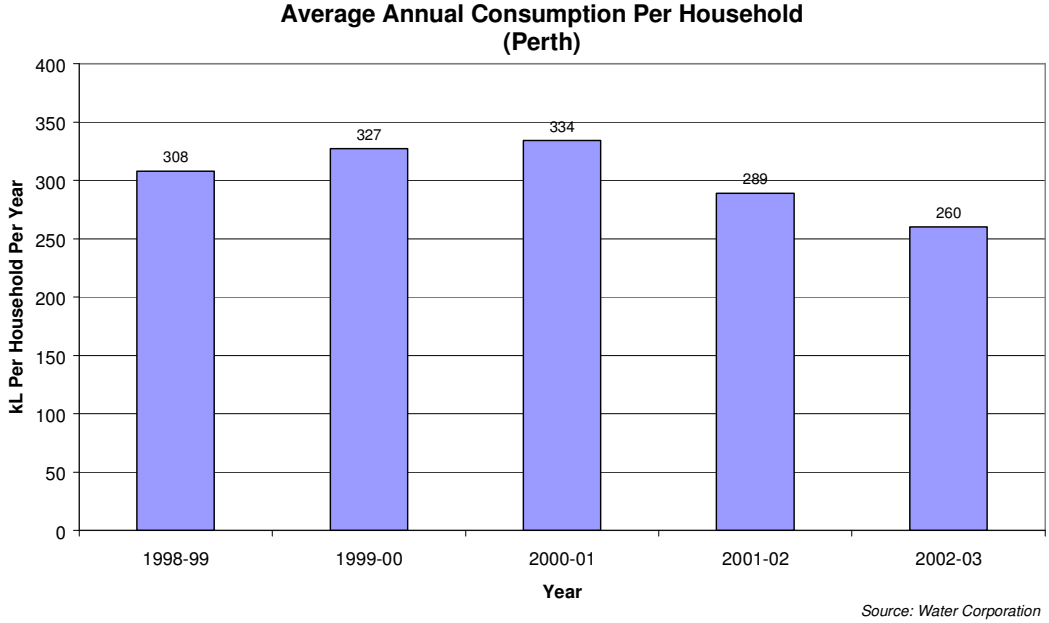
7.1 Are Demand Management Pricing Options Being Well Utilised?

7.1.1 Should Prices Play A Greater Role When Water Is In Short Supply?

There is currently a range of approaches to address the shortage of water, including:

- two days per week garden watering restrictions and no watering between 9am and 6pm (the estimated annual scheme water savings is 37-52GL);
- the Waterwise Rebate Program, which provides rebates for washing machines, garden bores, showerheads, rainwater tanks and greywater reuse systems, tap timers, tap flow controllers and soil wetting agents (the estimated annual scheme water savings is 1.2GL and the CSO payment from government is $8.8 million for 2003-04);
- community education campaigns and activities, including Waterwise Garden Centres and Waterwise Schools; and
- tariffs that increase as consumption increases (including a recent tariff increase for water consumption above 550kL, which covers about 6% of residential customers and 4% of water consumption[52]).

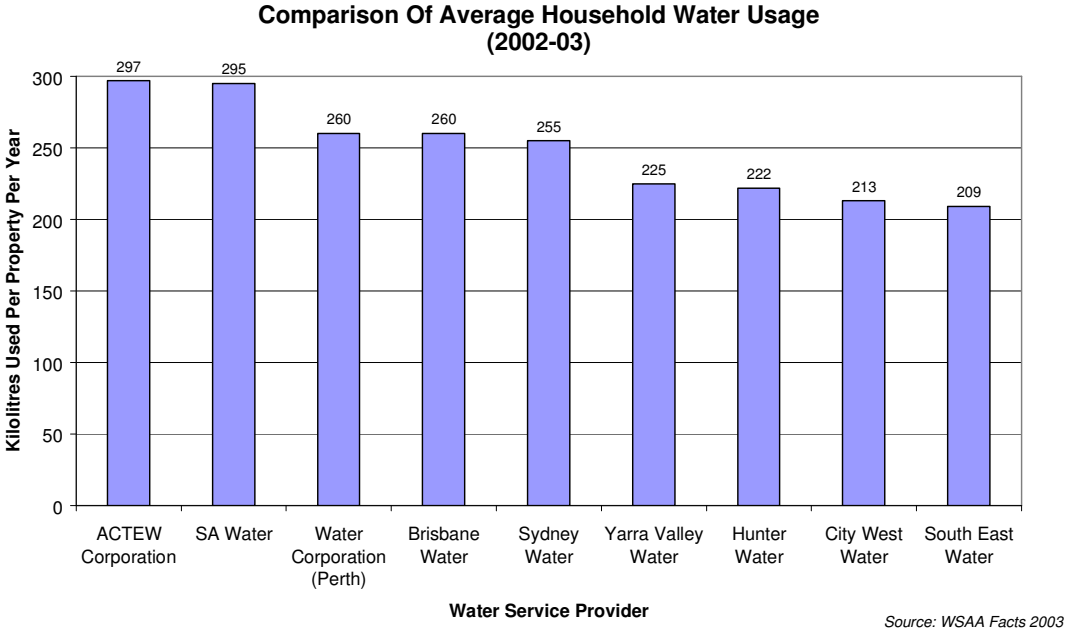
Consumption of scheme water per household in Perth has reduced significantly in the past two years[53]. This reduction is shown in the following chart.



[52] Source: Water Corporation.

[53] Increased use of bore water may be replacing the use of scheme water so that total consumption may not have declined as much as shown in the chart. The Water and Rivers Commission has advised that there are 135,000 garden bores in Perth (24% of residential properties), which save up to 100GL (38%) in scheme water each year.

The following chart shows that average residential scheme water usage in Perth is lower than usage in Canberra and Adelaide, but relatively high compared to usage elsewhere in Australia (particularly given that one in four gardens in Perth is watered using bore water).



The most important determinants of scheme water demand appear to be number of people in the household, size of garden and lawn, whether the property has a bore and the fittings and equipment in use[54].

Water restrictions are generally preferred over higher prices when water is in short supply. There appears to be general consensus that water usage is affected by the price of water to a lesser extent than other goods are affected by prices. Studies generally find that a 10% increase in the price of water results in a 1% to 3% reduction in water usage[55]. There are three main reasons for the lack of responsiveness to price:

- water is essential for basic non-discretionary activities (50% of annual usage including drinking, bathing, cooking, washing) and it tends to be only the non-discretionary usage (e.g. outdoor use) that can be significantly influenced by price;

- water accounts are sent out infrequently (twice per year for the Water Corporation's Perth customers and three times per year for its country customers compared to quarterly billing by most other water service providers), which means that people may not be very aware of how much water they are using and at what rate they are being charged when they use the water[56]; and

[54] See for example, Pricing for Water Conservation, Water Services Association of Australia Journal, May 2004.
[55] A recent literature review was reported in Influencing Demand – Water Pricing, by Thomas G Parry, Chairman of the Independent Pricing and Regulatory Tribunal of New South Wales. The paper was presented at the Western Australia Water Symposium, Perth, 9 October 2002.
[56] In addition, for an average household, the water and wastewater bill represents only 1.9% of their average annual expenditure (source: Water Corporation). However, increasing the frequency may

- many customers may be unaware of what rate they are being charged when they use the water (because of the five step progressive tariff scale).

However, it is possible that consumers in Perth are relatively more responsive to changes in water prices because of the extensive use of garden bores, which substitute for scheme water for discretionary usage.

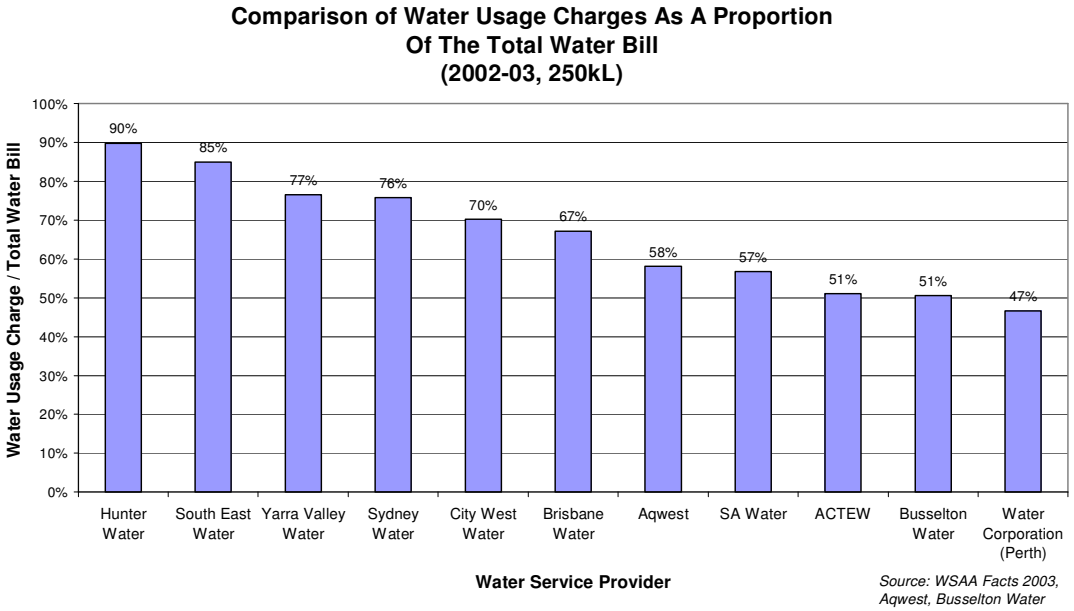
If higher prices were used to reduce demand when water is in short supply then water restrictions might not need to last so long. However, the advantage of water restrictions over higher prices is that water restrictions share the burden across all households.

As discussed in section 3.3, it appears that consumers in Perth are accepting two day per week water restrictions. A survey in 2002 showed that 75% of respondents considered it acceptable to limit sprinkler use to two days per week[57].

Should prices play a greater role in reducing demand when water is in short supply?

7.1.2 Should The Water Usage Charge Make Up A Greater Amount Of The Total Water Bill?

For Water Corporation's household customers, the water usage charge is 47% of the water bill (at 250kL per annum). The following chart shows that other major water service providers (such as Hunter Water in Newcastle) have water usage charges as high as 90% of the water bill.



Having a greater part of the water bill tied to usage does not necessarily mean the water bill would be higher – the fixed service charge could be reduced accordingly. Indeed, the Water Corporation's total water bill (at 250kL per annum) is average

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reduce the size of the bills which may have an impact on the incentive to conserve water. Another factor is that landlords get billed rather than tenants, which means that tenants cannot react to a direct pricing signal.

[57] B.E. Nancarrow, J.D. Kaercher, M. Po, Community Attitudes to Water Restrictions Policies and Alternative Sources: A Longitudinal Analysis 1988-2002.

compared to the water bills of the other water service providers shown in the chart above (see the chart in section 3.1.2).

While rebalancing the usage and fixed service charges could result in greater water conservation, the potential for water savings depends on the extent that households understand that their bill is made up of a fixed service charge and a usage charge. If this is not widely understood, then changing the mix may not have a significant impact on water usage.

Should the water usage charge make up a greater amount of the total water bill?

7.1.3 Is The Progressive Tariff Scale Appropriate?

The five-step progressive tariff scale for the Water Corporation's household consumers may be dampening the signal to conserve water because consumers may not be aware of the amount they are being charged for additional usage. From an efficiency perspective, it may be more appropriate to have fewer steps.

In comparison to the Water Corporation, Sydney Water Corporation and Brisbane Water have a one-step tariff scale. ACTEW Corporation, Hunter Corporation and the South Australia Water Corporation have a two-step tariff scale. The Victorian water service providers currently have a one-step tariff scale but the Victorian Government has recently indicated it will be introducing a three-step tariff scale[58].

From an economic efficiency perspective, it may also be important to have the usage charge reflect the cost of developing the next most efficient water source.[59] For example, if the next most efficient water source for Perth were a desalination plant then the usage charge would be set at $1.11/kL (the cost of the desalination plant). If at $1.11/kL people chose to use an amount of water that was greater than the current supply of water, this would signal their preparedness to pay for the desalination plant.

Should the number of steps in the progressive tariff scale be reduced? Should usage charges reflect the cost of developing the next most efficient water source?

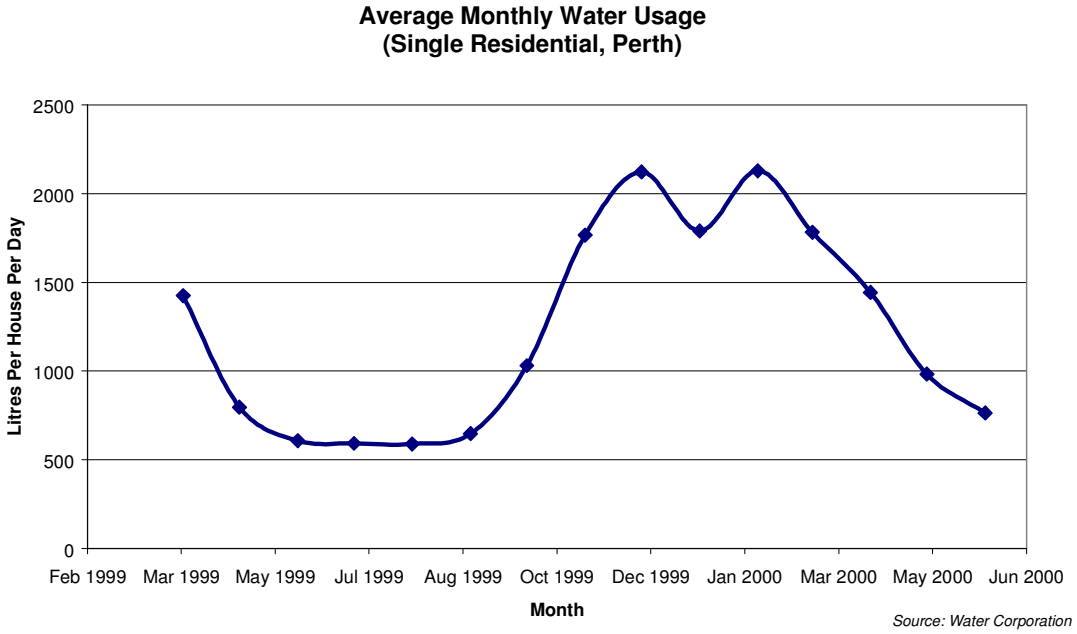
[58] Water service providers with a single usage charge include Brisbane Water (82c/kL) and Sydney Water Corporation (94 c/kL). Service providers with an inclining tariff scale include ACTEW Corporation (41c/kL up to 200kL then 97c/kL), Hunter Corporation (94c/kL up to 1000kL then 86c/kL) and South Australia Water (40c/kL up to 125KL then 97c/kL) (Source: WSAA Facts 2003). The Victorian Government has indicated that it will be introducing inclining water tariffs for its public water service providers, at 75c/kL up to 40kL of quarterly consumption, then 88c/kL up to 80kL then 130c/kL) (Source: Victoria Government White Paper, *Securing Our Water Future Together,* June 2004).

[59] Economic theory suggests that the efficient price for water is the cost of producing an additional unit of water, or its *marginal cost*. In times of capacity surplus, the marginal cost of supplying an extra unit is simply the cost of collecting or abstracting the water and transporting it to the customer, or the *short-run marginal cost*. However, when there are capacity constraints, the provision of an additional unit of water will require capacity augmentation, often "lumpy" in nature (e.g. a new dam). The relevant marginal cost in this case is the *long-run marginal cost*, which is the sum of the short-run marginal cost and the incremental unit capacity cost. Estimation of the long-run marginal cost can incorporate the environmental costs of a new water source project and social and political constraints, as well as the financial costs.

7.1.4 Should Water Prices Be Charged On A Seasonal Basis?

A more efficient pricing structure could include the introduction of higher prices for usage in the dry summer months when discretionary water usage increases (such as for watering the garden) and lower prices for usage for the rest of the year.

The variability of water usage throughout the year is shown in the following chart.[60]



"Seasonal pricing" is partly achieved with the current progressive tariff scale (because the extra water use in summer can be regarded as the use that takes consumers into the higher tariff zones). However, the highest tariff currently charged to 32% of households in Perth is 41.6 cents per kilolitre and to 44% of households is 67.4 cents per kilolitre. A more effective seasonal pricing structure could be implemented by having different usage charges for different seasons and billing that is based on usage in that season.

Seasonal pricing has been implemented in some parts of Europe, including Barcelona in Spain. A problem with seasonal pricing, however, is that it would have a significant impact on larger households. Additionally, seasonal pricing would require all meters to be read at the beginning and end of summer which would result in additional costs (meters are currently read over 5-month cycles).

Should water prices be charged on a seasonal basis?

[60] The data in this chart is drawn from a Water Corporation survey of several hundred single residential properties. A further survey suggested that average monthly water usage per household for multiple residential properties was substantially lower than for single residential households, which is probably due to the larger gardens in single residential households.

7.2 To What Extent Should Water Pricing Involve Cross-Subsidies?

The Council of Australian Governments (CoAG) has agreed to:

> "the adoption of pricing regimes based on the principles of consumption-based pricing, full cost recovery and desirably the removal of cross-subsidies which are not consistent with efficient and effective service, use and provision. Where cross-subsidies continue to exist, they be made transparent." (Clause 3(a)(i)).

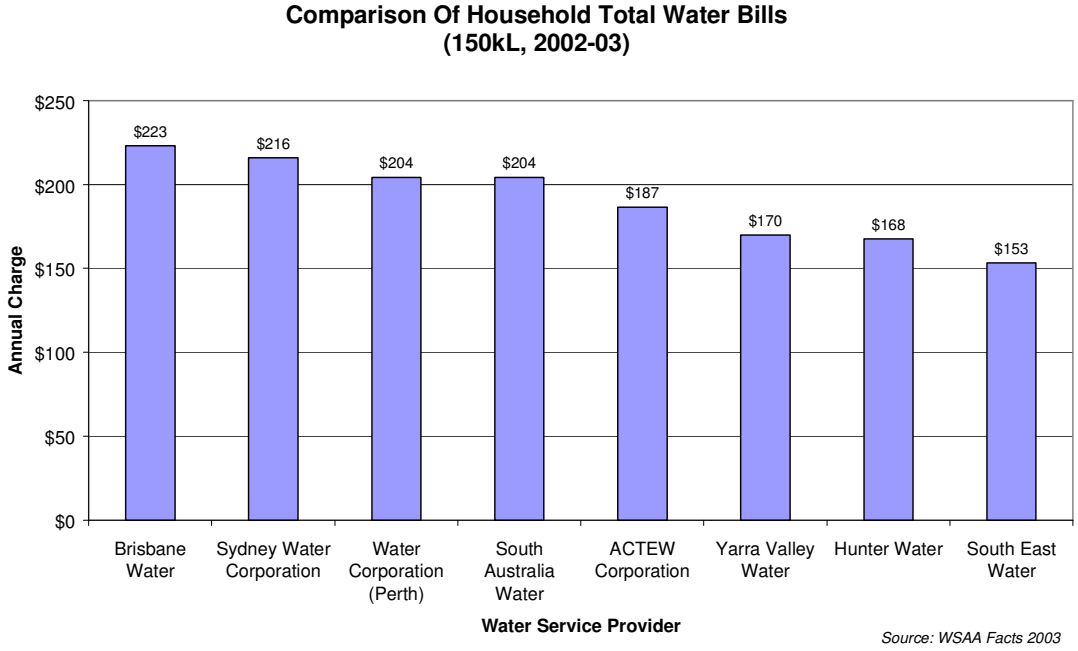
It is understood that the Council agreed to transparency so that the public would be aware of the possible cost to society of achieving a particular social objective. Cross-subsidies mainly impose costs on society when they change behaviour, which doesn't necessarily happen just because there is an income transfer from one group to another.

Under the current pricing arrangements in Western Australia, cross-subsidies exist in the following situations:

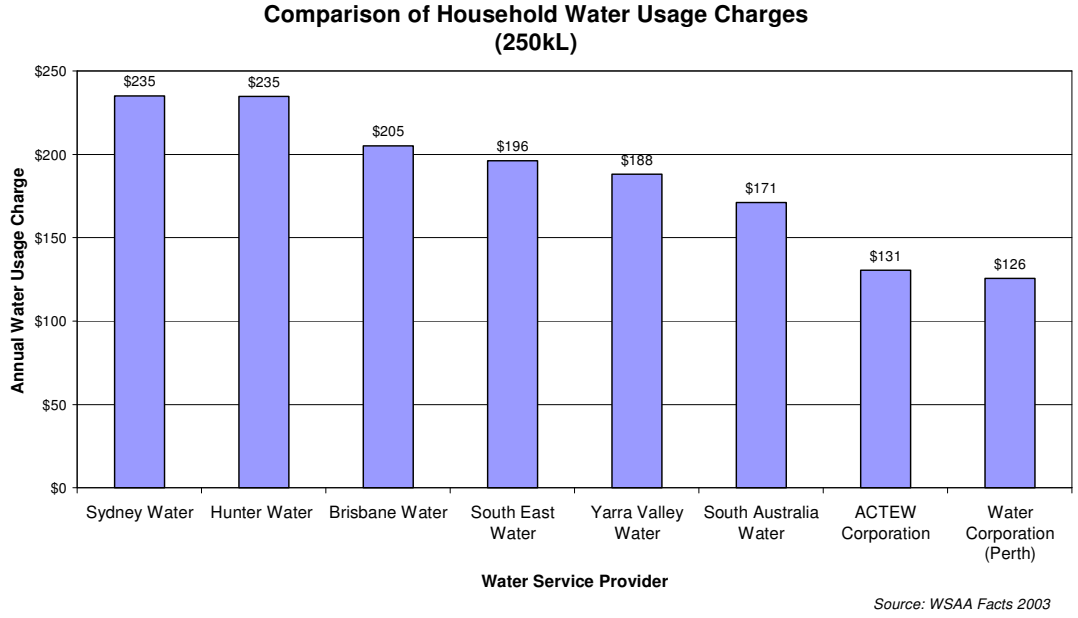
- High water users cross-subsidise low water users (because the low usage charge up to 150kL is funded by higher usage charges above 550kL).
- Customers in expensive properties subsidise customers in less expensive properties (as a result of the wastewater charging structure).
- Customers whose services are more costly to provide (e.g. in the hills) are subsidised by those whose services are less costly to provide.

7.2.1 Is The Low Rate For The First 150kL Of Water Usage Appropriate?

The low rate for the first 150kL of water usage per year is not resulting in lower water bills for low water using households in Western Australia compared to similar households in other States and Territories (because the fixed service charge is higher in Western Australia). The following chart shows that the water bill for Water Corporation's low water using households is at the higher end as compared with those in other jurisdictions.



The low rate for usage up to 150kL may have implications for water conservation. The following chart shows that the average usage charge for households using 250kL of water per year is lower in Western Australia than in other comparable cities. The South Australia Water Corporation and ACTEW Corporation also provide lower rates for low levels of water usage[61].



It may be possible to provide a discount to low water using households in another way. If the objective of the discount is the provision of water at an inexpensive rate for basic needs, then it could be more appropriate to provide the discount in the form of a reduction in the fixed service charge to households that use less than 150kL (the

[61] South Australia Water Corporation charges 40 cents per KL up to 125kL then 97 cents per kL. ACTEW Corporation charges 41 cents per KL up to 200kL then 97 cents per kL.

rebate could gradually reduce as usage increases above 150kL). The rebate could be funded by a Community Service Obligation payment from government.

Alternatively, the discount could continue to be funded by higher water using households but the tariff scale could be changed so that the discount was better targeted. For example, greater targeting could be achieved by increasing the tariff between 151kL and 350kL. This is similar to the way South Australia Water Corporation delivers its discount. It charges 40 cents per kL up to 125kL then 97 cents per kL above 125kL (by comparison, the Water Corporation currently charges 41.6 cents per kL up to 150kL then 67.4 cents per kL up to 350kL).

Is the low rate for the first 150kL of usage effective? If not, how could a discount to low water using households be delivered more effectively?

7.2.2 Can the Approach To Charging For Residential Wastewater Be Improved?

As was discussed above (in section 3.1.3) the property value based approach to residential wastewater charging results in cross-subsidies between different types of residential customers.

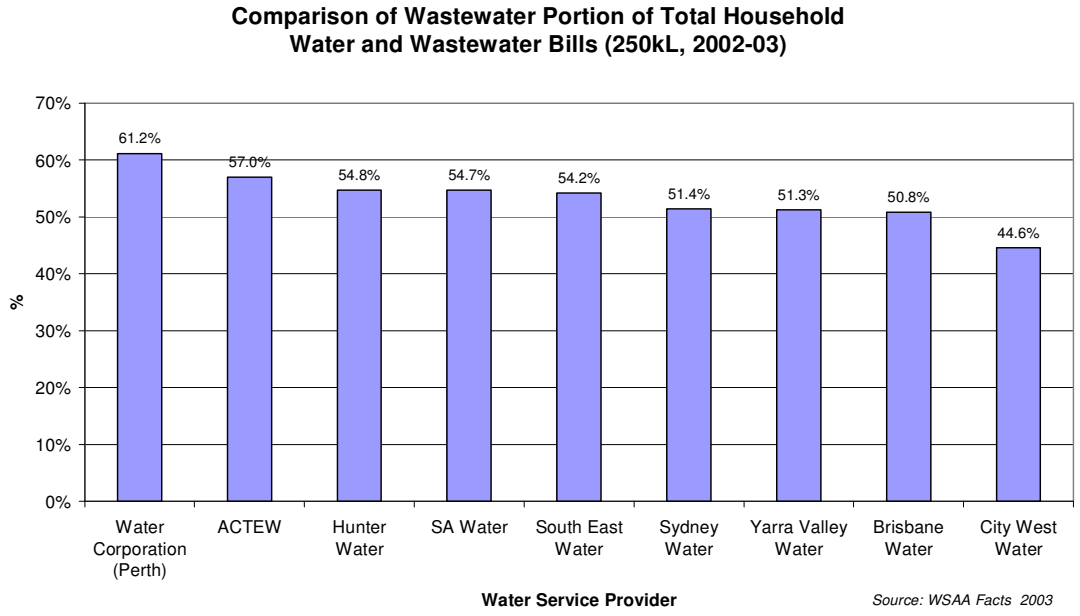
GRV-based charging results in customers with similar amounts of discharge to the sewer but different property values paying significantly different amounts. For example, 25% of low income families live in above average GRV properties and therefore pay an above average amount for wastewater.[62] Further, 11% of high-income families live in below average GRV properties and therefore pay a lower than average amount for wastewater. Medium income families are spread across the GRV spectrum. In addition, GRV charging favours landlords of low value properties (rental properties account for 36% of low value properties).

Another problem with GRV charging is the administrative costs that are incurred by the Water Corporation. The Water Corporation estimates that 5000 of the Corporation's customer contacts per annum relate to GRV and understanding of accounts. Complaints are particularly prevalent in a revaluation year which can result in significant changes in charges. In addition, the Water Corporation pays $2.4 million per annum to the Valuer General's Office for valuation services, which would not be required if a different charging structure were introduced.

The discussion in section 3.1.3 also suggests that the current approach to charging for wastewater may be contributing toward relatively high annual average wastewater bills.

The following chart shows that the wastewater portion of the total residential water and wastewater bill is higher in Perth than in other major cities.

[62] This data was based on the sample of properties participating in the Domestic Water Use Study.



The Authority seeks comments on whether there are particular circumstances that may result in the Water Corporation having higher wastewater expenses in Perth. In addition, the Authority will work with consultants to better understand the Water Corporation's allocation of costs between water and wastewater services.

Every jurisdiction in Australia except for Western Australia and South Australia has converted from property-based charging for residential wastewater to an alternative. Sydney Water, ACTEW Corporation, NT Power and Water Authority and Brisbane Water have adopted a standard flat charge. The three Melbourne retail water companies and Hunter Water have adopted a two-part tariff comprising a fixed service charge and a usage charge, based on estimated discharge.

The Government considered the move to a fixed charge in 2003 and agreed with the recommendations of the Joint Working Party's Review of Water Corporation Valuation Based Charges that the existing GRV-based tariff be retained, due to the redistribution issues associated with moving from the existing tariff.

For example, a State-wide fixed charge would require the 3% of customers on the minimum charge ($236) to pay an additional $228. Limiting increases in these charges to the inflation index plus 10% would require an eight year phase-in period.

It is unlikely that a move to a fixed tariff structure for residential wastewater charging would result in significant changes in water usage as this type of usage tends to be non-discretionary. The Domestic Water Use Study found that the volume of in-house water discharged is relatively constant throughout the year (although usage does rise slightly over the summer period) and is only marginally different between households (household size accounts for the differences)[63]. In any event, other approaches, such as rebates for dual-flush toilets, front-loading washing machines, and waterwise showerheads are likely to be a more effective way of achieving water conservation.

Can the approach to charging residential customers for wastewater services be improved? If so, how?

[63] Loh, P. & Coghlan, M., Domestic Water Use Study in Perth Western Australia, 2003.

7.2.3 Are Other Pricing Arrangements Resulting In Cross-Subsidies?

There may be other instances of cross-subsidies within the current water and wastewater pricing structures. This matter will be addressed by consultants who will seek to identify the extent of existing cross-subsidies.

One area that will be considered over the course of this inquiry is whether commercial customers are cross-subsidising residential customers, or vice versa. For example, the Authority is aware that the Water Corporation may be over-recovering expenditure on commercial wastewater customers because the transition to the new two-part tariff structure has not yet been completed[64].

The uniform charge that all Water Corporation households pay for usage up to 350kL is not funded by higher water prices but rather by Community Service Obligation payments from government. The level of the uniform charges will be reviewed as part of the inquiry.

To What Extent Should Water Pricing Involve Cross-Subsidies?

7.3 Are There Any Other Matters That The Authority Should Consider in Making Recommendations On Pricing Structures?

There may be other issues that the Authority should take into account when considering how to make recommendations on pricing structures. For example, what pricing approaches could be implemented to encourage greater reuse of wastewater?

What other matters should the Authority consider when making recommendations on pricing structures?

[64] The Water Corporation estimates that the GRV-based system of charging commercial wastewater customers was resulting in an over-recovery of expenditure (estimated at $26 million). The new two part tariff structure that was agreed by government in 1996 was originally meant to be phased-in over a six year period by moving customers progressively towards the target rates. However, this phase-in program was delayed in 2001-02 and then restarted in 2003-04. The over-recovery of expenditure that was remaining in 2002-03 was estimated by the Water Corporation at $8 million.

8 IMPACT OF RECOMMENDATIONS

There are a number of specific matters that the Government has asked the Authority to consider as it undertakes its inquiry. For example, the terms of reference require the Authority to consider the impact of the price recommendations on:

- social outcomes;
- environmental outcomes;
- the level of government funding (through Community Service Obligation payments);
- borrowing, capital and dividend requirements; and
- inflation.

Social outcomes would be particularly influenced by changes to the uniform tariff, the low usage charge up to 150kL, concessions to pensioners and seniors and the property-based approach to wastewater charging. The Authority will use statistical modelling to identify the distributional impacts of any pricing changes (as well as the impacts on different customer groups). If the pricing recommendations are likely to have significant impacts on household expenditure (either for all households or particular customer groups) the Authority will consider ways to phase-in the recommendations to minimise the social impacts.

Environmental outcomes could be influenced by the introduction of either water licensing charges or an environmental levy. A decision by government to invest in a new water source compared to extending the role of demand side management would also have differing environmental impacts. The Authority will use economic modelling to identify the impacts of the pricing recommendations on the demand for water, which will have implications for the need to abstract groundwater compared to relying on stream-flow into the dams.

The level of government funding provided to water service providers would be influenced by, for example, changes to the uniform tariff, concessions and by a decision to use targeted rebates to subsidise usage up to 150kL. The Authority will use economic modelling to estimate the impacts of the recommendations on government funding.

The impact of the recommendations on the government's triple-A credit rating is a further matter that will be considered. The government has two targets to maintain its credit rating:

- maintain net debt to revenue for the total non-financial public sector at or below 47%; and
- not increase real per capita expenses.

It is unlikely that the pricing recommendations that result from this inquiry would threaten the Government's triple-A credit rating. Net debt as a share of revenue is not currently close to the target (it is expected to be 35.5% for the 2003-04 financial year and increase to 41.7% in 2006-07[65]).

The Authority will also consider the inflationary impacts of the recommendations. However, any inflationary impact is likely to be small as the average household water and wastewater bill represents only 1.9% of average annual household expenditure[66].

If the Authority finds that its pricing recommendations have significant adverse consequences for any of the issues discussed above, it will present alternative scenarios to government that have differing impacts. It will also investigate ways to phase-in the recommendations to minimise the financial impacts of the changes.

How should the Authority assess the impact of the pricing recommendations on social outcomes; environmental outcomes; the level of government funding; borrowing, capital and dividend requirements; and inflation?

What other impacts should the Authority be aware of?

[65] Source: Western Australian State Budget, 2004-05, Budget Paper 3, p 13.
[66] Source: Water Corporation.

9 CONCLUSION

The Authority invites submissions from interested parties on the matters raised in this issues paper or in the terms of reference. Water pricing is being used to:

- ensure that the amount of water that is required for basic needs is affordable;
- treat customers throughout Western Australia consistently;
- promote the delivery of services consistent with the reasonable expectations of consumers;
- promote the conservation of water; and
- provide a reasonable return on the assets employed.

The Authority is particularly interested in receiving advice about whether these objectives are being met in the most effective and efficient manner.

ATTACHMENT 1: TERMS OF REFERENCE

INQUIRY ON WATER AND WASTEWATER PRICING

Terms of Reference

I, ERIC RIPPER, Treasurer (following consultation with the Minister for the Environment and the Minister for Government Enterprises) and 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 the water and wastewater pricing of the Water Corporation (as established by the *Water Corporation Act 1995*) and the water pricing of the Bunbury Water Board and Busselton Water Board (as established by the *Water Boards Act 1904*).

The Authority is to investigate and report on the following matters related to the pricing of water and wastewater services in Western Australia:

- the appropriate charging structures and recommended tariff levels for the Water Corporation's and the Bunbury and Busselton Water Board's urban water supply services (residential and non residential); and
- the appropriate charging structure and recommended tariff level for the Water Corporation's urban wastewater services (residential and non residential).

Section 26 of the ERA Act requires the Authority to have regard to certain matters:

- 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.

In conducting its investigation, the Authority must review:

- the regulatory asset base of each of the service providers;
- the non capital cost forecasts of the service providers;
- the depreciation and forecast capital expenditure program of the service providers; and
- the appropriate rate of return on public sector assets, including appropriate payments of dividends to the Government of Western Australia.

The Authority must give consideration to, but will not be limited to, the following matters:

- the methodology for assessing the revenue requirements of the service providers;
- the most appropriate price path and period, including the requirement for periodic reviews of that price path;
- the current structure and level of urban water and wastewater prices;
- the cost of providing the services concerned, including
  - a target for improvement in the efficiency in the supply of services.
  - any additional resources needed to meet the required standards of quality, reliability and safety, including such matters as the protection and development of future water resources.
  - how changes in standards and operating conditions faced by the service providers impact on its revenue requirements;
- the impact of pricing policies on borrowing, capital and dividend requirements and, in particular, the impact of any need to renew or increase relevant assets;
- considerations of demand management;
- the effect on and of general price inflation over the medium term;
- the need to maintain ecologically sustainable development, including by appropriate pricing policies that take account of all feasible options for protecting the environment;
- the social impact of the recommendations; and
- the effect of any pricing recommendation on the level of government funding (through Community Service Obligation payments).

In developing its recommendations the Authority is to have regard to the following policies:

- the pricing principles of the 1994 CoAG water reform agreement (as set out in Appendix to this reference);
- the Western Australian State Government's Uniform Pricing Policy;
- the Western Australian State Government's Sustainability Policy;
- the Western Australian State Government's Community Service Obligations Policy; and
- the pricing mechanisms available to the utility service providers through the *Water Agencies (Powers) Act 1984* and the *Water Boards Act 1904*.

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 by 18 March 2005 for further public consultation on the basis of invitations for written submissions.

A final report is to be completed by no later than 12 August 2005. This will ensure that any recommendations adopted by the Government are available for implementation in 2006/07.

APPENDIX

GUIDELINES FOR THE APPLICATION OF SECTION 3 OF THE COAG WATER REFORM AGREEMENT (THE COAG PRICING PRINCIPLES)

1 Prices will be set by the nominated jurisdictional regulators (or equivalent) who in examining full cost recovery as an input to price determinations should have regard to the principles set out below.

2 The deprival value methodology should be used for asset valuation unless a specific circumstance justifies another method.

3 An annuity approach should be used to determine the medium to long-term cash requirements for asset replacement/refurbishment where it is desired that the service delivery capacity be maintained.

4 To avoid monopoly rents, a water business should not recover more than the operational, maintenance and administrative costs, externalities, taxes or tax equivalent regime (TERs), provision for the cost of asset usage and cost of capital, the latter being calculated using a weighted average cost of capital.

5 To be viable, a water business should recover, at least, the operational, maintenance and administrative costs, externalities, taxes or TERs (not including income tax), the interest cost on debt, dividends (if any) and make provision for future asset refurbishment/replacement (as noted in (3) above). Dividends should be set at a level that reflects commercial realities and stimulates a competitive market outcome.

6 In applying (4) and (5) above, economic regulators (or equivalent) should determine the level of revenue for a water business based on efficient resource pricing and business costs. Specific circumstances may justify transition arrangements to that level.

7 In determining prices, transparency is required in the treatment of community service obligations, contributed assets, the opening value of assets, externalities including resource management costs, and tax equivalent regimes.

Notes:

- The reference to "or equivalent" in principles 1 and 6 is included to take account of those jurisdictions where there is no nominated jurisdictional regulator for water pricing.
- The phrase "not including income tax" in principle 5 only applies to those organisations that do not pay income tax.
- "Externalities" in principles 5 and 7 means environmental and natural resource management costs attributable to and incurred by the water business.
- "Efficient resource pricing" in principle 6 includes the need to use pricing to send the correct economic signals to consumers on the high cost of augmenting water supply systems. Water is often charged for through a two-part tariff arrangement in which there are separate components for access to the infrastructure and for usage. As an augmentation approaches, the usage component will ideally be based on long-run marginal costs so that the correct pricing signals are sent.
- "Efficient business costs" in principle 6 are the minimum costs that would be incurred by an organisation in providing a specific service to a specific customer or group of customers, or the minimum amount that would be avoided by not providing the service to the customer or group of customers.
- Efficient business costs will be less than actual costs if the organisation is not operating as efficiently as possible.

ATTACHMENT 2: 2003-04 TARIFFS

This attachment provides the 2003-04 water and wastewater tariffs for Perth, Bunbury and Busselton.

Water Corporation

Perth Residential Water Tariffs

Fixed Service Charge	$149
0– 150kL	41.6 c/kL
151 – 350kL	67.4 c/kL
351 – 550kL	91.0 c/kL
551– 950kL	120 c/kL
951+kL	150 c/kL

Country Residential Water Tariffs

The country residential fixed service charge is the same as for Perth.

Special (lower) tariffs for usage between 351 – 550kL and 551 – 650kL apply to residential properties in the North of the State (above the 26th parallel), and also in the towns of Cue, Laverton, Leonora, Meekatharra, Menzies, Mt Magnet, Sandstone, Wiluna and Yalgoo.

In 2003-04 the tariffs were:

Usage (kL)	**Class 1 c/kL**	**Class 2 c/kL**	**Class 3 c/kL**	**Class 4 c/kL**	**Class 5 c/kL**
1–150kL	41.6	41.6	41.6	41.6	41.6
151– 350kL	67.4	67.4	67.4	67.4	67.4
351– 450kL	83.3	85.7	85.7	85.7	85.7
451– 550kL	83.3	110.7	121.6	132.8	136.5
551– 750kL	120.0	125.2	144.2	159.5	174.6
751– 1150kL	152.6	206.8	230.6	262.4	294.2
1151– 1550kL	219.3	302.2	349.7	477.1	588.2
1551– 1950kL	252.7	373.7	461.2	572.5	683.8
over 1950kL	293.7	477.1	556.6	667.7	763.2

Perth Commercial Water Tariffs

Commercial fixed service charges are set according to the size of the meter serving the property.

In 2003-04, the charges were:

Meter size	**Charge**
20mm	$441.40
25mm	$689.70
30mm	$993.20
40mm	$1,766.00
50mm	$2,759.00
80mm	$7,062.00
100mm	$11,035.00
150mm	$24,829.00
200mm	$44,140.00
250mm	$68,969.00
300mm	$99,315.00
350mm	$135,179.00

The fixed service charge for strata titled units sharing a meter was $149.

The water usage charges were:

Usage (kL)	**Price**
0– 600kL	69.3 c/kL
601–1,100,000kL	77.5 c/kL
Over 1,100,000kL	75.5 c/kL

Country Commercial Water Tariffs

The fixed service charges are set according to the size of the meter serving the property.

In 2003-04, the charges were:

Meter size	**Charge**
15 mm & 20mm	$441.40
25mm	$689.70
30mm	$993.20
35mm, 38mm and 40mm	$1,766.00
50mm	$2,759.00
70mm, 75mm & 80mm	$7,062.00
100mm	$11,035.00
140mm and 150mm	$24,829.00

The fixed service charge for strata titled units sharing a meter was $149.

In 2003-04 the tariffs were:

Usage (kL)	**Class 1 c/kL**	**Class 2 c/kL**	**Class 3 c/kL**	**Class 4 c/kL**	**Class 5 c/kL**
First 300kL	81.0	107.5	118.1	129.1	132.6
Over 300kL	141.4	191.7	213.7	243.3	272.7

Perth Residential Wastewater Tariffs

Wastewater charges for residential properties are based on the rateable value of the property. The rateable value is derived from the gross rental value determined by the Valuer General's Office.

The tariffs for 2003-04 are provided in the following table.

$0– $8,700 GRV	5.59 c/$
$8,701– $23,600	3.37 c/$
Above $23,600	1.53 c/$
Minimum charge	$236.10 per residential unit

Country Residential Wastewater Tariffs

The minimum country residential sewerage charge in 2003/04 is $220.30 per residential unit.

The maximum country residential sewerage charge in 2003/04 is $599.20 per residential unit.

Perth Commercial Wastewater Tariffs

The tariff consists of a fixed service charge, based on the number of major sewerage fixtures (toilets and urinals) and a usage charge, based on the assessed volume of wastewater discharged into the Corporation's sewerage system.

This is a new charging system, and as such it is still being phased-in.

The sewerage charge for 2003-04 will be determined by comparing last year's bill with the combined service and usage charges.

If last year's bill is less than the combined service and usage charges, the customer's charges will be progressively increased, subject to a maximum increase of 10% plus the General Price Increase, 13.3% in 2003/04.

If last year's bill is more than the combined service and usage charges, the customer's charges for 2003-2004 will be progressively reduced.

The charges are:

Fixture	**Charge**
First Fixture	$460.90
Second Fixture	$197.30
Third Fixture	$263.50
Over 3 Fixtures (each)	$286.50

Strata titled units sharing major fixtures were charged $286.50 in 2003-04.

The usage charge in 2003-04 is 172.5 c/kL (with a 200 kL free discharge allowance per annum applying to each property).

Country Commercial Wastewater Tariffs

Fixture	**Charge**
First Fixture	$460.90
Second Fixture	$197.30
Third Fixture	$263.50
Over 3 Fixtures (each)	$286.50

On 1 July 2003 the Water Corporation introduced a new method of charging commercial properties for sewerage. The new tariff consists of a fixed service charge, based on the number of major sewerage fixtures (toilets and urinals) and a usage charge, based on the assessed volume of wastewater discharged into the Corporations sewerage system.

The new charges are being phased-in.

The sewerage charge for 2003/04 will be determined by comparing last year's bill with the combined service and usage charges.

If last year's bill is less than the combined service and usage charges, the customer's charges for 2003/04 will increase, subject to limitations:

- Where the increase is greater than $1,000, the increase will be capped at 13.3% (10% plus the General Price Increase) or $166.65 whichever is the greater.
- Where the increase is less than or equal to $1,000, the increase will be capped at 1/6th or 13.3% (10% plus General Price Increase) whichever is the greater.
- If last year's bill is more than the combined service and usage charges, the customer's charges for 2003/04 will be reduced by 1/6th of the difference.

Concessions

Perth pensioners receive a 50% concession on the fixed service charge for water, wastewater and drainage (country pensioners do not receive this concession).

Perth pensioners receive a 50% concession on the first 150kL. Country pensioners in the South receive this discount for the first 400kL while country pensioners in the North receive this discount for the first 600kL.

Seniors receive a 25% concession on the fixed service charge and do not receive a concession on their usage charge.

Other water concessions provided by the Water Corporation include a 25% concession on water, sewerage and drainage fixed service charges for residents of retirement villages.

Aqwest

Residential Water Tariffs

Fixed Service Charge	$87
0– 150kL	38 c/kL
151 – 350kL	66 c/kL
351 – 500kL	97 c/kL
501 – 700kL	126 c/kL
701 – 1000kL	150 c/kL
Above 1000kL	218 c/kL

Commercial Water Tariffs

Usage for non-residential properties is at a flat rate of $0.71 per kilolitre for all usage in excess of an allowance. The allowance is determined by first identifying the property category, as shown below. Aqwest is phasing in meter based charges over five years from 1 July 2005.

Property Category	**Land Use Rate in $**
Industrial	0.0240
Rural	0.0320
Commercial	0.0305
Vacant Land	0.0520

And then multiplying the land use rate in $ by the GRV and dividing the resulting amount by $0.71.

Non-rateable properties such as hospitals, schools etc are levied an annual fee of $327 per annum.

Concessions

Pensioners receive a rebate of up to 50% of their supply charge while seniors receive a rebate of up to 25% of their supply charge. Both pensioners and seniors receive a rebate on their usage charge of 50% up to 350kL.

Busselton Water

Residential Water Tariffs

Fixed Service Charge	$101
0-150kL	39 c/kL
151 – 350kL	57 c/kL
351 – 550kL	63 c/kL
551 – 750kL	75 c/kL
751 – 1150kL	124 c/kL
1151 – 1550kL	177 c/kL
1551 – 1950kL	204 c/kL
1951 +	237 c/kL

Commercial Water Tariffs

Busselton Water is phasing in meter based charges over five years from 1 July 2005.

Property Category	**Land Use Rate in $**
Commercial	0.207
Vacant Land	3.17

Concessions

Pensioners and Commonwealth Seniors Health Card customers receive a rebate of up to 50% of their supply charge while seniors receive a rebate of up to 25% of their supply charge. Both pensioners and Commonwealth Seniors Health Card holders receive a rebate on their usage charge of 50% up to 350kL.

ATTACHMENT 3: GLOSSARY

ACCC	Australian Competition and Consumer Commission.
CAPM	Capital Asset Pricing Model.
CoAG	Council of Australian Governments.
CSO	Community Services Obligation
ESC	Essential Services Commission (Victoria).
EPA	Environmental Protection Authority
ERA	Economic Regulation Authority
GL	Gigalitre, which is 1000 megalitres.
GPI	General Price Index, which is the annual percent change in the Perth Consumer Price Index based on the preceding September year.
GRV	Gross Rental Value, which is the gross annual rental that the property might reasonably be expected to realise if let on a tenancy from year to year.
IPART	Independent Pricing and Regulatory Tribunal of New South Wales.
IWSS	Integrated Water Supply Scheme, which supplies water to Perth, Mandurah, Pinjarra and the Wheatbelt and Goldfields areas.
kL	Kilolitre, which is 1000 litres.
ML	Megalitre, which is 1000 kilolitres.
O*ff*GAR	Office of Gas Access Regulation, now part of the Economic Regulation Authority.
OfWAT	Office of Water Services (United Kingdom).
ORAR	Office of Rail Access Regulation, now part of the Economic Regulation Authority.
QCA	Queensland Competition Authority.
WACC	Weighted average cost of capital.

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