Draft Report: Inquiry on Country Water and Wastewater Pricing in Western Australia

31 January 2006

Economic Regulation Authority
WESTERN AUSTRALIA

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Executive Summary

There are 285 country potable water systems and 128 country wastewater systems in Western Australia. Most are operated by the Water Corporation (Corporation). Costs of service delivery vary between country areas and between country and metropolitan areas. In the absence of a specific policy to the contrary, prices would differ across the State to reflect the different costs of providing water and wastewater services.

The substantial cost differences across the State have led to the Government applying the same prices for residential water customers across the State (up to a certain level of water usage). This policy is referred to as the uniform pricing policy.

The uniform pricing policy is central to country water pricing and a major issue to be taken into account when considering how country water prices might be set in future. The uniform pricing policy has been adopted as a mechanism to achieve particular social objectives. However, the policy is not documented in any formal way that spells out these objectives. The Authority is of the view that there would be benefits from having the uniform pricing policy more clearly defined and documented.

The social objectives currently underlying the uniform pricing policy can be discerned from observing country prices and appear to include the provision of water for basic needs at a uniform price, the provision of an average amount of water at a location at a uniform price, and the provision of water to customers who use up to 150 kL/year more than the average at a particular location at a discounted price to that which applies in Perth.

The uniform pricing policy creates a trade-off: the greater the amount of water that is sold at a discount to country consumers, the less they are aware of the cost of using additional water. Ideally, consumers would make the decision to invest in water using goods (e.g. pools and gardens) and water saving technologies (e.g. water efficient appliances) when the value to them of doing so is greater than the cost of providing the water. If consumers do not face the whole cost in the price they pay, there is a risk that they will use more water than they otherwise would.

After considering the trade-off between providing water at a discount and pricing to reflect costs, the Authority suggests that the uniform pricing policy could be defined as a uniform payment for a certain level of water usage. The Authority welcomes submissions on what this level of water usage should be. However, there may be merit in making water payments equal across the State for consumers who use an average amount of water where the average depends on the location. For example, a household using 300 kL/year in the South would make the same total payment to the Corporation as a household in the North using 500 kL/year, assuming those amounts represent the averages for those areas. Setting the threshold at the average amount of water for the location would ensure that a similar percentage of households in each location exceed the threshold and pay usage charges that relate to costs and so are encouraged to use water efficiently.

An advantage of interpreting the uniform pricing policy as a uniform payment for a certain level of water usage is that it would allow the fixed charge, the threshold and the usage charge below the threshold to vary between groups of towns. Uniformity between different groups of towns is thereby achieved in the total amounts that consumers pay at some level, such as average consumption, for each particular group of towns. This approach could therefore provide additional flexibility in setting prices for each group of towns.

The Authority considers that towns that are approaching the need to increase their water supplies should have their water usage charges (above the threshold) based on the future cost of the additional water supplies. For example, in Kalgoorlie-Boulder this would result in a usage charge of $4.65/kL above the threshold compared to charges that currently can be less than a quarter of this amount. The advantage of pricing in this way is that water usage decisions in the affected towns would be influenced by the higher prices and, as a result, the increase to the water supplies in these towns would occur only when the towns have demonstrated (through their willingness to pay) that they sufficiently value the additional water that they consume. The Authority acknowledges that data may not be readily available to set prices in this way for some towns and that rough estimates of the future costs of additional water supplies may need to be used while the estimates are refined.

For towns that are unlikely to need to have their water supplies increased, the application of usage charges that result in consumers saving water would not result in the saving or deferral of capital expenditure. It may therefore not be appropriate to set usage charges for these towns in the same way as for towns that may soon need to increase their water supplies. However, it may be appropriate to set the usage charge above the threshold at a level that at least recovers the avoided costs that are associated with providing water services to the town (avoided costs include pumping, billing, meter reading and maintenance but exclude costs such as overheads and a return on the Corporation's investment in the infrastructure in the town). Setting usage charges above the threshold to recover avoidable costs would result in payment increases for an estimated two thirds of water schemes. In some cases it may, however, be appropriate to have prices also provide the Corporation with a return on its investment, particularly that relating to local infrastructure.

The uniform pricing policy is more concerned with social objectives relevant to residential rather than commercial customers. However, at present it is likely that commercial customers (both water and wastewater) in country towns are receiving discounted prices. This is because the Community Service Obligation (CSO) payment for a town is calculated as the difference between the costs and revenue of servicing all customers, not just residential customers. Better information to differentiate between commercial and residential costs would be required for commercial customer prices to be set such that they appropriately reflect the costs of providing water and wastewater services.

Currently, commercial customers pay uniform fixed water charges (although usage charges vary) and uniform wastewater charges. This can result in commercial customers in some towns not being charged their share of water or wastewater costs. As a consequence, residential customers in these towns may be paying more than their share of the costs, particularly for wastewater services. Cost-reflective pricing would see commercial customers being charged in proportion to the costs involved in servicing them.

Country residential wastewater customers pay charges that are related to the costs of servicing their town. It is understood that the Corporation currently takes these costs and subtracts the revenue that is received from commercial customers (who pay a uniform charge across the State). The amount that is left over is charged to residential customers (based on property value), although there is a cap on the amount of costs that can be recovered from residential customers in a town. In addition, the charges to individual residential customers are capped (currently at $612.40/year). As a consequence of the individual cap, residential customers in lower valued properties pay more than they otherwise would. In fact, country residential wastewater customers pay, on average, higher wastewater charges than customers in the same value properties in Perth. This is inconsistent with the principles of the uniform pricing policy. However, the individual cap serves to spread wastewater payments more evenly between households in a town, and

results in more cost-reflective pricing because the costs of wastewater provision do not differ significantly between households. The Authority is not proposing to remove the cap but is particularly interested in the views of interested parties on this matter.

Although the Corporation is the dominant supplier of water and wastewater services in Western Australia, it is possible in future that other service providers may wish to service a town or group of towns and compete for the CSO payments that are currently paid to the Corporation. A similar tendering approach has already been used for parts of the State's regional electricity network. Making future CSO payments transparent at the town level would provide information to potential service providers that would assist them in considering whether they can provide the service at a more competitive price than the Corporation.

In preparing this draft report, the Authority has recognised the importance of receiving feedback from interested parties on the directions suggested in the report before proceeding to undertake the detailed analysis that is required to work out the impacts on customers.

The Authority encourages interested parties to consider the findings in this draft report and participate in the inquiry, either by preparing a submission (due by 10 March 2006) or by attending one of the public forums. The forums are being arranged for mid to late February at Albany, Geraldton, Kalgoorlie-Boulder, Mandurah, Northam and Port Hedland. The venue and times of the forums will be available on the Authority's website (www.era.wa.gov.au) and published in local newspapers.

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1 Introduction

On 20 October 2005, the State Government of Western Australia gave written notice to the Economic Regulation Authority (Authority) for it to undertake an inquiry into the Water Corporation's (Corporation's) country potable water and wastewater prices.

The inquiry is the first independent evaluation of Western Australian country water and wastewater prices and provides an opportunity for Western Australians to have direct input into the process of determining country water and wastewater prices.

The final report on an earlier inquiry carried out by the Authority on urban water and wastewater pricing, which focussed on Perth, Bunbury and Busselton, was provided to the State Government on 4 November 2005. However the earlier inquiry did not extend to prices in country areas.

1.1 Terms of Reference

This inquiry has been referred to the Authority under Section 32 of the *Economic Regulation Authority Act 2003* (Act), which provides for the State Government to refer to the Authority inquiries on matters related to regulated and non-regulated industries.

The Terms of Reference issued by the Treasurer on 20 October 2005 is provided in Appendix 1.

In accordance with the Terms of Reference, the Authority will examine the current approach to country water and wastewater pricing, and the merits of potential alternative approaches, in the following areas:

- *the appropriate consumption threshold for the application of uniform residential charges;*
  - currently, the threshold is set at 350 kL/year, with customers using less than this amount paying the same as customers in Perth with equivalent water usage. The actual threshold above which country customers pay more than customers in Perth for an equivalent amount of water can be either 450 kL/year or 650 kL/year depending on the class that the town is assigned to;
- *the effectiveness and efficiency of the Water Corporation's five town class charges for residential and business customers in country towns and the merits of any alternative charging structure for country towns;*
  - currently, towns are allocated to five groups according to the costs of providing the service; in addition there are lower charges for some towns, such as those north of the 26th parallel;
  - currently, residential charges increase in blocks of water usage and can be more than double the highest charge in Perth;
  - currently, commercial charges are based on two blocks of water usage with the threshold set at 300 kL/year; in comparison the usage charges for commercial water customers in Perth are based on three blocks of water usage with the thresholds set at 600 kL/year and 1,100,000 kL/year respectively

- *the effectiveness and efficiency of the service charge structure for businesses and the merits of any alternative charging structure for country towns;*
  - currently, charges are based on the size of the meter and are set at the same levels as in Perth;
- *the appropriateness of the residential and vacant land rates for each country sewerage scheme and the maximum rate in the dollar gross rental value wastewater service charge and the merits of an alternative charging structure;*
  - currently, charges are based on the rateable value of the property;
  - currently, wastewater charges in country towns are capped while metropolitan wastewater charges are not;
- *the appropriateness of continuing uniform State-wide major fixture and volumetric discharge sewerage charges for business;*
  - the Corporation is phasing-in a new charging structure based on a customer's estimated level of sewerage discharge and a service charge based on the number of fixtures;
  - currently, the discharge rate and service charges are set at the same levels as in Perth; and
- *the impact proposed pricing structures will have on the Corporation's revenue and expenses, as well as payments to, and from, the Government.*

In proposing prices and pricing structures, the Authority is required by the Terms of Reference to consider:

- *the principles of the Government's uniform pricing policy;*
- *demand management targets; and*
- *other social, economic and environmental policy objectives.*

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

- the need to promote regulatory outcomes that are in the public interest;
- the long-term interests of consumers in relation to the price, quality and reliability of goods and services provided in relevant markets;
- the 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 inquiry covers only regulated charges and does not extend to consideration of the Corporation's headworks charges, which are charges that apply to new customers when they connect to the system; the charges contribute to the cost of future expansions to water supply infrastructure.[1] A number of submissions queried the headworks charges levied by the Corporation for industrial customers or rural sub-divisions.[2] The Government may consider that the subject of headworks charges should be the subject of a separate inquiry.

The Authority invites interested parties to consider the Terms of Reference and the issues discussed in this draft report and prepare a submission to the inquiry.

1.2 Review Process

The recommendations of this inquiry will be informed by the following public consultation process.

- The Authority published an issues paper on 9 December 2005 and invited submissions from industry, government, other stakeholder groups and the general community on the matters in the Terms of Reference. Fourteen submissions were received in response to the issues paper. The issues paper and submissions are available on the Authority's website, www.era.wa.gov.au.
- The Authority invites further written submissions on this draft report (see below).
- The Authority will hold public forums on the findings in the draft report. Interested parties are invited to attend the forums and raise any matters of relevance to the inquiry. Forums are being arranged for mid to late February at Albany, Geraldton, Kalgoorlie-Boulder, Mandurah, Northam and Port Hedland. Details of the forums will be provided on the Authority's website. You can register your interest in attending a forum by emailing watersubmissions@era.wa.gov.au.
- The Authority Consumer Consultative Committee was consulted on 14 December 2005 and will be consulted again in mid-March 2006.
- The final report for the inquiry will be delivered to the Treasurer by 28 April 2006, and the Treasurer will, in accordance with the Act, have 28 days to table the report in Parliament.

In accordance with section 45 of the Act, the Authority will act through the Chairman, Lyndon Rowe and Member, Chris Field, in conducting this inquiry.

[1] Headworks charges are in the form of a one-off upfront payment (in addition to water usage and annual fixed charges). They are based on the estimated unit costs of meeting significant increases in demand and are applied uniformly throughout the State.

[2] See submissions by Goldfields and Esperance Development Commission (p7), Southwest Development Commission, Great Southern Development Commission and Shire of Bridgetown-Greenbushes.

1.3 How to Make a Submission

Submissions on any matters raised in this draft report 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 Country Water and Wastewater Pricing
Economic Regulation Authority
PO Box 8469
Perth Business Centre
PERTH WA 6849

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

Submissions must be received by **Friday 10th March 2006**.

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

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

Further information regarding this inquiry can be obtained from:

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2 Residential Water Pricing

2.1 Terms of Reference

The Authority is expected to consider and make recommendations on:

- *the appropriate consumption threshold for the application of uniform residential charges; and*
- *the effectiveness and efficiency of the Water Corporation's five town class charges for residential and business customers in country towns and the merits of any alternative charging structure for country towns.*

2.2 Background

All households that are customers of the Corporation and use less than 350 kL/year are currently charged a uniform price, regardless of where they are in the State. The uniform price up to 350kL comprises an annual fixed charge (currently $152.30), which was made uniform in 1989/90, and usage charges (currently $0.425/kL up to 150kL and then $0.689/kL up to 350kL), which were made uniform in 1994/95.

A key feature of the uniform pricing policy is that water usage below the uniform price threshold does not reflect the costs of providing the water. This means that country water consumers using less than 350 kL/year do not pay a price for their water which reflects its cost. As a result, most country water systems need to be subsidised in the form of a Community Service Obligation (CSO) payment from the Government (the CSO for this purpose amounted to $146 million in 2004/05).[3]

In principle, consumers would pay prices that reflect the cost of supply for usage beyond 350 kL/year. However, this does not happen. The tables of water usage charges for residential customers (see Tables A2.1 and A2.2 in Appendix 2) show that charges are generally uniform across customer classes, and below Perth charges, for up to 450 kL/year for Group A customers (generally those in the south) and 650 kL/year for Group B customers (generally those north of the 26th parallel).

The distinction between Group A towns and other towns was first introduced in 1974/75, and acknowledges that households in parts of the State with higher temperatures and harsher weather conditions may require a higher amount of water usage (e.g. for showering and air-conditioning) and also recognises that some of these towns have less access to alternative sources of water, such as from bores.

A detailed explanation of the current water pricing arrangements in the country is provided in Appendix 2.

Uniform pricing is not universal in Australia as a pricing policy and other jurisdictions adopt a variety of approaches. South Australia and the Northern Territory face similar issues to those of Western Australia, with single utilities providing water and wastewater services

[3] According to the Corporation, the total CSO payment for country operations in 2004/05 was $217.8 million which includes $146.1 million to cover country losses, $16.5 million for providing revenue concessions, $7.8 million for the infill sewerage program, $40.5 million for new projects requiring CSOs and a $6.9 million payment that is an adjustment for the actual expenditure incurred in 2003/04 (the “wash-up”).

across the State or Territory, covering both metropolitan and country customers. The South Australian Water Corporation (SA Water) provides water and wastewater services to over 1.4 million customers across the State under a uniform pricing policy. The most significant difference between SA Water and the Corporation that is of relevance to this inquiry is the application in South Australia of a uniform price for water within each customer class. In South Australia, therefore, country and metropolitan commercial customers pay the same water charges, whereas in Western Australia charges are only uniform for residential consumers and only up to the threshold of 350 kL/year. The South Australia Government funds its uniform pricing policy by making CSO payments to SA Water. In the Northern Territory, Power and Water Corporation (Power and Water) provides electricity, water and sewerage services to over 70,000 customers across the Territory. Territory-wide uniform tariffs for water and wastewater are in place, for which Power and Water receives a CSO from the Territory Government.

The uniform pricing policy was adopted as a mechanism to achieve particular social objectives. It is of relevance to note in this context that no formal policy exists that spells out these objectives, and while there is no requirement for uniformity beyond residential prices, the Corporation does have elements of uniformity in other areas of pricing – for example, all commercial customers throughout the State pay the same wastewater charges.

In some other jurisdictions, water and wastewater industries are decentralised, with separate service providers for urban and regional centres and with each charging different amounts for their services. For example, Victoria has three metropolitan (Melbourne) retail businesses and 15 regional urban water authorities, which provide water distribution and wastewater services, and five rural water authorities, which provide water for irrigation. Water and wastewater charges vary across providers.

2.3 Analysis

2.3.1 Objectives Underlying the Current Country Water Pricing Approach

The current country residential water pricing structure is described below in a way that provides an indication of the various objectives that appear to be being pursued:

- water for basic needs (e.g. up to 150 kL/year) is provided at the same price throughout the State;
- residential customers who use an average amount of water for their Group are generally charged the same throughout the State (i.e. $0.425/kL up to 150kL and then $0.689/kL up to the average amount);
- country residential customers using approximately 150 kL/year more than the average for their location are provided this water at a lower price than they would pay in Perth (the average in Group A is 305 kL/year and the price is lower than Perth for usage up to 450 kL/year, while the average in Group B is 503 kL/year and the price is lower than Perth for usage up to 650 kL/year); and
- thereafter, usage charges increase in blocks to reflect, at least in part, the costs of servicing the town. Approximately 28 per cent of country residential customers pay usage charges that attempt to be cost reflective because they consume these higher volumes.

There is considerable support for the notion of providing a level of water for basic needs at an affordable price. For example, Western Australian Council of Social Services (WACOSS) notes in its submission that:

> Water usage can be either necessary or discretionary. That is, there is a level of water usage that is unavoidable to sustain a relative standard of life and water usage above this standard for non-essential purposes. Any changes to existing pricing structures and/or the development of new pricing structures must guarantee access to an affordable level of water, and most particularly, ensure that necessary use of water is affordable for all households. (WACOSS submission, p2)

The policy objectives associated with providing discounts to customers using water for basic needs and to those using less than an average amount are reasonably evident. However, discounts are also provided to customers using more than an average amount. This policy would appear to be taking into account the average water use requirements of larger country households.

It is important to make clear that it is uniformity in price per unit that is currently achieved rather than uniformity in the quality of the service, as towns are fundamentally different in terms of the water sources, the non-health related aspects of water quality and the capacities and attributes of the system for delivering water services. As a result, some towns benefit from being provided with a higher level of service (and receive a greater share of the CSO) while they are charged the same price as towns that receive a lower level of service. For example, the non-health related aspects of water quality are higher at Kalgoorlie-Boulder than at Esperance but the price for water up to 350 kL/year is the same.

Findings

1 There is no formal policy statement that sets out the social objectives of the uniform pricing policy. However, the social objectives currently underlying the uniform pricing policy can be discerned from observing country prices and appear to include: the provision of water for basic needs at a uniform price; the provision of an average amount of water at a location at a uniform price; and the provision of water to customers who use up to 150 kL/year more than the average at a particular location at a discounted price to the charge that applies in Perth.

2.3.2 What Would Efficient Country Water Prices Look Like?

The uniform pricing policy results in some households making decisions about water usage without facing prices that reflect the costs that their decisions impose on the system. As a result, some country households will be using more water than they would if they faced efficient (cost reflective) pricing, and the consequent cost of expanding infrastructure capacity to meet this higher demand must currently be met largely through CSOs.

The generally accepted principle for achieving economic efficiency is to price any additional water that households might consider using at its Long Run Marginal Cost (LRMC). LRMC is a forward-looking cost that accounts for the investment needed to expand capacity over time so that consumers can be delivered the required volume of

water. Such investment will include a range of the most cost-effective strategies of balancing supply and demand (e.g. enhancing supplies, through additional dam capacity or groundwater supplies, as well as reducing demand, by encouraging water conservation and re-use).[4]

In theory, pricing on this basis will encourage consumers to think about the cost consequences of using additional water. Consumers will use additional water if the value of that water to them (reflected in what they would be willing to pay) exceeds the price they are required to pay (and which reflects the long run cost of supply). Pricing on this basis encourages consumers to only consume water where the value to them exceeds the cost of providing the water to them. It also encourages efficiency when consumers make decisions to invest in water-using goods (pools and gardens) and water-saving technologies (water-efficient appliances) because the water prices paid/saved reflect the costs incurred/avoided. Furthermore, provides a clear signal to potential investors in alternative water sources, such as water recycling, as to what consumers are willing to pay for additional water supplies.

The theory can be illustrated by using notional households in Kalgoorlie-Boulder and Esperance. This household in Kalgoorlie-Boulder, which currently uses, say, 350 kL/year is considering expanding its garden to take total water usage to, say, 450 kL/year. The current usage charge for this additional amount of water is $0.876/kL or $87.60. However, the cost of sourcing and transporting an additional 100kL is $465 (100kL * $4.65/kL = $465) at times of peak demand, which is based on a LRMC of $4.65/kL. Efficient pricing would see this household charged $465/year for the additional water rather than $87.60. If the household is prepared to pay $465/year then the system should be expanded to accommodate the additional demand.

By comparison, Esperance provides an example of where the cost of delivering additional water is relatively low. A household in Esperance looking to expand its garden to take its total annual water use from 350kL to 450kL would currently have to pay an additional $85 in water usage charges (based on a usage charge of $0.85/kL). Efficient pricing would see this household charged $25 for the additional water rather than $85, because the cost of sourcing and delivering that additional water at times of peak demand is $0.25/kL.

As can be seen from the examples above, the application of economic principles on a town-by-town basis without reference to the uniform pricing policy would result in different usage charges across towns. In addition, the fixed charge could also need to be set differently for each town to recover the shortfall in revenue that is often associated with setting usage charges at LRMC.

In general, the levels of the usage charges, thresholds and fixed charges would reflect the different cost and demand conditions of each town. Kalgoorlie-Boulder is an example of a city which is expensive to supply because the water is sourced from Perth (550 km away). Esperance is an example of a growing town with a relatively inexpensive water supply because the water is sourced from local bores, although the water is of a relatively low quality. Other growing towns may have expensive water (with relatively high usage charges). Some towns may have static or even declining populations with little or no likely requirement to expand capacity as a result of any reasonable change in average household water use (and therefore have relatively low usage charges).

[4] This is consistent with the submission by the Goldfields and Esperance Development Commission (GEDC), which emphasised the need to encourage water conservation, private water collection and storage, and grey water reuse, for both residential and commercial customers.

Applying economic principles would not only mean that the charges and thresholds across country towns would differ: the charges and thresholds would also almost certainly be different from Perth charges and thresholds.

Readers who are interested in gaining a better understanding of the Authority's view of the economics of water pricing are encouraged to read Appendix 4.

There are, however, practical difficulties associated with applying economic principles to country water pricing:

- cost data is not available in the detail required. Separate commercial versus residential cost information is not available, and forward-looking cost estimates for each town needed for the purposes of estimating efficient usage charges are not readily available;
- it could result in significant payment increases/reductions for those households using more/less than the threshold amount of water if the estimated LRMC is higher/lower than current usage charges;
- averaging prices across towns (if forward-looking cost data is not available on a town-by-town basis) may mean that some towns will not face efficient price signals; and
- forward-looking cost estimates are heavily influenced by the future growth expected in a town, which for many towns is uncertain.

The Corporation highlights the difficulties associated with implementing efficient pricing in its submission:

> Moving to marginal cost for country schemes is problematic with the greatest difficulties being the complexity of the calculation required for each of the Corporation's 236 schemes, coupled with the instability of the result due to the uncertainty of growth.
>
> These difficulties need to be further weighed against the administrative costs of using a marginal cost approach and the fact that price differentiation applies only to consumption in excess of 350kL, being 28% of the total country consumption. The Corporation currently has the systems in place for calculating the average cost for a scheme. (Corporation submission, p11)

Applying any methodology to improve efficiency will require more accurate cost data than is currently available, but this will need to be approached having due regard to the practicalities. In some instances, such as for towns that have static or declining populations, it is unlikely to be worthwhile developing more complicated methodologies for pricing purposes. In other instances, such as for towns or groups of towns that are growing and approaching the need to expand or upgrade their water supplies, the calculation of LRMC may be worthwhile, but, as the Corporation notes, the estimate may lack precision due to the uncertainty of the expected growth.

The decision about whether it is worthwhile to achieve more efficient water pricing for a particular town or group of towns would involve weighing up the benefits of influencing water use decisions against the costs of developing more complex systems to estimate efficient prices.

In this regard, consideration needs to be given to the benefits of having prices available that signal the forward-looking costs associated with servicing a town or group of towns, as this information might encourage alternative providers of water and wastewater services. This would be particularly relevant where either the service provision or bulk

water provision is tendered (e.g. in a manner similar to the approach used for parts of the State's regional electricity network). As noted by the Department of Industry and Resources (DoIR):

> …it is important that any pricing (and policy) structures proposed reflect the need to encourage, where economically feasible, additional water providers. Creating a competitive environment that sponsors full contestability in providing water and waste water services to industry (and the residential sector) will enhance the State's long term development potential. (DoIR submission, p2)

Similarly, the Chamber of Commerce and Industry (CCI) stated that:

> …the absence of transparent pricing for the various elements of the water supply chain in Western Australia limits the ability of potential market entrants to establish business viability. (CCI submission, p2)

It should also be appreciated that more efficient pricing is unlikely to have a large impact on the Corporation's capital works programme, which is largely driven by projects that are determined by government regulation. For example, over the next five years the Corporation is planning to spend more than $300 million to achieve the water quality specifications of the Australian National Drinking Water Guidelines, $90 million on upgrading dams to be consistent with the safety guidelines of the Australian National Committee on Large Dams and $22 million on managing wastewater overflows in the country.

Findings

2 Application of economic principles on a town-by-town basis without reference to the uniform pricing policy would almost certainly result in significantly different usage charges and fixed charges between towns with higher payments being made in total by customers in the country systems.

3 In order to achieve more efficient water pricing, the Corporation would need to develop better systems to differentiate commercial and residential costs and to identify the forward-looking supply costs for towns or groups of towns that are approaching capacity and need to increase their water supplies.

2.3.3 Can Greater Efficiency be Achieved for Country Water Pricing Within the Constraint of Uniformity?

Setting prices in the manner described above would be inconsistent with the current concept of price uniformity based on uniform fixed and usage charges. Taking the current data limitations as given, the Authority has explored alternatives for the purposes of identifying an appropriate direction for country water pricing.

Setting the threshold is the critical element for balancing social and efficiency objectives. If the threshold is set too high, then there is the likelihood that many country households will have annual water usage less than the threshold. For example, if the threshold for all country towns was set at 550 kL, which was the threshold recommended for Perth customers in the Authority's Final Report on Urban Water and Wastewater Pricing, 91 per cent of households in Group A would be below the threshold (and 75 per cent of

households in Group B). For Groups A and B, households using less than 550 kL/year would not be subject to cost-reflective charges. On the other hand, if the threshold were set too low, say at 150 kL/year, which could be considered the amount of water necessary for basic needs, the water payments of country customers would increase significantly (and the CSO reduce significantly).

The Authority has considered the two alternative approaches to setting the threshold underpinning the uniform pricing policy. The threshold could be:

- set at a certain level across all country towns; or
- set at different levels for different groups of country towns.

Setting a single threshold across all country towns would not acknowledge differences in costs, demand pressures, non-health related aspects of water quality or even weather conditions. Although a single threshold has the advantage of simplicity, it hampers opportunities for improving efficiency and is therefore not supported.

Setting the threshold differently across towns or groups of towns, at a level taking into account the need for expanding or replacing water supply infrastructure and what the Government can provide by way of a CSO, has the potential to achieve a more equitable as well as efficient pricing arrangement.

For administrative and data availability reasons this principle may need to apply to groups of towns. Therefore, the uniform pricing policy could be defined as:

- uniformity up to a specified amount of water usage for a group of towns (e.g. uniform usage charges up to 300 kL/year in Group A and 500 kL/year in Group B) and then cost-reflective pricing above that threshold.

Setting thresholds differently across groups of towns can also take the water needs of households at different locations into account. This approach would be consistent with the approach recommended by WACOSS:

> WACOSS supports the uniform tariff threshold being set at a level of agreed water use for individuals to maintain a reasonable quality of life, recognizing the essential nature of water services. (WACOSS submission, p4)

The actual definition of uniformity influences the options available to use price to achieve greater efficiency. Uniformity could be achieved, for example, by having all residential customers throughout the State using an average amount of water for their group paying the same amount, but paying different amounts for water usage below the average. For example, a residential customer in Group B using 500 kL/year could pay the same as a residential customer in Group A using 300 kL/year (this could be achieved by setting the usage charge for Group B at $0.49/kL from 1 to 500 kL and the usage charge for Group A at $0.82/kL from 1 to 300 kL, which would make the usage payments the same ($245.00) at the respective consumption levels).

An additional advantage of interpreting uniformity as uniform *at* rather than *up to* a threshold level of water usage is that it would allow the fixed charge, the threshold and the usage charge below the threshold to vary between groups of towns (subject to the constraint that uniformity is achieved at the threshold). This approach could therefore provide additional flexibility in setting prices for each group of towns to achieve certain objectives, such as having a prudent number of customers facing cost-reflective usage charges (at least at the higher usage levels) in towns that are close to needing to have their water supplies increased.

A complication with having a single usage charge below the threshold and a single usage charge above the threshold is that there could be a significant step in the price schedule for towns close to fully utilising their current water supplies. This effect would be particularly an issue where the usage charge below the threshold was set as uniform across towns.

One way to deal with this complication is to add another usage charge so that towns close to fully utilising their current water supplies have three usage charges, one below the threshold and two above. The highest charge would approximate LRMC.

On balance, the pricing system can place relatively more emphasis on pricing signals to encourage efficient water use or on the social objectives as embedded in a uniform pricing policy. The inherent conflict in achieving the twin objectives of securing both uniform pricing and maintaining some degree of appropriate cost reflectivity to ensure a pricing incentive for efficient water use requires some careful balancing of competing objectives.

The Authority's preliminary view is for uniformity to be defined as having all residential customers throughout the State using an average amount of water for their group paying the same amount (say, linked to the average payment in Perth), but paying different amounts for water usage above and below the average. The usage charge below the threshold and fixed charge could be adjusted to achieve the average payment. The usage charge above the threshold could be set to reflect LRMC where appropriate.

Findings

4 The commitment to and the specific implementation of uniformity limits the options available to use price as an incentive to achieve greater efficiency. Setting the threshold differently across groups of towns, at say the average water use for the group, would ensure that a similar percentage of households in each group exceed the threshold and pay cost reflective prices. The usage charge below the threshold and fixed charge could be adjusted to achieve the average payment (which could be set, say, at the average payment for Perth). This would allow the usage charge above the threshold to be set in relation to LRMC, where appropriate, thereby introducing an efficiency incentive for above average users.

2.3.4 Allocation of Country Towns to Classes

As indicated above, country towns are currently allocated to classes based on the costs of servicing the town. This method of grouping towns is specified in the By-laws[5]. The allocation of towns to classes is reviewed each year by the Corporation and the allocations are based on costs per kilolitre averaged over the past three years. The Corporation considers operating costs (including allocated overheads) and total costs (including depreciation and a rate of return) when determining the allocations. According to the By-laws, the allocations are on the basis of the costs as shown in Table 2.1.

[5] Section 17D, Water Agencies (Charges) By-laws 1987.

Table 2.1 Basis for Allocating Country Towns to Classes (2005/06)

Class	3 year average operating cost (including allocated overheads) ($/kL)	3 year average total cost (including depreciation and a return on capital) ($/kL)
Class 1	$0 - $1.00	$0 - $2.00
Class 2	$1.00 - $1.50	$2.00 - $3.00
Class 3	$1.50 - $2.50	$3.00 - $5.00
Class 4	$2.50 - $5.00	$5.00 - $10.00
Class 5	Over $5.00	Over $10.00

Note: The costs referred to in this table are specified in the By-laws and are not indexed for inflation.

Source: Water Corporation

The Corporation has advised that allowance is occasionally made for a town's specific circumstances including:

- the impact of an exceptional year on the three year average;
- towns whose average cost alternates frequently between classes; and/or
- regional advice regarding the future requirements for a scheme.

The cost categories for towns specified in the By-laws were initially based on the criteria of an approximately equal number of towns in each category. As these cost categories are not adjusted for inflation, there is considerable bracket creep in each year, with many towns moving into higher cost categories each year and relatively few moving into lower-cost brackets. At the allocation review for 2005/06, the Corporation reallocated 40 towns to higher classes (out of a total of 281 schemes). One town was reallocated to a lower class.

Regarding the optimal number of categories, there is a trade-off between cost reflectivity and complexity. A large number of categories would mean that prices are close to the historical average costs for each scheme. On the other hand, a large number of categories is more complicated for users to understand, with more complex pricing tables and more shifting of towns to different categories from year to year. The optimal number of categories would minimise the variation in costs within categories, while maximising the variation in costs between categories.

Since the current classification of towns is on the basis of historical costs, the classes do not reflect the future water infrastructure requirements of country towns. Although there are currently data limitations associated with allocating towns on the basis of forward-looking costs (such as by using LRMC), classifying towns to reflect future water infrastructure requirements would be more efficient because it would group together, for pricing purposes, towns which have rapidly growing demands relative to supplies, and which will require large capital investments to secure future water supplies.

The Authority is yet to establish how many towns will need to have their water supples increased in the near future, and therefore how many would have usage charges above the threshold based on LRMC, because this information is not readily available from the

Corporation. This analysis will be undertaken as part of the preparation for the final report.

It may not be necessary to change the pricing system in the way described above for some towns, such as those that are unlikely to need to have their water supplies increased. This is because the introduction of usage charges that result in consumers saving water would not result in the saving or deferral of capital expenditure. However, it may be appropriate to set the usage charge above the threshold at a level that at least recovers the avoided costs that are associated with providing water services to the town. Avoided costs are the costs that could be avoided if the customer group were not serviced and, in the case of water services, include pumping, billing, meter reading and maintenance but exclude costs such as overheads and a return on the Corporation's investment in the infrastructure in the town.

Pricing to at least recover avoidable costs would mean price increases (above the average threshold) for towns where the total water payments do not currently cover the direct costs. It is estimated that around two thirds of water schemes do not generate sufficient revenue to cover the avoidable costs of providing the service.

In some cases it may, however, be appropriate to have prices also provide the Corporation with a return on its investment, particularly that relating to local infrastructure.

A shortcoming of the current classification system is that it makes no allowance for differences in the non-health related aspects of the quality of the water supplied. It is possible that the classification system could encompass an additional variable that accounts for non-health related aspects of water quality.

The Authority proposes considering in more detail how to group towns as part of the preparation of the Final Report, but its preliminary view is to use the following approach:

- first, group towns according to the harshness of the weather conditions (in a manner similar to the distinction currently between Groups A and B);
- second, group towns that are approaching the need to increase their water supplies and estimate LRMCs that are relevant to these towns; and
- third, group towns that are unlikely to need additional water supplies in the foreseeable future and establish prices that would at least cover the avoidable costs of providing water services to these towns and, where appropriate, contribute to the Corporation's return on its investment.

Findings

5 Grouping of towns should ideally be based on forward looking cost of providing water services and additionally account for non-health related aspects of water quality and differences in weather conditions between groups of towns. Whilst such a classification is dependent on data that is not readily available from the Corporation, it is the case that the current classification needs to be reconsidered to ensure that a reasonable balance is achieved between efficiency and social objectives.

6 Grouping towns that are approaching the need to increase their water supplies would allow (possibly imprecise) estimates of LRMC to be applied while the usage charge above the threshold for towns that are unlikely to need to increase their water supplies could be set to at least recover the avoidable costs of providing water services and, where appropriate, also make a contribution to the Corporation's return on its investment.

2.3.5 Concessions

Concessions on the Corporation's annual service charge (which covers both the water service charge and the wastewater charge for residential customers) are available to pensioners, seniors and dual seniors on a State-wide basis, as shown in Table 2.2. In addition, concessions apply to water usage up to 400 kL per annum for Group A customers, 600 kL per annum for Group B customers and 150 kL per annum for Perth customers.

Table 2.2 Maximum Concessions on Annual Service Charge

Card Holders	Maximum Rebate on Annual Service Charge (Water Service Charge Plus Wastewater Charge)
Pensioner Concession Card or State Concession Card	50 per cent
State Seniors Card	25 per cent
State Seniors Card and Commonwealth Seniors Health Card (dual seniors)	50 per cent

The difference between the threshold at which concessions apply for Perth and country customers is largely a by-product of the different approaches to concessions by the Corporation and the water authorities which preceded it. As noted in the Corporation's submission (p 20-21), the Public Works Department introduced 50 per cent concessions off the first 400 kL for Group A customers and the first 600 kL for Group B customers, based on average water usage in each region. Perth pensioner concessions were introduced later by the Corporation, in 1993/94. The 150 kL threshold on concessions in Perth was introduced to mitigate the impact on pensioners of the removal of the 150 kL free water usage allowance.

Some submissions noted that the Perth concession threshold seemed relatively low. Radys commented that:

> …it seems unfair that Perth pensioners have to be under a miserly 150 kL/year when the average Perth consumption is 275 kL. (A. Radys submission, p1).

WACOSS recommend that the concession threshold for Group A and Perth customers be extended to 600 kL/year, as for Group B (WACOSS submission, p4).

The Corporation acknowledges that:

> Given the similar climatic conditions experienced by metropolitan Perth and Country South, there is no reason for different concessions to apply to pensioners in those schemes. (Water Corporation submission, p21)

However, the Corporation notes that any re-alignment of the thresholds between country and metropolitan customers would be difficult.

> The alignment has not been done because of the revenue impact in metropolitan Perth if the threshold were to be increased to 400kL, and the financial impact on customers in the country if their threshold were to be reduced. (Water Corporation submission, p21)

The Authority concurs with the Corporation's view that there would seem to be no reason for concession thresholds to differ between Group A and Perth, given that average water usage is similar in both areas. A consistent approach to the allocation of concessions might be to base the thresholds on the average water usage in a group (i.e. using the same principle as the Authority supports for water charging in general). This would see the threshold in Group B reduced from 600 kL/year to 500 kL/year, the threshold in Group A reduced from 400 kL/year to 300 kL/year and the threshold in Perth increased from 150 kL/year to 300 kL/year. However, as noted above by the Corporation, such an approach would have financial impacts on country concession holders and would require a higher CSO payment because there are more customers eligible for concessions in Perth than in the country.

The Authority considers that the level of concessions is a matter for Government and is outside the scope of this inquiry. However, the Authority has become aware through the submission process that stakeholders have expressed views on the level of concessions. For example, the Authority notes the submission by WACOSS:

> WACOSS is currently urging the government to conduct a whole of government review of state concessions to more appropriately assess the impact of current concessions and make recommendations for changes to improve concessions from both a government and citizen perspective. (WACOSS, p5)

The Authority agrees that the concession arrangements may require further consideration by Government. In this context, the Authority concurs with the Chamber of Commerce and Industry that it is preferable that:

> …social objectives be delivered in ways that minimise as far as possible the distorting of price signals, and the economic efficiencies and inequities that would result. For example, it is better to pay the cost of community service obligation guaranteeing access to affordable water in the regions by a direct subsidy from general government, rather than through cross-subsidies from other consumers. (Chamber of Commerce and Industry WA submission, p1)

In the event that a review of concessions takes place, the Authority considers that direct subsidies to individuals and families that are unconnected to consumption of particular services are less likely to distort decision making than the current approach.

The Authority also considers that, as with the uniform pricing policy, there is justification in reflecting on the objectives of the concessions policy to improve understanding of the policy and ensure that appropriate strategies are in place for the objectives to be met. In relation to the concessions policy, it may be worth considering whether a wider definition of need should be adopted, rather than restricting it to pensioners, seniors and dual seniors.

In relation to the definition of need, WACOSS raises concerns in their submission regarding the high levels of water bill debt amongst Group B customers. WACOSS's analysis indicates that:

> …despite the North West Region having a population 30 times smaller than the Perth Region, the total amount of debt is only 10 times smaller than the Perth level of debt. That is to say, there are less people who owe more money to the Water Corporation within the North West (Group B) region. (WACOSS submission, p5)

The Public Interest Advocacy Centre (PIAC), which published a recent report commenting on the NSW water pricing guidelines and country town communities, noted numerous measures which can be employed to mitigate financial hardship for vulnerable customers (such as low-income households, large families, pensioners, Indigenous customers, unemployed people and tenants).[6] These measures included:

- caps on annual residential bill increases;
- rebates, alternative tariff structures, and demand management programmes linked to household size;
- special tariffs for vulnerable customers;
- non-price measures such as community-wide restrictions, retrofits, rebates and hardship programmes,
- extension of the government-funded Water Payment Assistance Scheme;
- discontinuation of penalty fees for vulnerable customers.

The issues raised by WACOSS and the PIAC could be considered within a review of the concessions policy.

[6] Reidy, C. and Partridge, E. (2005), *NSW Water Pricing Guidelines and Country Towns: Assisting Vulnerable Residents*, report prepared by the Institute for Sustainable Futures, UTS for the Public Interest Advocacy Centre, Sydney.

Findings

7 There are various options for restructuring existing country water pricing arrangements including basing the threshold below which concessions apply on a value such as average consumption for a group of towns to help achieve clearly specified objectives.

8 The concession arrangements may require further consideration by Government. Any such review might consider, among other things, the objectives of the policy, criteria for eligibility, the options for providing assistance, and the consistent treatment of those appropriately considered eligible for assistance.

3 Commercial Water Pricing

3.1 Terms of Reference

The Authority is expected to consider and make recommendations on:

- *the effectiveness and efficiency of the service charge structure for businesses and the merits of any alternative charging structure for country towns; and*
- *the effectiveness and efficiency of the Water Corporation's five town class charges for residential and business customers in country towns and the merits of any alternative charging structure for country towns.*

3.2 Background

Since 1995 commercial country water users have paid a fixed charge and usage charges for water. Previously charges were based on property values.

Although commercial users throughout Western Australia face the same fixed charges for water, an overall uniform pricing policy has not been adopted for commercial customers (contrary to commercial wastewater pricing). For commercial water pricing purposes schemes are currently divided into the same five classes that are used for residential pricing: those schemes that are more costly to supply are placed in a higher class and face higher water usage charges. Country commercial users currently face higher usage charges than Perth commercial users *for any given level of water consumption*.

Commercial customers pay higher charges for higher levels of water usage. The change in price for country users currently occurs at 300 kL/year; for metropolitan area users the threshold is at 600 kL/year. The country commercial water charge for usage up to 300 kL/year was initially set at the same rate as the country residential charges for usage between 450 kL/year and 550 kL/year while the commercial charge for usage above 300 kL/year was initially set at the same rate as the residential charge for usage between 750 kL/year and 1150 kL/year. However, this alignment is now only approximate due to the application of different annual increases to residential and commercial charges.

Prior to 1995, commercial water fixed charges were based on the value of the commercial property. In Perth, this approach was replaced with a pricing structure involving a fixed charge based upon the size of the meter serving the property. This revised approach was extended to the country regions in 1995 and by 2001/02 commercial users throughout the State faced the same tariff structure. By applying uniform fixed charges the Corporation sought to simplify the administration of the tariff. Pricing based on meter-size was chosen as it was considered to be a reasonable approximation for the different costs of supply.

The full country commercial pricing structures are available in Appendix 2.

3.3 Analysis

As with residential water pricing, uniformity and cost reflectivity are the main issues of consideration.

3.3.1 Uniformity and Cost Reflectivity

The first question to be asked is: what is the desirable balance between cost reflectivity and uniformity? As with residential pricing this is to some extent a subjective assessment. The argument for cost reflectivity for commercial customers is broadly similar to the argument for cost reflectivity for residential customers: for users to make an efficient choice on consuming water it is necessary that the price they pay is close to the cost of supplying that water. If prices are much less than the cost of supply users will be encouraged to consume more water than they might otherwise if prices were cost reflective. Also, many commercial users can economise on their water usage by installing water-efficient technology. The installation of such technology is costly. Users will not have an incentive to pay these installation costs if water is under-priced. While location decisions are influenced by headworks charges, which are outside the scope of this inquiry, water pricing can also influence the location decision of a business. Another advantage of cost reflectivity is that high water-using industries have an incentive to locate in regions where water is cheaper to supply.

Because of the large variation in water costs across schemes, uniformity means that many users would not face efficient price signals. On the other hand, under full cost-reflectivity some users would face very high water charges.

As with residential pricing the challenges associated with applying cost-reflectivity to commercial customers include administrative complexity and data availability (as discussed above, the Corporation does not separate the costs of servicing commercial and residential customers and estimates of LRMC are not readily available).

Commercial charges for water *usage* are significantly higher in country towns than in Perth. It is not clear, however, to what extent the usage charges for each of the groups are close to LRMC. Much depends upon the methodology used to allocate schemes to classes. Currently this allocation relies on historical costs (both operating and total) which may result in a different allocation to one based on LRMC, particularly for expanding towns close to capacity constraints. However, the complexity and high data requirements of LRMC estimation may inhibit the viability of scheme-by-scheme LRMC pricing.

In relation to the allocation of towns to classes for the purposes of setting commercial water usage charges, it may be appropriate to identify those towns that are approaching the need to increase their water supplies and base the commercial water usage charge for customers in these towns on a (perhaps imprecise) estimate of LRMC. For towns that are unlikely to need their water infrastructure expanded, commercial usage could be set to recover the full costs of service provision.

If commercial users do not fully contribute to the cost of the water they consume they will have to be subsidised, either by residential users or by the taxpayer through CSO payments. Business inputs are not generally subsidised and it is not clear why water should be subsidised either. In the absence of separate residential and commercial cost information it has not been possible to conclude whether (or the extent to which) the CSO payment is subsidising commercial services rather than the residential uniform pricing policy.

In contrast to usage charges, fixed charges are uniform across the State, with country and Perth customers paying the same rates on the basis of their meter size. It is possible that there are large differences in the cost of servicing different schemes. Fixed costs include metering costs, billing costs, and network maintenance. These costs are influenced by factors such as proximity to the water source, the size of the town (influencing economies of scale), and the need for peak capacity as a result of the variance in seasonal demand

(particularly for tourist towns). However, information on cost differentials between towns is not readily available.

According to the Corporation, when the new system of uniform fixed charges was being developed in 1993, 81 per cent of meters were located in Classes 1 and 2 (see Appendix 3 for the towns that are currently in these classes).

> It was felt that the revenue benefit ($1 million) from the differentiation of charges between the five classes would not provide sufficient benefit to justify complicating the system of charges, coupled with the potential discouragement of businesses within Classes 3, 4 & 5. (Water Corporation submission, p11)

The Authority will be giving further consideration to commercial fixed water charges within the context of cost-reflective pricing as it prepares the final report.

Findings

9 Commercial water charges appear to be only weakly related to costs – the fixed charge is uniform and usage charges are not specifically linked to estimates of LRMC.

10 It is not clear that it is the Government's intention in its uniform pricing policy to provide discounts to commercial users. In the absence of residential and commercial cost information by scheme it is not possible to conclude the extent to which the CSO payment is benefiting commercial customers rather than residential customers.

11 The Corporation would need to further develop its cost databases for a more accurate assessment of the current commercial pricing structure to be made.

3.3.2 Water Usage Threshold

Country commercial users currently face a water usage threshold of 300 kL/year, at which point charges increase by at least 74 per cent (the exact increase is different for different town classes); the threshold for metropolitan users is 600 kL/year. It is unclear why there should be a disparity in the threshold of country and metropolitan users, particularly in light of the fact that average commercial water usage is similar between country and Perth users (991 kL/year and 1,121 kL/year respectively).

A threshold, where the usage charges below the threshold are not cost-reflective, can reduce the number of users who make efficient decisions regarding water usage. A threshold can increase the required CSO or fixed charge need to recover the full costs of service provision. In the case of residential pricing, arguments have been made, on social grounds, for "essential" water usage to be priced at below cost. In the case of commercial users, however, it is not clear why water usage should be subsidised. Business inputs in the State generally do not receive a subsidy. Furthermore, assistance for regional development (where the Government determines that it is warranted) may be better provided by other means which do not impact on the efficient use of water.

Commercial users vary greatly in size and in their water requirements. The vast majority of commercial country users (81 per cent) have the smallest meter size. As these users,

who consume an average of 345 kL/year, account for only 28 per cent of total commercial country water consumption the efficiency loss associated with having the threshold at 300 kilolitres might not be great. Nonetheless, these efficiency losses could be avoided if the threshold were removed.

Findings

12 Water for commercial use is a business input; the argument that water should be treated like any other input appears to be warranted. The current commercial usage charge threshold is an impediment to efficient water pricing, which reduces the extent of cost-reflective pricing.

4 Residential Wastewater Pricing

4.1 Terms of Reference

The Authority is expected to consider and make recommendations on:

- *the appropriateness of the residential and vacant land rates for each country sewerage scheme and the maximum rate in the dollar gross rental value wastewater service charge and the merits of an alternative charging structure.*

4.2 Background

The Corporation operates 79 per cent of the licensed wastewater schemes in Western Australia.[7]

Residential wastewater charges in Western Australia have always been based on the Gross Rental Value (GRV) of the property, which are determined by the Office of the Valuer General. A charge per dollar of GRV is levied. Unlike residential water there is no uniform tariff policy for residential wastewater services. Instead, tariffs are set independently for each country wastewater scheme with the objective of recovering the costs of providing wastewater services to that scheme (the classes used for water pricing are not used for wastewater pricing). The cost recovery is achieved by varying the charge per dollar GRV. However, full cost recovery is limited by the application of a cap of $0.12 per dollar.

There is also a maximum and minimum charge on the total service charge payable by any individual country customer (there is currently no maximum charge for metropolitan customers). The minimum country residential wastewater charge in 2005/06 is $241.30 per residential unit and the maximum charge is $612.40. The maximum charge was introduced in 2000/01. According to the Corporation, part of the justification for the cap was to limit the payment increases to country towns to ensure affordability.

Wastewater charges for vacant land held for residential purposes are also based on GRV and set in a way to recover costs. Vacant land is subject to the same maximum charge; however the minimum charge is lower ($159.90 in 2005/06, compared to $241.30 for developed residential properties).

The rates paid by each town are intended to be reflective of the cost of supplying that town with wastewater services (so, for example, a town in an environmentally-sensitive area will pay a higher rate). The cost of providing wastewater services should thereby be met by the households that use the service. Furthermore, the Corporation has advised that it has been possible for local communities to be charged a higher amount than they otherwise would because of their preference for a particular type of service. For example, Albany residents agreed to a higher wastewater charge because they preferred the more costly option of using treated wastewater to irrigate tree lots rather than disposal through ocean outfall.

However, in the past there has been some inconsistency between wastewater charging in each town.[8] These inconsistencies were further complicated by government-imposed

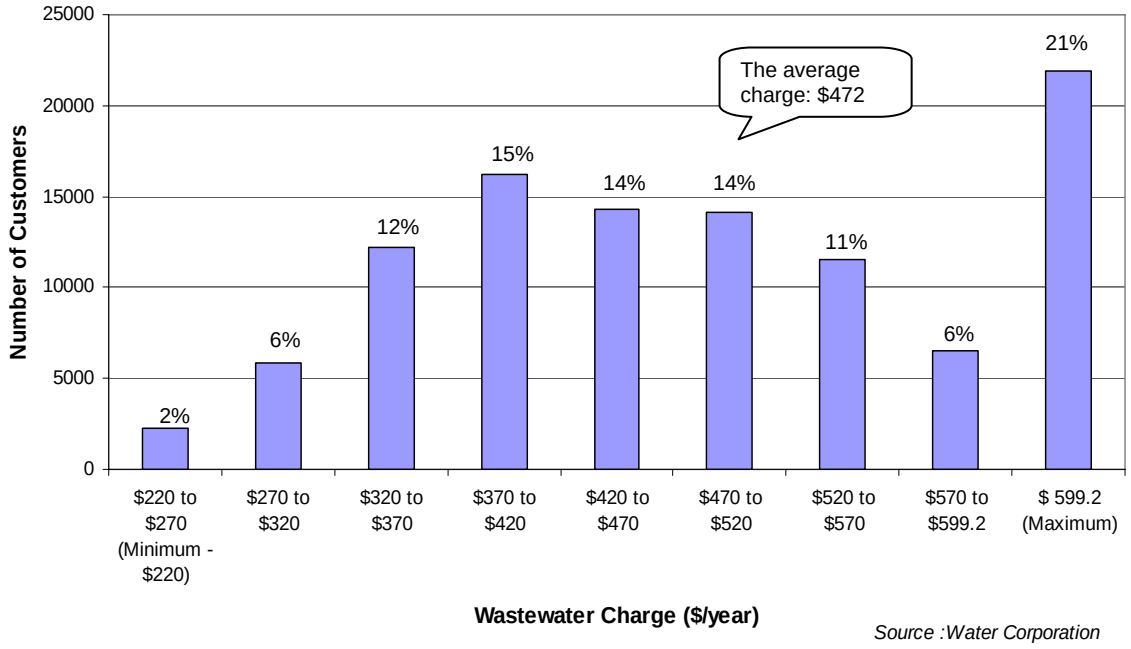
[7] Other wastewater service providers in Western Australia are mainly shire councils (19 in total), as well as Hamersley Iron Pty Ltd and Rottnest Island Authority.

limitations on increases in charges between 1983/84 and 1992/93. Hence, the relationship between individual town charges and their associated costs diverged over time.

In 1993 the Government approved the introduction of a new charging method which aimed to gradually bring revenue back into line with the cost of provision in each town. This realignment of costs and revenues required price increases for some towns and decreases for others. To minimise the impact on households, annual price increments were limited to a maximum of 10 per cent above inflation.

The distribution of country residential wastewater charges in 2004/05 is shown in Figure 4.1.

Figure 4.1 Distribution of Country Residential Wastewater Charges (2004/05)



Source :Water Corporation

4.3 Analysis

The Authority has considered several features of country wastewater charges:

- the use of GRV as a basis for wastewater charges;
- the extent to which wastewater charges reflect the costs of wastewater services; and
- the cap on individual country wastewater charges.

4.3.1 GRV-Based Pricing

Gross rental value (GRV), which is a percentage of land value, is not a cost-reflective basis for pricing wastewater services. GRVs can vary markedly in a town: customers will pay different amounts for an identical wastewater service. Wastewater charges will also

[8] Differences were largely due to the complication of calculating cost of capital where schemes were funded through grants.

vary between country towns, with customers in the same GRV band facing different charges, depending not only on the wastewater costs in each town but also on the proportion of high-GRV and low-GRV properties.

For example, assume two towns (A and B) have the same wastewater costs but Town A has a higher proportion of high-value properties. In this case a customer in Town A with a low GRV (say $5,000) would pay less for wastewater than a similar customer in Town B as there are fewer high-GRV customers in Town B to share the wastewater costs.

The rationale behind GRV-based pricing is that it is a tool for income redistribution since there is a general correlation between land value and income (high income earners tend to live in more expensive areas). For these reasons, WACOSS supports the retention of GRV-based pricing:

> It is important that progressive wastewater charges, based on property valuation, continue to be applied. (WACOSS submission, p2)

However, the relationship between property values and income is not perfect, and the Authority noted in its inquiry into urban water and wastewater prices that 25 per cent of lower-income households were in above-average valued properties.

GRV-based prices are not transparent and are the subject of complaints when customers' wastewater bills change due to changes in land valuations. Most other States have moved away from GRV-based prices for wastewater services to either uniform charges or charges based on estimated discharge to sewers.

For these reasons, the Authority recommended in its Inquiry on Urban Water and Wastewater Pricing a gradual move away from GRV-based pricing for residential wastewater services, towards a structure that had four charging blocks (with higher charges for higher blocks). A similar move away from GRV-based pricing would appear appropriate for application in country towns.

Findings

13 Under GRV-based pricing, customers within towns, and in different towns with identical wastewater costs, pay different amounts for the same wastewater service.

4.3.2 Cost-Reflectivity

As noted by the Corporation, wastewater services are generally more expensive in country regions than in the metropolitan area (Corporation submission, p12). Costs vary considerably between towns, due to underlying factors such as:

- size of the community: the per capita cost (both capital and operating) are generally inversely proportional to the size of the community being served;
- remoteness of the community; and
- type of environment: small country communities may be located in sensitive environments, requiring a greater level of environmental protection. Additionally, some country communities are popular tourist destinations requiring infrastructure to cater for short term peak flows. (Corporation submission, p7)

Furthermore, wastewater service costs are driven by community expectations, including an increasing level of protection for the environment, reduced risks to public health and greater social amenity. These expectations can increase the requirements for:

- emergency storage to reduce the risk of overflows;
- nutrient reduction;
- seasonal storage of treated wastewater;
- recycling of treated wastewater;
- meeting increased levels of protection of public health, especially for recycling schemes, as reflected in the latest National and State guidelines;[9]
- filtration and disinfection (for recycling and discharges to waterways); and
- odour reduction.

Country wastewater charges are potentially more cost-reflective than country water charges since wastewater charges are intended to recover the costs of wastewater services on a town-by-town basis, rather than for classes of towns. In addition, there is the potential for wastewater charges to reflect higher levels of service (such as in the case of Albany), unlike water charges, where the non-health related aspects of water quality may differ between towns in the same class but the uniform pricing policy applies.

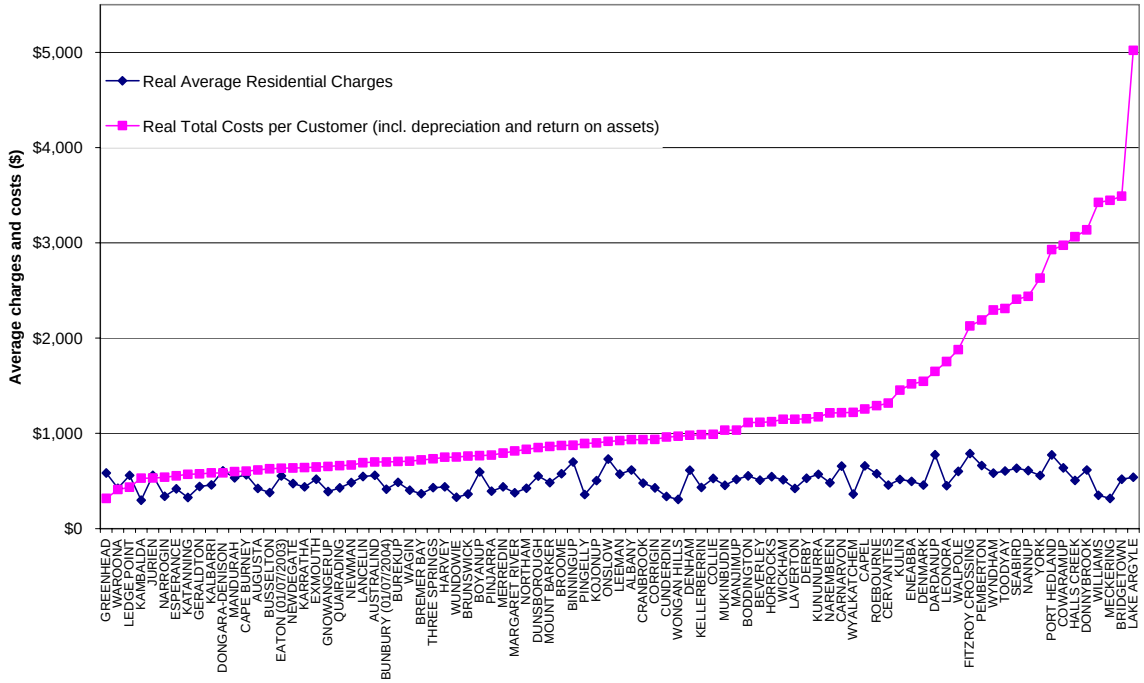
The degree to which country wastewater charges actually reflect costs will therefore depend on the method used to set the dollar rate per unit of GRV in each town. At present, there is a cap on the amount of costs that can be recovered from each town (the cap is applied by limiting the dollar rate per unit of GRV to $0.12). In 2005/06, 24 per cent of country towns, representing 10 per cent of the Corporation's country residential wastewater costs, had their wastewater charges capped in this way. The cap is funded by a CSO payment to the Corporation.

The Corporation's cost data does not distinguish between commercial and residential wastewater services, so it is not possible to determine the extent to which residential wastewater charges reflect the costs of providing residential wastewater services. However, the Corporation has provided the Authority with information that shows that on average the revenue from a wastewater scheme (commercial and residential services in aggregate) recovers 70.4 per cent of its total expenses.

The relationship between average residential wastewater charges and total costs per customer (commercial and residential services in aggregate) for each scheme is shown in Figure 4.2. Total cost includes overheads, depreciation and return on assets. The data has been averaged over three years to remove the affects of cost fluctuations.

[9] The Corporation has taken over some reuse schemes run by shires which had difficulties in meeting new health guidelines.

Figure 4.2 Average Residential Wastewater Charges and Total Costs per Customer (Averaged over 2001/02, 2002/03 and 2004/05) in Real Dollar Terms as at 30 June 2005



Source: Water Corporation

Note: Cost data was not available for 2003/04. For a small number of schemes data was not available for 2001/02 or 2002/03.

Figure 4.2 shows that there is no relationship between total wastewater costs per customer and average residential wastewater charges. Real average residential charges over the three periods range from less than $300 to over $750 per year. Total costs per customer range from less than $400 to over $2,000 per year in 16 schemes. The figures shows that average residential charges can vary significantly between towns with similar costs. For example, Boyanup and Pinjarra both have total costs per customer of around $770 but average residential charges are $594 and $394 respectively. These differences are notwithstanding the policy that the Corporation has implemented since 1993 to gradually bring revenue into line with the cost of provision in each town.

The consideration of any alternative approaches to residential wastewater pricing will depend on the policy objectives of Government. If uniform pricing is not considered to be as important as cost-reflectivity in wastewater pricing then the emphasis should be on establishing good information on the costs of wastewater services in each town. This will involve distinguishing between the costs of residential and commercial wastewater services, to allow residential wastewater prices to more closely reflect residential wastewater costs.

Cost-reflective pricing is important for the reason that wastewater services could potentially be provided by alternative suppliers using a range of different technologies, particularly in new developments. Cost-reflective prices could therefore provide important information to competing suppliers regarding the scope for improvements and cost reductions in wastewater services, and to residential customers when comparing the cost of alternatives.

Findings

14 While the current approach allows for wastewater charges to reflect costs on a town-by-town basis (subject to a cap for towns with expensive wastewater systems) actual charges show no relationship to actual costs, despite a policy since 1993 to gradually align charges with costs.

15 The cap on the recovery of costs from an individual town (currently $0.12 per dollar of GRV) is applied for affordability reasons but is inconsistent with the principle of cost-reflective pricing.

16 Cost-reflective prices for wastewater services would provide important information to alternative service providers who may be considering offering wastewater services, particularly in new developments.

17 Cost-reflective pricing of residential wastewater services would require the Corporation to develop more detailed data on the costs of service provision, including differentiation between servicing residential and commercial customers.

4.3.3 Caps on Individual Wastewater Charges

Country wastewater charges, unlike metropolitan wastewater charges, are subject to a cap on the maximum charge (currently $612.40/year), which was introduced by the Government in 2000 to limit the payment increases to high value property owners in country towns. The Corporation maintains that a key reason for the cap on individual wastewater charges in country towns is affordability. Without the cap, the high wastewater rate per dollar of GRV in country towns relative to Perth would result in country customers with high-value properties facing high wastewater charges. As stated by the Corporation:

> In general, the cost of providing wastewater services to country schemes is more expensive than metropolitan Perth schemes. While the Corporation seeks to recover the total cost on an overall scheme basis, customer affordability remains a primary concern.
>
> The country schemes are capped at a rate of 12c/$GRV. This is considerably higher than the tiered bands of 5.33c, 3.24c and 1.45c charged to metropolitan customers.
>
> 21% of all country customers are limited by the overall cap on the customers total wastewater charge (2005/06: $612.4). 12% of metropolitan customers pay a charge at or above this level.
>
> In light of the above – in the interests of customer affordability, a country cap may be appropriate. (Corporation submission, p 25-26)

The Corporation notes in its submission that despite the cap, average country residential wastewater charges are still higher than average Perth residential wastewater charges (in 2004/05 the average was $472/year for country customers versus $443 for Perth customers).[10]

[10] Corporation submission on Issues Paper, p13.

Comparison between residential wastewater tariffs in Perth and in country areas (Figure 4.3) shows that, in the lower GRV brackets, wastewater tariffs are higher for country customers than for Perth customers in the same GRV band. This is partly due to the cap on individual wastewater charges in country towns, which does not apply in Perth, and which results in a greater proportion of wastewater costs being borne by low-GRV households in country towns, relative to households with the same GRVs in Perth.

Figure 4.3 Estimated Average Annual Wastewater Charges (2006) Versus GRV for Country and Metropolitan Residential Customers

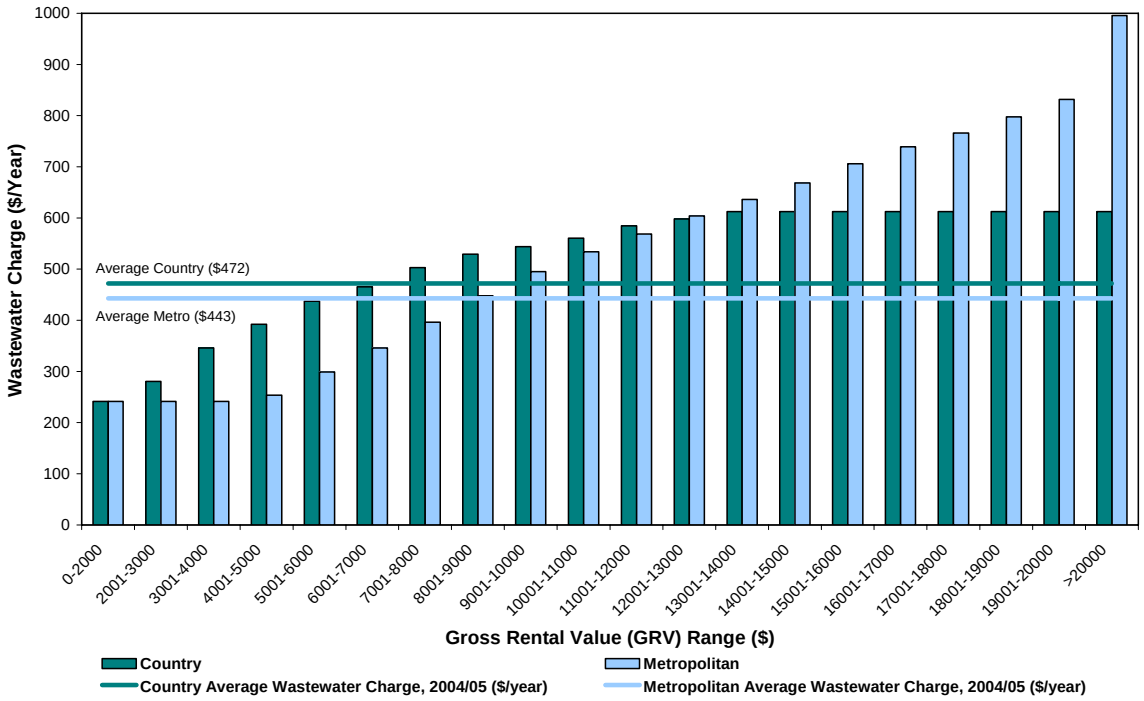


Figure 4.3 shows that the effect of the cap is to shift the cost burden from customers in high-GRV properties towards customers in low-GRV properties. Thus, the income-redistribution effect of GRV-based pricing is less pronounced in country towns than in the Perth metropolitan area.

Having customers in low-valued properties in the country pay more than customers in similar valued properties in Perth is inconsistent with the principles of the uniform pricing policy. However, the individual cap serves to spread wastewater payments more evenly between households in a town, and results in more cost-reflective pricing because the costs of wastewater provision do not differ significantly between households. The Authority is not proposing to remove the cap but is particularly interested in the views of interested parties on this matter.

Findings

18 The effect of the cap on individual country residential wastewater charges is to shift the relative contribution from customers in high-value properties towards customers in low-value properties. In fact, country customers in low-value properties pay, on average, higher wastewater charges than customers in the same value properties in Perth. This is inconsistent with the principles of the uniform pricing policy. However, the individual cap serves to spread wastewater payments more evenly between households in a town, and results in more cost-reflective pricing because the costs of wastewater provision do not differ significantly between households. The Authority is not suggesting that the cap be removed but is particularly interested in the views of interested parties on this matter.

5 Commercial Wastewater Pricing

5.1 Terms of Reference

The Authority is expected to consider and make recommendations on:

- *the appropriateness of continuing uniform State-wide major fixture and volumetric discharge sewerage charges for business.*

5.2 Background

Wastewater services involve the acceptance, transport and treatment of wastewater followed by the disposal of the end products of treatment.

Until 1995/96 both metropolitan and country commercial customers paid wastewater charges based on property values (using the GRV methodology). Following a Corporation review of wastewater pricing practices in Australia and abroad a new charging structure was introduced for metropolitan commercial users with charges based on the number of major fixtures (e.g. toilets and urinals) and the volume of wastewater discharged to the sewerage system. Country customers continued to pay GRV-based charges.

At the request of the Expenditure Review Committee (a sub-committee of Cabinet) another review was conducted in 2002 by a work group established by the Minister for Government Enterprises. A number of alternative options for country commercial wastewater pricing were considered. It was recommended that the metropolitan tariff structure should be adopted in country pricing. A preference was also expressed for a greater consistency between country and metropolitan pricing structures.

Country commercial pricing reform began in 2003/04. Once completely phased-in, all of the Corporation's commercial customers throughout the State will pay the same wastewater charges.[11] The new tariff consists of a service charge based on the number of major sewerage fixtures and a usage charge based on the assessed volume of wastewater discharged into the wastewater system. Discharge below 200 kL/year is charged at zero cost.

The full country commercial pricing structures are available in Appendix 2.

5.3 Analysis

With the exception of South Australia, all States apply a two-part tariff for commercial customers, but the specific structure of this tariff varies. In the final report of the Inquiry on Urban Water and Wastewater Pricing the Authority considered that prices for wastewater services for metropolitan commercial customers should continue to be determined by a combination of fixed and volumetric charges. The Authority considered that volumetric charges should be set to reflect the estimated LRMC of providing wastewater services and fixed charges should be set at levels necessary to ensure that revenue requirements are met after taking into account revenues from volumetric charges. In coming to its recommendation the Authority considered the alternative commercial wastewater tariffs in

[11] To minimise disruption to customers, annual price changes were limited to 10 per cent above inflation. By 2013/14 an estimated 85 per cent of users will be fully phased-in.

place in Canberra and Sydney, where the estimate of discharge is based on the number of fixtures rather than water usage.

Again, an important issue to consider is cost reflectivity. At first consideration it may seem that users have little discretion regarding their level of wastewater discharge and therefore cost reflectivity is of little relevance: if wastewater discharge is not responsive to the prices charged for wastewater services there is little role for "efficient" price signals. However, commercial users may have a choice of alternative wastewater management systems (recycling for example) and therefore have an element of discretion regarding their discharge levels. Also, if users have discretion over their water consumption they necessarily have discretion over their wastewater discharge (which is closely related to water consumption). The Authority therefore believes that the arguments for cost reflectivity are relevant to wastewater pricing.

5.3.1 Cost Reflectivity

The current degree of cost reflectivity can be considered at the user level in two ways: do the current fixture charges reflect the increased service cost imposed by additional fixtures, and do the discharge fees reflect the costs imposed by discharge (both to the Corporation and to society where there are significant externalities)? Cost reflectivity can also be considered at a town level: do current revenues cover the direct costs the Corporation incurs in providing wastewater services to the town (cost recovery).

Cost reflectivity in the current price structure is provided for by service charges per fixture (and an inclining charge per fixture for the second and third fixture) and usage charges for all discharge over 200 kL/year. However, unlike residential wastewater pricing in country towns there is no differentiation between towns: all commercial users across the State pay the same charges per meter size, even though the costs of wastewater provision in some country towns is very high (see Figure 4.2).

It has not, at present, been possible to assess whether the current configuration of service charges encourages efficient fixture decisions because of the lack of detailed cost data. Furthermore, it is not clear whether *service* costs, for a given number of fixtures, vary across towns.

Figure 4.2 illustrates that the *total cost* (both service costs and discharge costs) of wastewater provision in some country towns is very high. Therefore the current commercial charges will not be cost reflective because charges do not vary across towns. So, for example, commercial users in towns where disposal of wastewater is very expensive may not be spending sufficient resources on reducing their wastewater discharge (through recycling for example).

Currently, commercial wastewater tariffs are based on historical costs of wastewater services. In towns approaching the need to increase their wastewater treatment facilities it would be desirable for prices to reflect the LRMC of wastewater service provision. However, the data required for calculating the LRMC of wastewater service provision for each town or class of towns is not readily available.

Residential wastewater tariffs are set independently for each country town wastewater scheme, with the objective of recovering the costs of providing wastewater services to the scheme. Cost recovery is achieved by varying the charge per dollar GRV. Uniform pricing for commercial users means that in towns with high wastewater costs residential users currently have to pay more relative to commercial users than in low cost towns. Without further cost information it is not possible to establish what the extent of cross-

subsidisation is and its full implications for residential users. However, the disparity between the approach to residential and commercial pricing is evident.

Findings

19 Current commercial wastewater charges are not cost reflective because charges do not vary across towns whilst costs vary significantly.

20 There is an inconsistency between the approaches to commercial and residential wastewater pricing. Uniform pricing for commercial users coupled with a cost-recovery pricing approach for residential users means that residential users in towns with high wastewater costs currently have to pay more relative to commercial users. The Authority's preliminary view is to recommend cost reflectivity for commercial customers.

5.3.2 Other Issues

The provision of new wastewater services by service providers other than the Corporation is possible throughout the State, particularly in substantial new developments. However, the uniform pricing of wastewater services can affect alternative provision. This is because uniform pricing across towns results in some towns paying an average price that is lower than the average costs associated with servicing those towns. In these towns, it would be difficult for an alternative provider to offer their services to new developments because customers would receive a lower price from the Corporation. In other towns, however, it could encourage alternative provision because the average price will be higher than the average costs. Cost-reflective pricing would remove these distortionary effects.

Findings

21 The potential for competition in wastewater service provision might be compromised by uniform commercial pricing across schemes.

6 Community Service Obligation Payments

6.1 Terms of Reference

The Authority is expected to consider and make recommendations on:

- *the impact proposed pricing structures will have on the Water Corporation's revenue and expenses, as well as payments to, and from, the government.*

6.2 Analysis

The Terms of Reference specifically requires the Authority to consider the impact of its recommendations on the financial flows between the Corporation and Government. In *net* terms the flow is from the Corporation to the Government as the total dividend and tax equivalent payments (tax is paid to the State Government rather than Federal Government) are greater than the CSO payments. The financial flows are summarised in Table 6.1.

Table 6.1 Selected Revenue and Expenditure Flows for the Corporation (2004/05)

Revenue/Expenditure	$ million
Revenue from country customers	177
Total operating expenditure (including depreciation) on country operations	267
CSO payments from Government for the purpose of funding country operations*	218
Dividends paid to Government from the Corporation's total country and metropolitan operations	312

Source: Water Corporation data with ERA analysis

** The CSO payment comprises country losses ($146.1 million), revenue concessions ($16.5 million), Infill Sewerage Program ($7.8 million), new CSOs ($40.5 million) and a wash-up payment for the 2003/04 actual expenditure ($6.9 million).*

The financial flows that result from the Authority's final recommendations will be reported in the Final Report.

There is a wider issue that is relevant to this inquiry: the CSO policy itself influences the design of country water and wastewater pricing. While CSOs are provided for a variety of reasons (such as revenue concessions, infill sewerage and the provision of higher service standards in the country), the largest component of CSOs covers the financial loss on country operations. The Corporation received $146 million in 2004/05 to fund this financial loss out of a total CSO payment for country operations of $218 million.[12]

The current approach is to treat the country loss part of the CSOs as whatever is needed to ensure the uniform pricing policy is achieved. However, part of the CSO pays for the

[12] The total CSO paid to the Corporation in 2004/05 was $288.3 million, which includes $70.5 million to fund revenue concessions and the Infill Sewerage Program in the metropolitan area.

subsidisation of country commercial water and wastewater pricing and residential wastewater pricing (the extent to which is not readily available[13]) to achieve policy objectives that are not clearly defined.

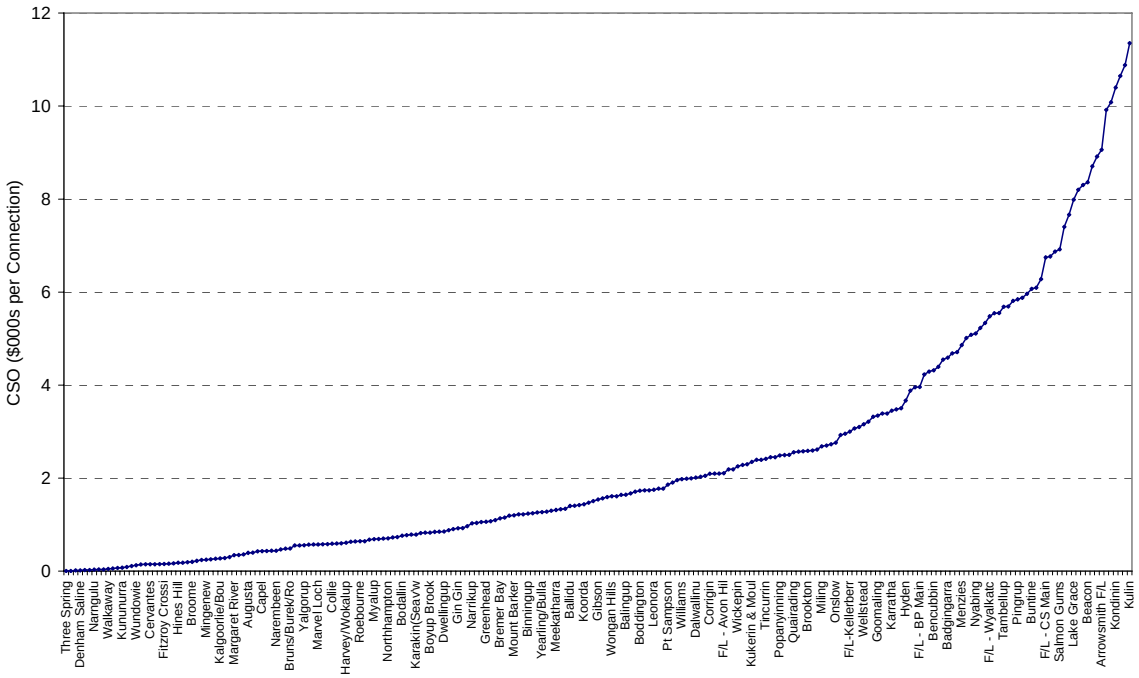
An alternative approach would be to specify the level of CSOs, which would result in prices being established to make up the Corporation's shortfall in revenue. The main advantage of this approach is that it would force a more thorough debate about how the money is to be shared across customer groups and services and what objectives are to be achieved. As discussed in the previous sections, the Authority would prefer to avoid commercial customers and residential wastewater customers being beneficiaries of CSO payments unless this is a clearly defined policy objective.

Under either approach, transparency can by improved by making the level of CSOs associated with servicing particular towns or groups of towns (both current and expected) publicly available. This would provide information to alternative service providers about whether they could provide the service at a lower cost. It is possible that the CSO could be tendered in a manner similar to the approach used for electricity power procurement in parts of country Western Australia. However, the publication of this CSO information (particularly the forward-looking information) would be useful even without a formal tender process. This was evident from the Authority's Inquiry on the Cost of Supplying Bulk Potable Water to Kalgoorlie-Boulder in which the Authority was able to publish independent information on the Corporation's future costs that could be avoided if Kalgoorlie-Boulder and surrounding regions were to be supplied by an alternative provider.

The CSO information that is readily available – the amount of CSOs per water and wastewater connection for each country town – is shown in Figure 6.1 and Figure 6.2 respectively. The figures shows that CSOs per connection differ significantly between towns, which is to be expected because of the significant cost differences between towns and the element of uniformity in residential water pricing and commercial pricing.

[13] While the extent of the subsidy to country customers other than residential water customers is not readily available, the Corporation has estimated that in 2005/06 total country commercial and residential wastewater revenue accounts for 70 per cent of total country commercial and residential wastewater costs. The shortfall is provided as part of the CSO payment to the Corporation.

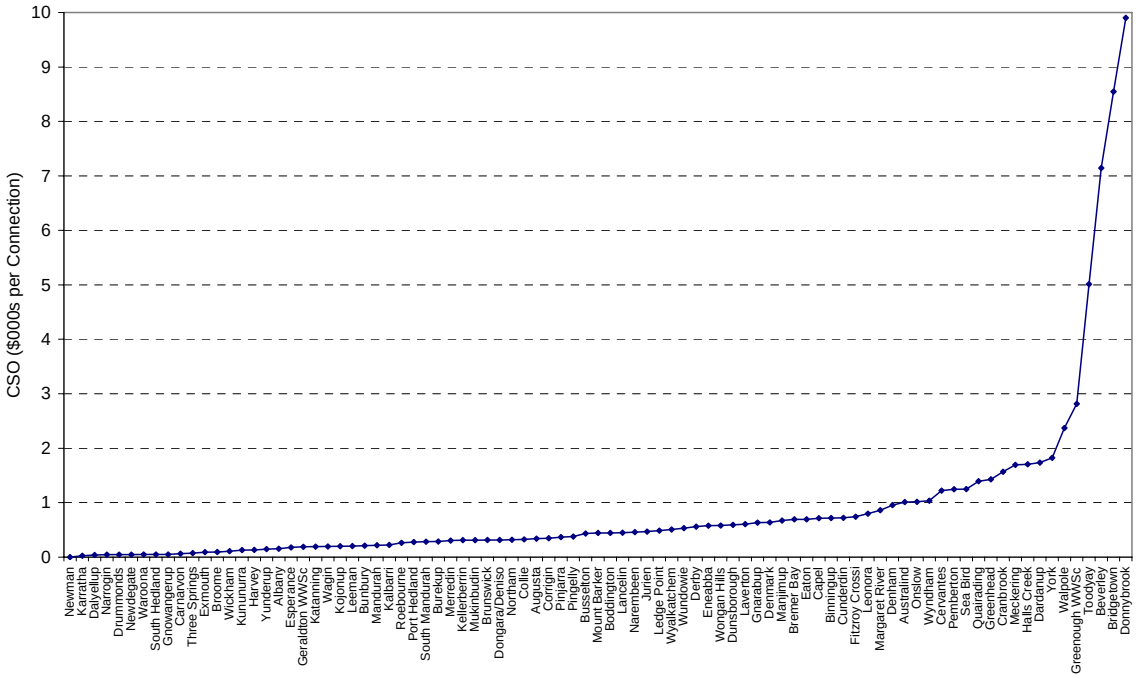
Figure 6.1 Average CSO per Water Connection (2003 to 2005), Constant 2004/05 Dollars



Source: Water Corporation.

Note: data for some schemes was unavailable. CSO per connection was calculated using connection data from June 2004. Only schemes with a CSO of less than $15,000 per connection are displayed. In the available dataset there are 18 schemes with an average CSO of over $15,000.

Figure 6.2 Average CSO per Wastewater Connection (2003 to 2005), Constant 2004/5 Dollars



Source: Water Corporation.

Note: data for some schemes was unavailable. CSO per connection was calculated using connection data from June 2004.

Findings

22 The CSO policy influences the design of country water and wastewater pricing. CSOs could either be calculated as whatever is needed to ensure the uniform pricing policy and other policies are achieved or specified at a certain level, which would result in prices being established to make up the Corporation's shortfall in revenue.

23 CSOs are not clearly related to specific policy objectives. Although used primarily to fund the uniform pricing policy, CSOs are also used to fund residential wastewater customers and are likely to be benefiting commercial customers.

24 As currently understood, the uniform pricing policy applies to residential water pricing. Yet, other aspects of pricing such as the imposition of caps on individual wastewater charges appear contrary to the social objectives underlying uniform pricing. The Authority's preliminary view is that the uniform pricing policy would benefit from being clearly defined and documented.

25 CSOs could be made more transparent at the town level. The benefit of doing so would be to provide the opportunity for competitive tenders for water and wastewater services.

7 Draft Findings

1 There is no formal policy statement that sets out the social objectives of the uniform pricing policy. However, the social objectives currently underlying the uniform pricing policy can be discerned from observing country prices and appear to include: the provision of water for basic needs at a uniform price; the provision of an average amount of water at a location at a uniform price; and the provision of water to customers who use up to 150 kL/year more than the average at a particular location at a discounted price to the charge that applies in Perth.

2 Application of economic principles on a town-by-town basis without reference to the uniform pricing policy would almost certainly result in significantly different usage charges and fixed charges between towns with higher payments being made in total by customers in the country systems.

3 In order to achieve more efficient water pricing, the Corporation would need to develop better systems to differentiate commercial and residential costs and to identify the forward-looking supply costs for towns or groups of towns that are approaching capacity and need to increase their water supplies.

4 The commitment to and the specific implementation of uniformity limits the options available to use price as an incentive to achieve greater efficiency. Setting the threshold differently across groups of towns, at say the average water use for the group, would ensure that a similar percentage of households in each group exceed the threshold and pay cost reflective prices. The usage charge below the threshold and fixed charge could be adjusted to achieve the average payment (which could be set, say, at the average payment for Perth). This would allow the usage charge above the threshold to be set in relation to LRMC, where appropriate, thereby introducing an efficiency incentive for above average users.

5 Grouping of towns should ideally be based on forward looking cost of providing water services and additionally account for non-health related aspects of water quality and differences in weather conditions between groups of towns. Whilst such a classification is dependent on data that is not readily available from the Corporation, it is the case that the current classification needs to be reconsidered to ensure that a reasonable balance is achieved between efficiency and social objectives.

6 Grouping towns that are approaching the need to increase their water supplies would allow (possibly imprecise) estimates of LRMC to be applied while the usage charge above the threshold for towns that are unlikely to need to increase their water supplies could be set to at least recover the avoidable costs of providing water services and, where appropriate, also make a contribution to the Corporation's return on its investment.

7 There are various options for restructuring existing country water pricing arrangements including basing the threshold below which concessions apply on a value such as average consumption for a group of towns to help achieve clearly specified objectives.

8 The concession arrangements may require further consideration by Government. Any such review might consider, among other things, the objectives of the policy, criteria for eligibility, the options for providing assistance, and the consistent treatment of those appropriately considered eligible for assistance.

9 Commercial water charges appear to be only weakly related to costs – the fixed charge is uniform and usage charges are not specifically linked to estimates of LRMC.

10 It is not clear that it is the Government's intention in its uniform pricing policy to provide discounts to commercial users. In the absence of residential and commercial cost information by scheme it is not possible to conclude the extent to which the CSO payment is benefiting commercial customers rather than residential customers.

11 The Corporation would need to further develop its cost databases for a more accurate assessment of the current commercial pricing structure to be made.

12 Water for commercial use is a business input; the argument that water should be treated like any other input appears to be warranted. The current commercial usage charge threshold is an impediment to efficient water pricing, which reduces the extent of cost-reflective pricing.

13 Under GRV-based pricing, customers within towns, and in different towns with identical wastewater costs, pay different amounts for the same wastewater service.

14 While the current approach allows for wastewater charges to reflect costs on a town-by-town basis (subject to a cap for towns with expensive wastewater systems) actual charges show no relationship to actual costs, despite a policy since 1993 to gradually align charges with costs.

15 The cap on the recovery of costs from an individual town (currently $0.12 per dollar of GRV) is applied for affordability reasons but is inconsistent with the principle of cost-reflective pricing.

16 Cost-reflective prices for wastewater services would provide important information to alternative service providers who may be considering offering wastewater services, particularly in new developments.

17 Cost-reflective pricing of residential wastewater services would require the Corporation to develop more detailed data on the costs of service provision, including differentiation between servicing residential and commercial customers.

18 The effect of the cap on individual country residential wastewater charges is to shift the relative contribution from customers in high-value properties towards customers in low-value properties. In fact, country customers in low-value properties pay, on average, higher wastewater charges than customers in the same value properties in Perth. This is inconsistent with the principles of the uniform pricing policy. However, the individual cap serves to spread wastewater payments more evenly between households in a town, and results in more cost-reflective pricing because the costs of wastewater provision do not differ significantly between households. The Authority is not suggesting that the cap be removed but is particularly interested in the views of interested parties on this matter.

19 Current commercial wastewater charges are not cost reflective because charges do not vary across towns whilst costs vary significantly.

20 There is an inconsistency between the approaches to commercial and residential wastewater pricing. Uniform pricing for commercial users coupled with a cost-recovery pricing approach for residential users means that residential users in towns with high wastewater costs currently have to pay more relative to commercial users. The Authority's preliminary view is to recommend cost reflectivity for commercial customers.

21 The potential for competition in wastewater service provision might be compromised by uniform commercial pricing across schemes.

22 The CSO policy influences the design of country water and wastewater pricing. CSOs could either be calculated as whatever is needed to ensure the uniform pricing policy and other policies are achieved or specified at a certain level, which would result in prices being established to make up the Corporation's shortfall in revenue.

23 CSOs are not clearly related to specific policy objectives. Although used primarily to fund the uniform pricing policy, CSOs are also used to fund residential wastewater customers and are likely to be benefiting commercial customers.

24 As currently understood, the uniform pricing policy applies to residential water pricing. Yet, other aspects of pricing such as the imposition of caps on individual wastewater charges appear contrary to the social objectives underlying uniform pricing. The Authority's preliminary view is that the uniform pricing policy would benefit from being clearly defined and documented.

25 CSOs could be made more transparent at the town level. The benefit of doing so would be to provide the opportunity for competitive tenders for water and wastewater services.

Appendix 1: Terms of Reference

INQUIRY ON COUNTRY WATER AND WASTEWATER PRICING IN WESTERN AUSTRALIA

TERMS OF REFERENCE

I, ERIC RIPPER, Treasurer, pursuant to section 32(1) of the *Economic Regulation Authority Act 2003* (the ERA Act), request that the Economic Regulation Authority (the Authority) undertake an inquiry into the Water Corporation's country potable water and wastewater prices. In doing so the Authority is expected to consider and make recommendations on:

- the appropriate consumption threshold for the application of uniform residential charges;
- the effectiveness and efficiency of the Water Corporation's five town class charges for residential and business customers in country towns and the merits of any alternative charging structure for country towns;
- the effectiveness and efficiency of the service charge structure for businesses and the merits of any alternative charging structure for country towns;
- the appropriateness of the residential and vacant land rates for each country sewerage scheme and the maximum rate in the dollar gross rental value wastewater service charge and the merits of an alternative charging structure;
- the appropriateness of continuing uniform Statewide major fixture and volumetric discharge sewerage charges for business; and
- the impact proposed pricing structures will have on the Water Corporation's revenue and expenses, as well as payments to, and from, the government.

The Authority is to have regard to the principles of the Government's uniform pricing policy, demand management targets, and other social, economic and environmental policy objectives.

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 31 January 2006 for further public consultation on the basis of invitations for written submissions.

A final report is to be completed by no later than 28 April 2006.

ERIC RIPPER MLA
DEPUTY PREMIER; TREASURER;
MINISTER FOR GOVERNMENT ENTERPRISES;
MINISTER ASSISTING THE MINISTER FOR PUBLIC SECTOR MANAGEMENT

Appendix 2: Country Water and Wastewater Tariffs

This appendix sets out the Corporation's current water and wastewater tariffs for country customers, as published on the Corporation website (www.watercorporation.com.au).

Country Residential Water Tariffs

Each residential property is subject to a service charge and a usage charge.

Service Charge

In 2005/06 the service charge for each residential unit is $152.30, which is the same as for the Perth metropolitan region.

Usage Charge

Water usage charges increase with use to encourage the efficient use of water. Water usage charges in the country are the same up to 350 kL (approximate average residential consumption). Charges then vary based on the costs associated with providing water to the specific town or area.

There are two groups of towns:

- Group A covers the majority of country towns, while
- Group B covers towns in the north of the State (above the 26th parallel) and some other towns (e.g. Cue, Laverton, Leonora, Meekatharra, Menzies, Mt Magnet, Sandstone, Wiluna and Yalgoo).

Within each Group, each town or area is allocated to one of five classes on the basis of the cost of providing water to that town or area.

Appendix 3 sets out the full list of towns in each Group and Class.

In 2005/06 the tariffs for Group A are as follows. Existing Perth tariffs and the tariffs recommended for the Perth metropolitan area in the ERA Final Report on the urban water and wastewater pricing inquiry are included for comparison.

Table A2.1 Residential Water Usage Tariffs for Customers in Group A and Perth for 2005/06

	Perth Tariffs (c/kL)		Current Group A Tariffs (c/kL)				
Usage (kL/year)	ERA Recom-mended Tariffs (Urban Inquiry)	Current Perth Tariffs	Class 1	Class 2	Class 3	Class 4	Class 5
1 – 150 kL	82	42.5	42.5	42.5	42.5	42.5	42.5
151 – 350 kL	82	68.9	68.9	68.9	68.9	68.9	68.9
351 – 450 kL	82	93.0	85.1	87.6	87.6	87.6	87.6
451 – 550 kL	82	93.0	85.1	113.1	124.3	135.7	139.5
551 – 750 kL	120	122.6	122.6	128.0	147.4	163.0	178.4
751 – 950 kL	120	122.6	156.0	211.3	235.7	268.2	300.7
951 – 1150 kL	120	153.3	156.0	211.3	235.7	268.2	300.7
1151 – 1550 kL	120	153.3	224.1	308.8	357.4	487.6	601.1
1551 – 1950 kL	120	153.3	258.3	381.9	471.3	585.1	698.8
Over 1950 kL	120	153.3	300.2	487.6	568.8	682.4	780.0

Source: Water Corporation and ERA (2005) Final Report: Inquiry on Urban Water and Wastewater Pricing

Special (lower) tariffs for usage between 351–550 kL and 551–650 kL apply to towns in Group B. According to the Corporation, the basis for treating these towns differently is their greater water requirements due to the lower rainfall, higher temperatures and generally harsher weather conditions experienced by these towns (as demonstrated by historical meteorological data). In 2005/06 the tariffs for Group B towns are as follows (Table A2.2), with existing Perth tariffs and the tariffs recommended for the Perth metropolitan area in the ERA Final Report on the urban water and wastewater pricing inquiry are included for comparison.

Table A2.2 Residential Water Usage Tariffs for Customers in Group B and Perth for 2005/06

Usage (kL/year)	Perth Tariffs (c/kL)		Current Group B Tariffs (c/kL)				
	ERA Recom-mended Tariffs (Urban Inquiry)	Current Perth Tariffs	Class 1	Class 2	Class 3	Class 4	Class 5
1 – 150 kL	82	42.5	42.5	42.5	42.5	42.5	42.5
151 – 350 kL	82	68.9	68.9	68.9	68.9	68.9	68.9
351 – 450 kL (comparison with undiscounted class)	82	93.0	68.9 (-16.2)	68.9 (-18.7)	68.9 (-18.7)	68.9 (-18.7)	68.9 (-18.7)
451 – 550 kL (comparison with undiscounted class)	82	93.0	68.9 (-16.2)	68.9 (-44.2)	68.9 (-55.4)	68.9 (-66.8)	68.9 (-70.6)
551 – 650 kL (comparison with undiscounted class)	120	122.6	77.7 (-44.9)	83.2 (-44.8)	83.2 (-64.2)	83.2 (-79.8)	83.2 (-95.2)
651 – 750 kL	120	122.6	122.6	128.0	147.4	163	178.4
751 – 950 kL	120	122.6	156.0	211.3	235.7	268.2	300.7
951 – 1150 kL	120	153.3	156.0	211.3	235.7	268.2	300.7
1151 – 1550 kL	120	153.3	224.1	308.8	357.4	487.6	601.1
1551 – 1950 kL	120	153.3	258.3	381.9	471.3	585.1	698.8
Over 1950 kL	120	153.3	300.2	487.6	568.8	682.4	780.0

Source: Water Corporation and ERA (2005) Final Report: Inquiry on Urban Water and Wastewater Pricing

Country Residential Wastewater Tariffs

Sewerage charges for residential properties are based on the rateable value of the property. The rateable value is derived from the GRV (gross rental value, or estimated gross annual rent) determined by the Office of the Valuer General for the property.

The tariffs are set independently for each country town sewerage scheme, with the objective of recovering the costs of providing sewerage services to the specific town or area.

The minimum country residential sewerage charge in 2005/06 is $241.30 per residential unit. The maximum country residential sewerage charge in 2005/06 is $612.40 per residential unit.

Country Commercial Water Tariffs

Commercial properties are subject to a service charge and to usage charges.

Service Charge

Country commercial water service charges are set equal to metropolitan water service charges. The water service charge is based on the size of the water meter to the property. The charges for 2005/06 are set out in Table A2.3 below.

Table A2.3 Country Commercial Water Service Charges for 2005/06

Meter Size	Charge 2005/06
15mm & 20mm meter	$461.90
25mm meter	$721.70
30mm meter	$1,039.30
35mm, 38mm & 40mm meter	$1,848.00
50mm meter	$2,887.00
70mm, 75mm & 80mm meter	$7,390.00
100mm meter	$11,548.00
140mm & 150mm meter	$25,982.00
Strata titled units sharing a meter	$152.30

Usage Charges

For the purposes of setting commercial water charges, the Corporation allocates country towns to five classes in the same manner as for residential water charges. The allocation of towns to classes is set out in Appendix 3. Within each class, usage charges in country towns have two steps: 0-300 kL, and above 300 kL. Table A2.4 shows the commercial water usage charges for customers in country towns, compared with commercial customers in Perth, and commercial tariffs recommended for the Perth metropolitan area in the final report of the urban water and wastewater pricing inquiry. Unlike residential customers, there is no separation of commercial customers into Groups A and B.

As the uniform tariff policy does not apply to commercial water charges, commercial customers in country towns pay higher water usage charges than in Perth. In comparison to country residential customers, country commercial customers pay higher charges at lower levels of water usage and lower charges at higher levels of water usage

Table A2.4 Commercial Water Usage Charges for Perth and Country Town Classes for 2005/06

Usage (kL/year)	Perth Tariffs (c/kL)		Current Country Tariffs (c/kL)				
	ERA Recom-mended Tariffs (Urban Inquiry)	Current Perth Tariffs	Class 1	Class 2	Class 3	Class 4	Class 5
0 – 300 kL	82	72.6	84.7	112.5	123.6	135.1	138.8
301 – 600 kL	82	72.6	148.0	200.6	223.6	254.6	285.3
601 – 1,100,000 kL	82	81.1	148.0	200.6	223.6	254.6	285.3
Over 1,100,000 kL	82	79.0	148.0	200.6	223.6	254.6	285.3

Source: Water Corporation and ERA (2005) Final Report: Inquiry on Urban Water and Wastewater Pricing

Country Commercial Wastewater Tariffs

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

The new charges are being phased-in, in most cases over six years. Once completely phased-in, all of the Corporation's commercial wastewater customers throughout the State will pay the same wastewater charges.

The sewerage charge for 2005/06 will be determined by comparing last year's bill with the ultimate combined service and usage charges. These charges will be assessed using 2005/06 sewerage charges as the base.

Service Charges

Table A2.5 sets out the commercial wastewater service charges for 2005/06.

Table A2.5 Commercial Wastewater Service Charges for 2005/06 (State-wide)

Fixture *	Charge ($/year)
First Fixture	$516.00
Second Fixture	$220.80
Third Fixture	$294.90
Over 3 Fixtures (each)	$320.70
Strata Titled Units	$320.70

* Note: Fixture charges are cumulative.

Usage Charges

In 2005/06 the usage charge for country commercial wastewater services is 193.10 c/kL.

A 200 kL free discharge allowance per annum applies to each property. No usage charge applies to properties where the annual volume of discharge is less than 200 kL.

Vacant Land Water Tariffs

Vacant land is subject to a service charge and to usage charges.

Service Charge

The charge for 2005/06 is $152.30

Usage Charges

2005/06 residential usage charges apply to vacant land held for residential purposes. For usage charges please refer to country residential water usage charges above.

A country vacant land usage charge of 122.40 c/kL applies to vacant land held for purposes other than residential.

Vacant Land Wastewater Tariffs

Sewerage charges for vacant land are based on the rateable value of the property.

The rateable value is derived from the GRV (gross rental value), determined by the Office of the Valuer General for the property.

The tariffs are set independently for each country town sewerage scheme, with the objective of recovering the costs of providing sewerage services to the specific town or area.

The minimum country sewerage charge for vacant land in 2005/06 is $158.90. The maximum country sewerage charge for vacant land held for residential purposes is $612.40.

Appendix 3: Country Towns Within Each Class

Group A classes	Country Towns
1	Albany, Allanooka Farmlands, Australind/Eaton, Boyanup, Brunswick/Roelands/Burekup, Capel, Cervantes, Collie, Collie Farmlands, Cunderdin, Dalyellup, Dathagnoorara Farmlands, Dongara/Denison, Donnybrook, Esperance, Geraldton, Gnarabup, Grass Valley, Hamel/Waroona, Harvey/Wokalup, Jurien, Kalbarri, Mandurah, Margaret River, Moora, Narngulu, Northam, Park Ridge, Pinjarra, Porongorup, Walkaway, Wundowie, Yarloop/Wagerup
2	Allanson, Bakers Hill, Beverley, Binningup, Bodallin, Boddington, Boyup Brook, Burracoppin, Carnamah, Coorow, Dardanup, Darkan, Dowerin, Dunsborough/Yallingup, Dwellingup, Eneabba, Eradu, Gabbadah, Gingin, Greenbushes/Balingup, Greenhead, Guilderton, Karakin, Kellerberrin, Lancelin, Ledge Point, Leeman, Manjimup, Meckering, Merredin, Mingenew, Nannup, Narrogin, North Dandalup, Pemberton, Peppermint Beach, Tammin, Toodyay, Wagin, Williams, Woodridge, York
3	Arrowsmith Farmlands, Augusta, Bindoon/Chittering, Bolgart, Bremer Bay, Bridgetown/Hester, Brookton, Broomehill, Bullaring, Calingari, Coolgardie, Cuballing, Dalwallinu, Denmark, Doodlakine, Gibson, Goomalling, Highbury/Piesseville, Hines Hill, Hopetoun, Kalgoorlie/Boulder, Kambalda, Katanning, Katanning Farmlands, Kendenup Farmlands, Kirup, Kojonup/Muradup, Koorda, Marvel Loch, Morawa, Morawa Farmlands, Mt Barker, Myalup, Nabawa, Narrikup, Northampton, Northcliffe, Pingelly, Pithara, Porongorup Farmlands, Preston Beach, Quairading, Seabird, Southern Cross, Three Springs, Westonia, Wickepin, Woodanilling, Wyalkatchem, Yearling
4	Badgingarra, Ballidu, Bruce Rock, Bunjil, Caron, Condingup, Corrigin, Cowaramup, Cranbrook, Dandaragan, Frankland, Gnowangerup, Horrocks, Hyden, Jerramungup, Kalannie, Kendenup, Kondinin, Kulin, Kununoppin, Lake Grace, Latham, Merredin Farmlands, Miling, Moorine Rock, Mukinbudin, Mullewa, Mullewa Farmlands, Narembeen, Narrogin Farmlands, New Norcia, Newdegate, Norseman, Northam Farmlands, Nyabing, Perenjori, Pingaring, Popanyinning, Tambellup, Trayning, Walpole, Wandering, Watheroo, Widgiemooltha, Wongan Hills, Wubin
5	Arrino, Beacon, Bencubbin, Bindi Bindi, Borden, Broad arrow, Bullfinch, Buntine, Coomberdale, Dudinin/Harrismith/Jitarning, Dumbleyung, Grass Patch, Karlgarin, Kukerin/Moulyinning, Lake King, Mount Roe, Mullalyup, Munglinup, Muntadgin, Nungarin, Ongerup, Ora Banda, Pingrup, Quininup, Ravensthorpe, Rocky Gully, Salmon Gums, Tincurrin, Varley, Wellstead, Yerecoin, Yuna

Group B classes (generally for towns above the 26th parallel)	**Country Towns**
1	Broome, Dampier, Kununurra, Port Hedland, South Hedland
2	Carnarvon, Derby, Exmouth, Fitzroy Crossing, Karratha, Meekatharra, Mount Magnet, Newman, Wiluna
3	Camballin, Cue, Denham (Saline), Gascoyne, Halls creek, Laverton, Leonora, Point Samson, Roebourne, Wickham, Wyndham, Yalgoo
4	Lake Argyle, Marble Bar, Nullagine, Onslow, Sandstone
5	Menzies, Wittenoom

Appendix 4: General Principles for Country Water and Wastewater Pricing

Economic principles provide theoretical guidance for price regulation. The aim is to set prices that achieve the most efficient outcome. The concept of efficiency has three distinct elements:

i. *allocative efficiency* – identifying the optimal level of output to produce;

ii. *productive efficiency* – producing the optimal level of output at the lowest possible cost; and

iii. *dynamic efficiency* – achieving innovation and efficiency gains over time.

Pricing can influence the attainment of all three types of efficiency although the Authority's main concern in this inquiry is with allocative efficiency.

Allocative efficiency means providing water (and wastewater) services in the right quantity; that is, the quantity that maximises the welfare of society. The provision of water creates benefits for those who consume that water. Some of this benefit is transferred to the producer in the form of revenue. The provision of water services is also costly. The producer directly incurs costs when providing water; costs may also be imposed on third parties (through pollution for example). Allocative efficiency involves identifying the optimal balance between the benefits and costs of water provision.

Consumers will purchase units of a good until the benefit they receive from the last unit bought equals the price they are charged.[14] This can be represented by a demand curve. At high prices demand will be low. At low prices demand will be high. Allocative efficiency is achieved by setting price equal to the cost of producing the last unit (the marginal cost).[15] How does this ensure that the welfare of society is maximised? Suppose that price was instead set above marginal cost. The benefit derived by consumers from an extra unit exceeds the cost society would incur in the provision of this extra unit. Therefore the extra unit will increase net welfare. Consumption is below the optimal level. Now suppose that price is set below marginal cost. The last unit produced will have a benefit that is less than the cost incurred in producing it: the last unit reduces net welfare. Consumption is above the optimal level. Only when price equals marginal cost are benefits and costs aligned and net welfare is maximised.

Consumers observe prices; they do not observe production costs. For consumers to make efficient choices regarding their water consumption it is necessary that the price that they are charged signals the cost of their water consumption. Allocative inefficiency arises when prices do not reflect the underlying costs. For example, if water costs $3.00 per litre to provide and consumers are only charged $1.00, consumers will act as though water is cheap to produce and consume too much water. A price of $1.00 does not signal to the consumer the true cost of water provision. Charging a price of $3.00 would ensure that consumers only use water which has a value to them that exceeds the cost of supplying that water.

[14] In technical terms, consumers equate marginal benefit and price.

[15] Assume for this analysis that the marginal cost curve does indeed cut the demand curve. This assumption need not hold; in such a case the optimal level of production is zero (see Figure A4.4).

The size of the welfare loss arising from under or over consumption vis-à-vis the optimal level of consumption depends upon how responsive demand is to price.[16] If demand is unresponsive then output will be close to optimal even when prices diverge from cost.

In theory, inefficiency can arise if the marginal cost of supplying two consumers or two groups of consumers is different but they are charged the same usage charge. The higher cost group may use too much water and the lower cost group too little. In general, when seeking to apply marginal cost pricing to a single system some form of averaging to achieve uniformity in the usage charge is necessary and any resulting inefficiency will be a function of the magnitude of the cost differences. The form of inefficiency may be potentially more significant if we have price uniformity across separate systems (rural towns) with significantly different costs.

In its simplest form, allocative efficiency requires that price be set equal to short run marginal cost. Such a policy would result in fluctuating prices as capacity constraints were periodically reached in the lead up to new investment in capacity. The particularly lumpy nature of infrastructure investment for water supplies and the consequences that this has for actual prices results in the accepted principle being to set a uniform price based on long run marginal cost (LRMC). LRMC pricing results in smoother price paths. LRMC is a forward looking cost that accounts for the pattern of capacity investment needed to expand capacity over time to meet projected demand. Hence, it gives consumers a signal regarding the long run implications of their consumption decisions.

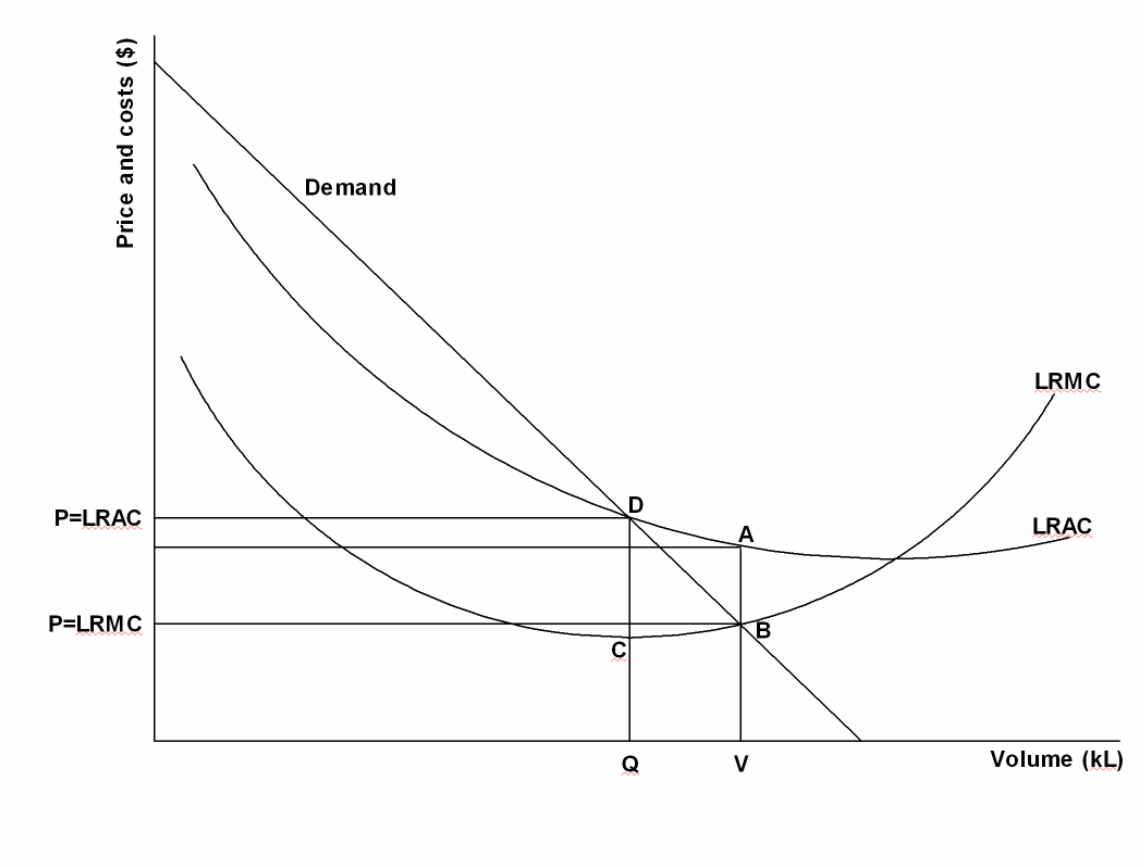
The arguments against using LRMC as the first best approach fit into two categories. First there is the practical problem of actually estimating LRMC. Whilst there is no single simple approach to the estimation this issue reduces to one of securing adequate reliable data. The water industry is one where providers have detailed long run capital plans, often as a requirement of regulation, making this one industry where the meaningful estimation of LRMC is possible.

The more relevant issue for pricing centres on the price and profit implications from pursuing marginal cost pricing under various cost scenarios. The most commonly discussed case involves pricing at LRMC when LRMC is declining and long run average cost (LRAC) is above it. In this case the service provider will incur losses as illustrated in Figure A4.1 where with price set at LRMC a loss of AB is incurred on each of the V megalitres supplied.

Figure A4.1 can also be used to show the allocative inefficiencies associated with diverging from LRMC pricing.

[16] In technical terms: the elasticity of demand.

Figure A4.1 Pricing When Long Run Marginal Cost (LRMC) is Below Long Run Average Cost (LRAC)



There is a value to consumers from water consumption and a cost to producers associated with the provision of water for them to consume. The value consumers place on receiving an additional unit of water supply is indicated by their marginal willingness to pay and this is reflected by the price as shown along the demand curve. The cost of providing consumers with the additional unit of water encompasses capital and operating costs as well as source costs and is reflected in the long run marginal cost. The benefit to society from the provision of the water supply to the consumer is the difference between the value obtained by consumers (as measured by price) and the cost incurred by producers to provide it (as measured by LRMC). Allocative efficiency occurs when water is provided in a manner that maximises the benefit to society.

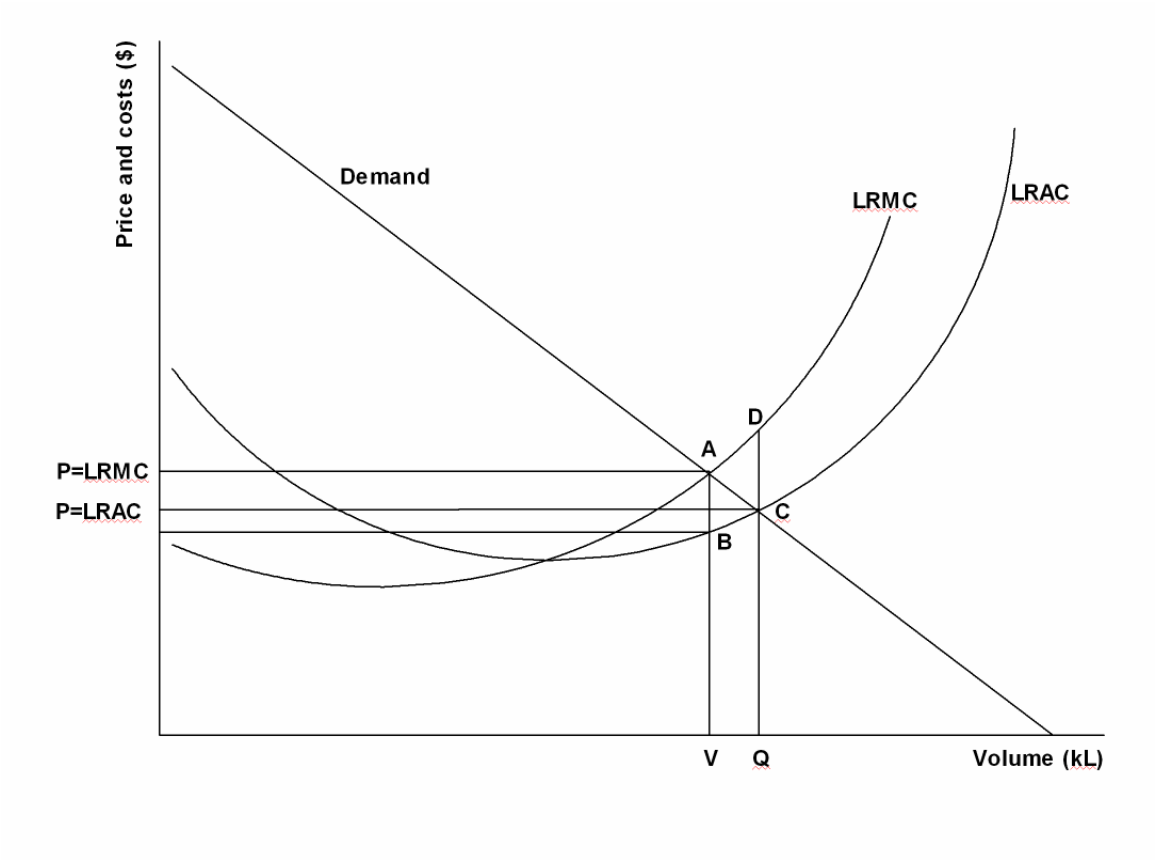
In Figure A4.1 this occurs at a price equal to LRMC at the volume V. Any other price involves welfare or allocative efficiency losses. For example, if we avoided losses by charging a price equal to LRAC, volume would fall to Q. At this point, the value to consumers of an additional unit of water consumption (price on the demand curve) exceeds the cost to society of providing it (cost on the LRMC curve). The difference between Q and V involves a welfare loss measured by the area BDC.

Clearly the principle of allocative efficiency requires that we start from the position of setting price at LRMC and then seek to solve the problem of the inherent losses in a way that does not detract from allocative efficiency.

When LRMC is rising and LRAC is below it, pricing at LRMC generates above normal profits. This case is shown in Figure A4.2, where an excess profit of AB is made on each of the V megalitres supplied. Under this cost scenario it is possible to price at LRMC without requiring a threshold, fixed charge or subsidy payment. Again, moving away from

LRMC pricing involves allocative inefficiency. For example, pricing at LRAC would reduce price, eliminate excess profits and increase volume to Q. Society would incur welfare losses on the extra VQ supply as the cost of the additional provision exceeds the value placed on it by consumers, the net loss being the area ADC.

Figure A4.2 Pricing When Long Run Marginal Cost (LRMC) is Above Long Run Average Cost (LRAC)



Whichever situation arises depends on the particular water system being considered. In theory it may even be the case that the LRAC cost curve lies entirely outside the demand curve so that pricing at any level including LRMC always involves losses. Such a case is shown in Figure A4.3. However, provision can be commercially viable with the introduction of a fixed charge per customer, for example. Figure A4.5 shows a further case where both LRAC and LRMC are outside the demand curve. Under this extreme case no pricing arrangements could ensure commercial viability – a subsidy would be required to induce supply.

Figure A4.3 Pricing When Long Run Average Cost (LRAC) is Above Demand

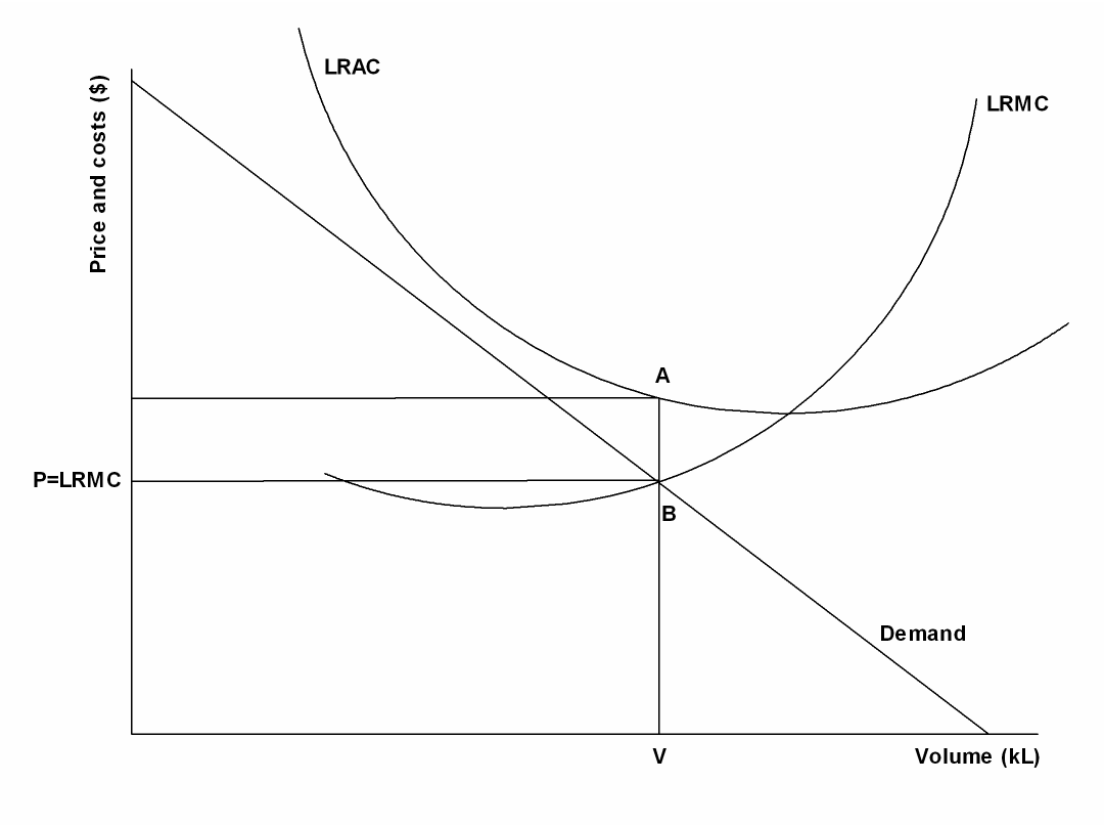
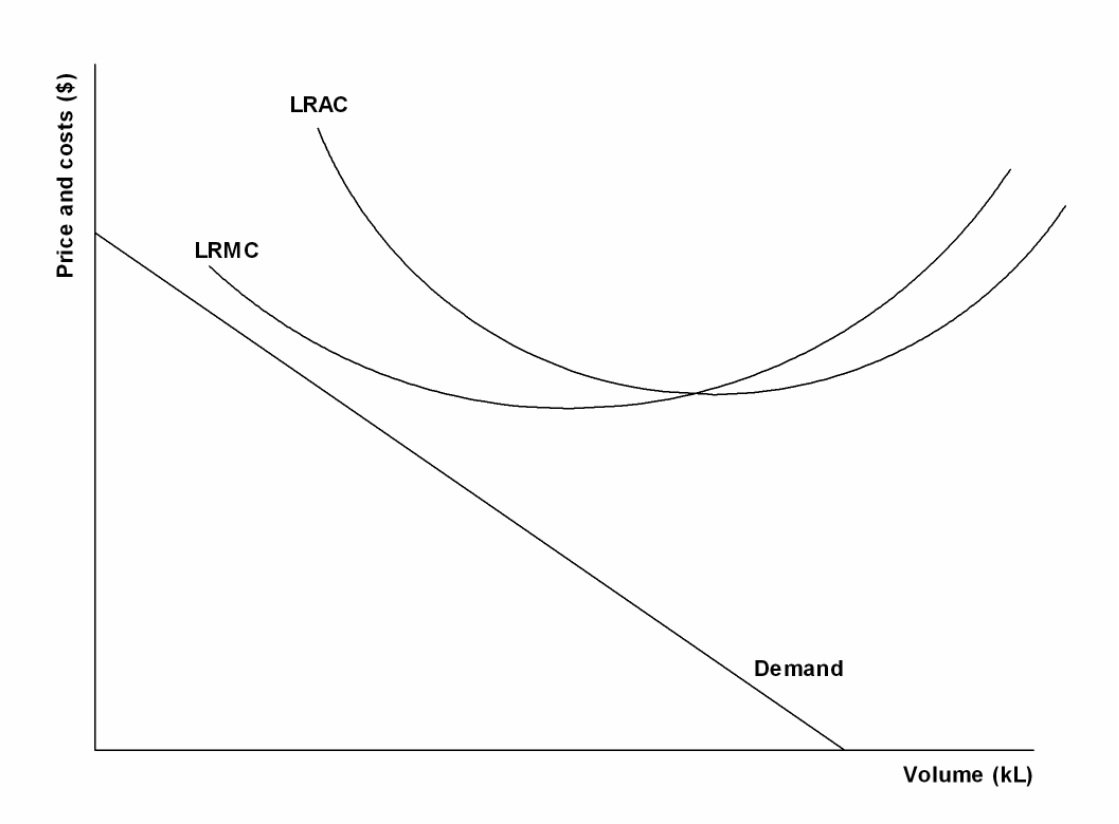


Figure A4.4 Pricing When Long Run Average Cost (LRAC) and Long Run Marginal Cost (LRMC) are Above Demand



Large scale urban water providers are often characterised by the declining cost model and much of the pricing debate is in this context – a single, large scale urban water system. However, individual water systems can be characterised by any one of these situations. And while large scale urban water providers may be characterised by the declining cost model the loss-making model may arise in small rural water systems where the capital costs of setting up a system at a suitable standard are very high relative to the demand that the population being served generates.

Each cost scenario that involves financial losses under LRMC pricing poses a theoretical challenge. A pricing policy is needed that can achieve the efficient outcome whilst avoiding loss-making. Figure A4.3 is a case where there is no single economic price at which a profit could be made, unlike the case in Figure A4.1.

With a large number of separate country water systems and with significant variation between the associated localities in terms of water sources, population size, population growth, industry and socio-demographics, it is likely that all four cases are represented across country systems. That is, the country spectrum spans inherently profitable systems to inherently unprofitable systems through to systems, based on strict economic analysis, cannot be justified.

The classic case is that of Figure A4.1. In this case, theoretically acceptable solutions are well developed. These include:

- introducing a fixed charge unrelated to consumption in combination with the LRMC charge for supply;
- introducing a declining block tariff whereby only higher levels of consumption are charged at the LRMC; and
- Ramsey pricing, whereby different consumers are charged different prices, with the relative prices reflecting their responsiveness to price changes (with least responsive consumers paying more).

A case can be made for all three in theory. What is clear is that with a single usage charge, efficient pricing involves losses and subsidies. Figure A4.3 is also a case for a combination of fixed charge or declining block tariff, only the viability problem is greater.

In the increasing cost case, where the regulator desires to remove above normal profits (i.e. profits that exceed a “normal” rate of return), an increasing block tariff might be adopted. Higher consumption volumes could approximate the LRMC whilst lower volume blocks are charged a lower price.

One disadvantage of using a threshold rather than a fixed charge is that some consumers may not face cost-reflective pricing. Households are not identical. For example, the number of occupants per household varies across households. Smaller households may consume water that is below the threshold and will therefore face prices above or below LRMC under a declining or increasing block tariff respectively. Thresholds can therefore compromise economic efficiency. Also note that fixed charges and thresholds will have different distributional consequences.

In summary, the application of economic principles leads to a theoretically sound approach being one based on a fixed charge combined with a usage charge, where the latter approximates the LRMC. Depending on the shape of the cost curves, the usage charges could be in the form of an increasing or decreasing block tariff as explained previously.

Whilst the pricing scheme requires that the usage charge be related to LRMC for allocative efficiency, it must also satisfy the revenue-raising requirements of the service provider, which typically are established as part of the regulatory regime. In this context the combination of fixed charge and usage charge can be adjusted such that the combined effect is to produce the revenue needed to earn the approved rate of return, even when LRMC is declining (Figure A4.1).

The usual application of these principles is to a single water system. Within a single water system price can be determined against a single LRMC curve estimate. Something like the cases described in Figure A4.1, Figure A4.2 or Figure A4.3 will apply. In the simplest systems there will be a single fixed charge and a single usage charge that approximates LRMC, with the combination of fixed charge and usage charge set so as to allow total revenue sufficient to earn the regulated rate of return and still provide the required incentive in terms of the marginal unit consumed. Without losing the incentive at the margin, the single usage charge could be replaced with an inclining or deceasing block tariff which offers an additional degree of freedom in setting prices.

However, the country water system in Western Australia is in fact many separate water systems. Application of the above principles on a system-by-system basis would result in different fixed charges, different thresholds, different usage charges for the threshold quantities and different above-threshold usage charges across the towns. This is a reflection of the fact that each system will have different cost and demand conditions. There could be some extreme cases. Some towns may have cheap access to water (bores for example) and static populations. In these cases the marginal capacity cost is zero; the capacity constraint is not going to be reached. The SRMC and LRMC will be similar and low so that optimality may imply a very low usage charge.

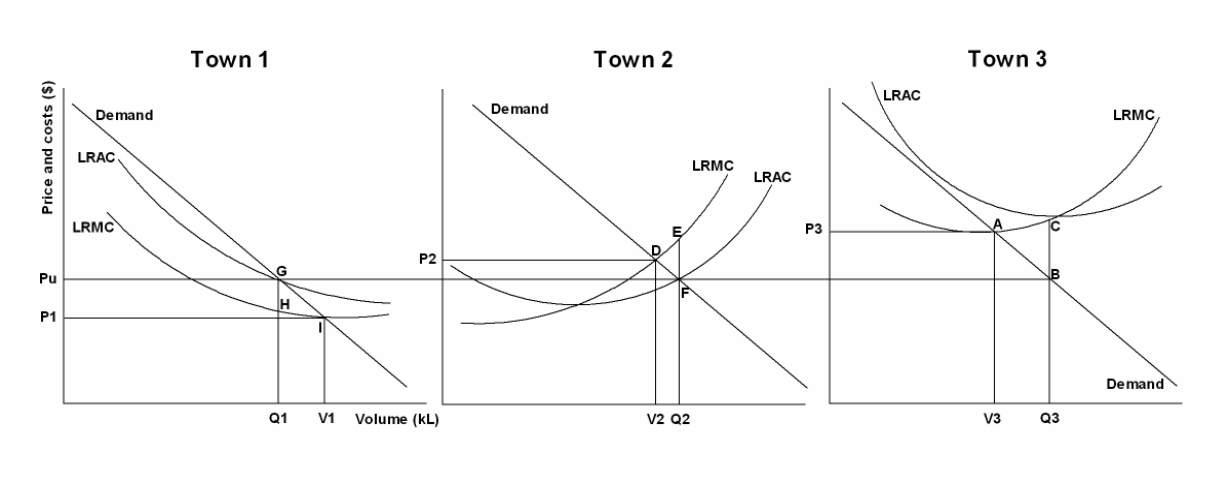
Application of these economic principles would mean that the charges in country towns would almost certainly be different from the urban prices and thresholds based on these same principles.

Some jurisdictions do accept the consequent pricing variations between towns. For example, country water prices in NSW, Victoria and Queensland are set by a wide range of rural councils or water authorities, each with their own pricing structures. Other jurisdictions, including Western Australia, attempt to have some kind of uniformity in pricing water across country towns and this introduces a significant complication in the application of the general economic principles.

The general issues of applying a common price across a set of towns (systems) is illustrated in Figure A4.5.

Three towns with different costs are depicted. Under cost reflectivity each town is charged a price per kilolitre equal to LRMC. The optimal level of consumption is each town is given by V1, V2, V3. Each town pays a different price. The water provider incurs losses in towns 1 and 3 but earns a profit in town 2. A fixed charge or a declining block tariff will be required to ensure that costs are recovered in towns 1 and 3. Note that the requirement that the water provider recoups its costs can be applied on a system-wide, rather than a scheme-by-scheme, basis. On this approach the profit earned in town 2 can be used to reduce the fixed charge in towns 1 and 3 without compromising the firm's overall cost recovery.

Figure A4.5 Example of Application of Uniform Price (Pu) to Three Towns with Different Costs



Pu is an illustrative uniform usage charge. Relative to the efficient price, under price Pu, price would rise in Town 1, and fall in Town 2 and Town 3.

Consumption falls to Q1 in Town 1 and increases to Q2 and Q3 in Towns 2 and 3. These changes involve allocative inefficiencies. In Town 1, Q1 is inefficiently small with a consequent welfare or efficiency loss of GHI. In Towns 2 and 3, consumption goes above the optimal level with a consequent efficiency loss of DEF in Town 2 and ABC in Town 3.

The financial loss falls in Town 1, the financial profit in Town 2 is reduced and the financial loss increases in Town 3. The overall effect on the aggregate subsidy required to run these systems depends on the exact circumstances across towns. In general, if all towns need to have price reductions then the aggregate subsidy needed increases.

In applying the general principles in this model, we could interpret price uniformity in terms of the average price paid. By adjusting the combination of fixed charge, threshold and below-threshold usage charge whilst leaving the above-threshold charge at LRMC we could, in theory, achieve price uniformity in this sense, although each price variable would likely vary across towns.

To achieve this outcome there is a need to have either (i) an external reference for uniform price Pu; or (ii) a fixed subsidy amount to distribute across towns which can govern the setting of the various elements. If (i) is used to determine the uniform average price, say by reference to the urban price, the consequent subsidy is the residual calculation. If there is a specified level of aggregate subsidy, then the uniform average price is the residual calculation. It may therefore be possible to retain some element of uniformity and introduce some cost reflectivity.

Appendix 5: List of Submissions Received in Response to Issues Paper

Chamber of Commerce and Industry WA

Chamber of Minerals and Energy WA

Department of Industry and Resources

Goldfields Esperance Development Commission

Great Southern Development Commission

Harvey Water

Nelsons of Bridgetown

Public Interest Advocacy Centre

Radys, A.

Shire of Bridgetown-Greenbushes

Shire of Yilgarn

South West Development Commission

Water Corporation

Western Australian Council of Social Service Inc

Appendix 6: Glossary and Abbreviations

Act	Economic Regulation Authority Act (2003)
Authority	Economic Regulation Authority (Western Australia)
Corporation	Water Corporation (Western Australia)
CSO	Community Services Obligation
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 (determined by the Valuer General)
kL	Kilolitre, which is 1,000 litres.
LRAC	Long run average cost, which is the average cost per unit of output supplied over the long run, assuming no factors of production are fixed.
LRMC	Long run marginal cost, which is the forward-looking cost of supplying an additional unit of water to meet increases in projected demand, through new source development and/or demand management programs.
WACOSS	Western Australian Council of Social Service Inc