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Rural Water Charging
Stocktake

WATER STORAGE AND DELIVERY CHARGES IN THE RURAL WATER SECTOR IN AUSTRALIA

Report prepared by the NWI Steering Group on Water Charges



The Steering Group on Water Charges is comprised of representatives from: the National Water Commission; the Department of Environment and Water Resources (formerly represented through the Office for Water Resources, the Department of Agriculture Forestry and Fisheries and the Department of Environment and Heritage); the Murray Darling Basin Commission; New South Wales Department of Energy, Utilities and Sustainability; New South Wales Department of Natural Resources; New South Wales Independent Pricing and Regulatory Tribunal; Queensland Department of Natural Resources and Water; Queensland Competition Authority; Victorian Department of Sustainability and Environment; Victorian Essential Services Commission; South Australian Department of Treasury and Finance; South Australian Department of Water, Land and Biodiversity Conservation; Tasmanian Department of Primary Industries and Water; Western Australian Department of Water; Australian Capital Territory Chief Ministers Department; Australian Capital Territory Independent Competition and Regulatory Commission; Northern Territory Treasury; and Northern Territory Natural Resources, Environment and The Arts.



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Preface

This stocktake has been prepared by the National Water Commission with assistance from the Steering Group on Water Charging. The Steering Group on Water Charging, chaired by the National Water Commission, has been set up under the NWI Committee to progress development of consistent approaches to water charging. Membership of the group includes commonwealth, state and territory government officials and representatives of pricing regulators.

This stocktake is the first step in developing principles to achieve consistency in water charging across jurisdictions. The stocktake is designed to achieve a shared understanding of how water charges are determined in different jurisdictions. It will also provide the basis for the next phase of work, which is to determine the materiality of differences in approaches to components of water charging across states and territories, and to identify areas where consistency in approaches will contribute to better water management outcomes.

The stocktake is in three parts; the first part details approaches to setting water charges in the urban (metropolitan and regional) water sector; the second part deals with approaches to setting water charges in the rural water sector; and the third part deals with approaches to charging for, and attributing costs of, water planning and management. This section of the stocktake is focussed on the rural water sector.



1 Introduction

The states and territories have committed to the National Water Initiative (NWI) reforms in the area of best practice water pricing and institutional arrangements. A central tenet of these reforms is to achieve consistency in water pricing policies across states and territories and sectors for water storage and delivery, and to achieve consistency in approaches to pricing, and attributing costs of, water planning and management (Clauses 65, 67 and 73 of the NWI refer). Under the NWI, the aim was to achieve consistency in pricing arrangements by the end of 2006.

The NWI refers to consistency in 'water pricing'. However, for the purposes of this document, the term 'water charges' is used. This is in order to distinguish between charges paid by water businesses and water users for water storage and delivery services and water planning and management activities, and the price determined in the market when water is traded as a commodity.

Consistency may be desirable in a number of areas of charging, and for a number of reasons. For example, to provide consistent pricing signals where water is traded in order to avoid economic distortions and to improve the competitive neutrality of state/territory water regimes (for water-based trade and investment purposes); and to achieve consistent regulatory principles and reduce the risk of regulatory error.

An important factor to consider in developing consistent approaches to charging is the legal and regulatory framework, under which pricing principles are set in each jurisdiction. Some jurisdictions already have quite well developed water charging principles and supporting legal and regulatory frameworks. Consistent charging principles will build on these existing arrangements.

The NWI refers to consistency in pricing policies across sectors and jurisdictions in Australia "where entitlements are to be traded". However, consistency is also important where the operation of water markets is limited: it brings greater transparency to charging practices and offers the opportunity to improve them. For this reason, consideration will also be given to the development of consistent approaches to charging where the operation of water markets is limited.

It is important to note that best practice water pricing policies are seeking to achieve consistency in approaches to charging, rather than consistency in charges.

Under the NWI, governments have agreed to full cost recovery for all rural surface and groundwater based systems through achievement of lower



bound pricing; and continued movement towards upper bound pricing for all rural systems where practicable¹.

The Council of Australian Governments (COAG) definition of lower bound pricing is: the setting of water charges sufficient to recover the operational, maintenance and administrative costs, externalities, taxes or tax equivalents (not including income tax), the interest cost on debt, dividends (if any) and provision for future asset refurbishment/replacement. If a dividend is paid, it should be set at a level that reflects commercial realities and stimulates a competitive market outcome.

Upper bound pricing is setting water charges that are above lower bound charges but avoid monopoly rents. The COAG definition of upper bound charging is: a water business should not recover more than the operational, maintenance and administrative costs, externalities, taxes or tax equivalent regimes, and provision for the cost of asset consumption and the cost of capital, the latter being calculated using a weighted average cost of capital.

The concepts of upper and lower bound pricing are designed to provide a band within which prices should lie. The lower bound provides for the recovery of costs only, and the upper bound provides for the recovery of costs, including a rate of return on capital, without earning monopoly rents.

While the COAG definitions provide guidance on the setting of water charges, each state has interpreted certain aspects, and their application, differently. The Steering Group on Water Charging is working towards consistency in the setting of upper and lower bound water charges.

Information provided in this stocktake is from a number of sources, including: the National Competition Policy Assessment, 2005, prepared by the National Water Commission; websites of water businesses and economic regulators; State and Territory government departments; and direct from water businesses.

There are a number of gaps in the stocktake, where information on the charging practices of rural water businesses was not available. This applied, for example, to some irrigation corporations and trusts in New South Wales and South Australia. Information from Coleambally Irrigation Co-operative Limited in New South Wales and the Central Irrigation Trust and Renmark Irrigation Trust in South Australia, have been used as examples. The information from Tasmania and Western Australia also has some gaps.

¹ The Steering Group on Water Charging is developing a practicality test.



2 The Rural Water Sector

Rural water supply generally refers to the provision of water-related services in rural areas, and, in particular, to the supply of irrigation and stock and domestic water. In the rural sector, water is sourced from regulated rivers, unregulated rivers or groundwater sources. It is distributed to customers through a network of natural water-courses, constructed storages, open channels and pipe networks.

While the nature and activities of rural water businesses vary considerably, they typically provide services including: network irrigation water supply; irrigation drainage; surface water diversion service management; groundwater diversion service management; stock and domestic water supply services; supply of subsidiary entitlements; management of water licences/entitlements and administration of water trading; operation of storage facilities; and customer services such as billing and payments. Some also provide salinity management, flood protection and land management planning services.

The information presented in this stocktake covers retail and wholesale water supply services for irrigation and stock and domestic purposes provided by rural water businesses. For this purpose, a rural water business is defined as: an organisation that operates or manages infrastructure providing raw water supply to customers. A wholesale water business in the rural water sector is defined as a business that supplies water in wholesale to other businesses to on-sell to retail customers. A retail water business is an organisation that supplies water directly to water users.

Some of the businesses providing retail water services to rural water users also operate storage facilities whereby they store water on behalf of customers. Some provide wholesale water services to non-metropolitan urban water businesses.

The corporate form and structure of rural water businesses varies. While rural water businesses in Victoria and Queensland remain in state government ownership, a number of those in New South Wales, South Australia, Western Australia and Tasmania are private co-operatives, or companies owned by the irrigators.

It is useful to categorise rural water supply businesses into three major forms: Government Business Enterprise (GBE), Statutory Authorities with customer majority boards, or private companies or trusts. The degree of pricing oversight by government or regulatory agencies tends to have association with these forms.²

² The principal characteristics of GBEs are: they engage in commercial activities in the private sector, are controlled by government, and represent an independent legal existence



With the exception of Queensland (where SunWater operates throughout the state), there are separate suppliers in different geographical parts of each state.

In some cases there are a number of schemes serviced by the one rural water business (e.g. SunWater has some 30 schemes). Typically, Customer Service Committees, based on local areas, have key input into key service issues, such as service standards, prices and related matters.

The peak body for water businesses that supply water and other services in support of irrigation is the Australian National Committee on Irrigation and Drainage (ANCID). The majority of remaining rural water supplies, for example domestic and stock supplies, are generally provided by the same businesses.

A summary of key features of the rural water businesses in each jurisdiction is provided at Appendix A.

from government and the executive. GBEs can be in the form of a company, or a statutory authority.



3 Framework for determining and regulating water storage and delivery charges

3.1 Legal and regulatory framework

The legal and regulatory frameworks that support water charging differ across jurisdictions. Summaries for each jurisdiction are provided at Appendix B. These differences have emerged for a range of reasons. They do not necessarily present problems but do have the potential to create significant divergence across jurisdictions in the detailed application of charging principles and outcomes achieved. The main areas where differences in legal and regulatory frameworks occur are:

1. ***Different decision makers determining charges*** (such as governments, ministers, economic regulators, water businesses). For example, in Victoria, the independent regulator, the Essential Services Commission (ESC) determines water charges; and in Western Australia, South Australia, Queensland and New South Wales, charges are set by rural water businesses in consultation with customers (except State Water in New South Wales, which has its water charges determined by the Independent Pricing and Regulatory Tribunal (IPART)).
2. ***Various statutory forms*** (e.g. heads of power and instruments) under which decision makers determine water charges. The transparency and accessibility of those powers vary from statutory law (as in Victoria), to individual water business decisions (e.g. for privately-owned irrigation corporations and trusts in New South Wales and South Australia). The corresponding monitoring and enforcement regimes also differ considerably.
3. ***Mandatory or discretionary application of pricing principles***. For example, some jurisdictions, as a matter of practice – not legal requirement – call on a regulator to advise government on water charges, but the government is free to disregard that advice (e.g. Western Australia). Other jurisdictions are required to follow a set of pricing principles for specific services as set by an economic regulator (e.g. Victoria).
4. ***Application of COAG pricing principles***. Some jurisdictions apply additional criteria (outside the COAG/NWI pricing principles) that decision makers are either allowed, or required to, consider.
5. ***Services covered by legal and regulatory frameworks***. Terminology used for rights and water services differs; the actual services subject to price regulation also differ across jurisdictions. The rationale for inclusion or exclusion, of particular services is not always clear. Further, businesses may perform a combination of wholesale and retail functions in different areas. In these cases, the distinctions between rural and urban, wholesale and retail are not clearly reflected in the regulatory frameworks.



3.2 Economic regulation and pricing determinations

A list of the Economic Regulators in each jurisdiction is provided in Table 1; their roles vary depending on the applicable legislation. In Victoria all rural water businesses have their average water charges determined by the ESC, while in New South Wales it is only the major rural water business, State Water, which has its water charges determined by IPART.

Table 1: Economic Regulators by Jurisdiction

Jurisdiction	Economic Regulator
New South Wales	Independent Pricing and Regulatory Tribunal (IPART)
Victoria	Essential Services Commission (ESC)
Queensland	Queensland Competition Authority (QCA)
South Australia	Essential Services Commission of South Australia (ESCOSA) ³
Tasmania	Government Prices Oversight Commission (GPOC)
Western Australia	Economic Regulation Authority (ERA)
Australian Capital Territory	Independent Competition and Regulatory Commission (ICRC)
Northern Territory	Utilities Commission

For the privately-owned irrigation corporations and trusts in New South Wales and South Australia and for businesses in Tasmania; rural water charges are determined by these businesses, in consultation with their customers. In Western Australia, rural water charges for the three major water storage and delivery providers The Water Corporation, AQWEST and Busselton Water - are set by government. They are based, in part, on the recommendations of the Economic Regulation Authority (ERA).

New South Wales

Wholesale water

IPART sets the maximum charges for extractions of wholesale water from regulated rivers by State Water. State Water is obliged to implement the charges determined by IPART, unless the approval of the Treasurer is obtained to set a lower charge.

Retail Water

IPART does not have a role in determining charges for rural retail water services provided by privately owned irrigation companies in New South Wales. Typically, these companies are set up as co-operatives, where

³ Note – ESCOSA undertakes inquiries into urban water and wastewater price setting processes. Information relating to the urban water service provider, SA Water, is presented in the urban section of the document.



elected customers make up the controlling majority of the board. Overall decisions regarding budgeted expenditure, prices and service standards, remains with the board of the co-operative, informed by senior management and customers.

Victoria

Wholesale water

The ESC provides regulatory oversight of expenditure levels, revenue requirements and service standards for all state owned water businesses that provide wholesale water supply to customers. In the next regulatory period this oversight will extend to individual water charge levels and structure.

As part of its regulatory oversight process, the ESC reviews formal price submissions by businesses, and invites submissions from interested stakeholders. This includes customers, regulatory bodies, industry bodies, and the community generally.

Retail Water

The same process as followed for wholesale water businesses, is followed for rural retail water businesses.

Queensland

Wholesale water

The QCA has not been directed to determine charges for rural water businesses in Queensland. They are determined by the rural water businesses, with the QCA providing monopoly oversight only when matters are referred by the Premier or Treasurer.

SunWater recently set five-year price paths for its 27 water supply schemes. It used a jointly agreed three-tiered negotiation and communication process approved by the Queensland Government. Parties to this agreement were: the Queensland Farmers' Federation, SunWater, Customer Councils and Committees, and peak industry representative bodies⁴.

The three-tiered negotiation and communication process involved:

- Tier 1—a committee of SunWater customers and industry representatives negotiated with SunWater to set statewide charging principles, to apply to all SunWater schemes (within the government policy framework). The major objective of Tier 1 was to establish efficient, forward looking, costs to set reference charges for further discussion at the scheme level or under Tier 2.
- Tier 2—involved scheme based meetings and negotiations between SunWater and local customer committees, to finalise five-year price

⁴ Customer councils are a form of local involvement in the management of the schemes, and include members of local governments, industry and irrigators. Customer councils act as advisory groups to SunWater's decision-making processes.



paths consistent with Tier 1 principles and government policy. Input from individual schemes was important, so as to consider their own conditions and to allow each one the scope for trade-offs in price and service levels.

- Tier 3—SunWater provided all its rural customers with updates on Tier 1 and Tier 2 progress, including overall scheme costs and tariffs.

Water charges for SunWater schemes were benchmarked via an independent process, to establish efficient costs. By June 2011, the majority of SunWater schemes will have achieved, or be on a path to achieving, the lower bound of cost recovery, consistent with NWI requirements.

The Queensland Government issues a pricing direction notice under the *Water Act 2000*, which may also impose other administrative obligations on SunWater: such as price setting rules, type of water users subject to the price path, and the ability to annually index tariffs.

Retail water

Private rural retail water businesses who on-sell their water are outside the purview of SunWater. Records of their price-setting activities are not kept and the *Water Act 2000* does not cover their operations. .

South Australia

Retail water

Overall decisions regarding budgeted expenditure, water charges and service standards remain with the board, informed by senior management and customers. However, Renmark Irrigation Trust may not impose rates without the Minister's approval.

As Irrigation Trust board members are elected irrigators, it is in the trust's best interests to provide efficient service delivery. Any inefficiency will directly impact members of the board and the trust.

SA Water's main focus is on urban water supply. It has a more limited role in providing rural and stock and domestic water, and certainly irrigation water. All business operations involving SA Water are outlined in the urban water storage and delivery stocktake document.

Western Australia

Wholesale water

The ERA was set up under the *Economic Regulation Authority Act 2003*. It makes recommendations on water charges for the three major water storage and delivery providers in Western Australia – The Water Corporation, AQWEST and Busselton Water. The Western Australian Government continues to set water charges, taking into account the recommendations of the ERA.



The ERA places conditions on the operating licences that it grants to rural water businesses. It requires them to provide a written submission on proposed charges, and the methodology for determining charges, for its approval. Subsequent proposals to amend charges must also be forwarded to the ERA for approval. The water supply agencies are also required, as a condition of their licence, to consult with customers, at least annually, on proposed tariffs.

Retail water

Harvey Water

Charges for the South West Irrigation Asset Cooperative Ltd (SWIAC) and the South West Irrigation Management Cooperative Ltd (SWIMCO) are reviewed annually. The cooperatives' intention is to increase water charges by no more than CPI (sometimes, not even that), while returning at least a break-even budget and making an allowance for future costs. Annual income is variable due to the seasonal nature of the business.

Gascoyne Water

The Gascoyne Water Cooperative (GWC) comprises two cooperatives (GWC and Gascoyne Water Asset Mutual Cooperative (GWAMCO)). They purchase wholesale water from the Water Corporation and then distribute it to their members through the piped irrigation distribution system. It is incumbent upon each cooperative to remain a viable entity and consequently water charging is not set by customer consultation. As a business, with a board of directors elected to manage it on behalf of its shareholders (who are also the members), the Board sets its water charges to maintain that viability.

Each year, the boards of GWC and GWAMCO review the water charging levels required to:

- maintain the assets and services provided to its customers;
- meet its future development and growth in accordance with its strategic business plan; and
- provide a smooth glide path to full cost recovery, offsetting the operating subsidy which will reduce to zero over its 15 year life.

Ord

The Ord Irrigation Cooperative (OIC) determines water charges based on a long term operating strategy and subsidy draw down. The OIC does not plan to make a profit and keeps all shareholders involved.

Tasmania

Retail water

GPOC does not have a routine role in setting water charges for the rural water supply agencies in Tasmania. However, where the Tasmanian Government owns scheme infrastructure, or manages the scheme, it requires that water charges are set to recover at least the lower bound of cost recovery, consistent with NWI requirements.



Northern Territory

There are no significant public or private rural water providers in the Northern Territory. The Power and Water Corporation's focus is on urban water supply and delivery. Therefore, all relevant business operations are outlined in the urban storage and delivery section of the stocktake.



4 Determining Revenue Requirements

Generally, the first step in setting charges for water storage and delivery services involves an assessment of the “revenue required” by the water agency, to cover the costs of providing the services in an efficient manner and on a sustainable basis.

In broad terms, the revenue requirement reflects the operating costs (operating, maintenance, administration, bad debts, working capital) and the capital costs (replacing assets, expansion, depreciation and funding).

The second step is to determine the proportion of the revenue requirement to be recovered through user charges. This second step recognises that revenue may also be recovered through government contributions, including Community Service Obligations (CSOs).

This chapter discusses: the overall approaches to calculating revenue requirements (section 4.1), including the relationship between the revenue requirement and the NWI concepts of upper and lower bound pricing. It then summarises how agencies across Australia assess the two cost categories – that is - costs associated with capital investment (section 4.2) and operating expenditure (section 4.3). Finally, section 4.4 discusses other, cost-recovery related elements.

4.1 Approaches to calculating revenue requirements

The revenue requirement for an agency can be determined in different ways. For example, one option is to use a bottom up approach that adds up component costs. Alternatively, it could be established by simply basing an estimate on the previous year’s actual revenues.

All water storage and delivery agencies throughout Australia base their revenue requirement calculations on “bottom up” methods, broadly characterised as “building blocks” approaches. However, there are significant differences in the costs included and in the way these component costs are determined.

Some of these differences can be understood through the NWI concepts of ‘lower bound’ and ‘upper bound’ pricing (see section 4.1.2). Other differences relate to the way specific costs are calculated, in particular the costs associated with capital investment (see section 4.2).

4.1.1 Building blocks approaches

The term “building blocks” refers to a broadly based approach to determining revenue requirements. The party setting water charges uses it to



derive forward estimates of the revenue needed to permit a defined service to be delivered over the “pricing period”.

The term “building blocks” is commonly used by economic regulators, to describe the approach used to calculate the efficient cost components that are to be recovered through water charges. In that context, the pricing period is the regulatory period.

The “building blocks” approach is forward-looking and considers estimates of the future costs associated with providing the service. There is usually a clear link between the definition or level of the service (such as service standards and regulatory obligations), cost drivers (such as the number of customers, and number of connections) and the forecast costs.

The cost components included in the “building blocks” may vary. It can depend on the pricing objectives (including the position on upper and lower bound pricing) and on the approach used by the business to fund capital investment.

The “building blocks” approach generally determines a revenue requirement that is then applied over a number of years (e.g. over a five-year regulatory period).

The incentives provided through a “building blocks” approach, strongly depend on:

- the detailed approach to establishing each cost block (how much scope exists to reduce assumed costs over time); and
- whether any subsequent adjustment occurs through reconciling actual costs (ex post) with the estimates used to set water charges (ex ante).

For example, benchmarked operating and capital expenditure cost allowances should be set to deliver sufficient revenue to provide:

- the service expectations of customers, and
- any obligations imposed by regulatory agencies.

However, the businesses could be free to determine their own expenditure priorities in light of changing circumstances. This approach would provide incentives for the business to pursue innovation and efficiencies that enable them to outperform the revenue benchmarks; and face penalties if actual costs exceed the cost benchmarks.

4.1.2 Lower bound and upper bound pricing

As mentioned in chapter 1, the NWI requires all rural surface and groundwater based systems to achieve lower bound pricing and demonstrate continued movement towards upper bound pricing, “where practicable”.



Lower bound pricing is when water charges are set to recover the minimum revenue required for maintaining a financially sustainable water storage and delivery business. Lower bound pricing is set to recover the following costs:

- recurrent expenditure requirements (operations, maintenance and administration);
- capital expenditure on replacement of existing assets and expanding assets to meet increases in demand, meet required service standards, and any increases in regulatory obligations; and
- interest costs on any debt, dividends and tax or tax equivalent payments (if any).

Under *upper bound pricing*, water charges are set to recover costs associated with:

- recurrent expenditure requirements (operations, maintenance and administration);
- a return on capital; and
- a return of capital (depreciation).

The determination of the return on capital and the value of the capital on which this return will be sought, are subject to the following limitations:

- the rate of return should be no higher than the Weighted Average Cost of Capital (WACC). Earning a rate of return on capital through the WACC provides businesses with a return on debt and equity from which they may: pay interest on debt, pay dividends, and meet tax or tax equivalence payments. Returns in excess of this are considered to reflect monopoly pricing; and
- the value assigned to the initial asset base is the estimate of the value of the assets involved in storing and delivering water (as distinct from assets involved in other activities)⁵. There are a number of different ways to determine the value of the Regulatory Asset Base (RAB). This value though, should not be any higher than the value determined by applying the Depreciated Optimised Replacement Cost (DORC) approach to asset valuation^{6,7}. A RAB set in excess of DORC is considered to reflect monopoly pricing.

⁵ There are a number of terms that can be used to describe the value assigned to the asset base for the purposes of setting water prices, including the Regulatory Asset Value (RAV) or Regulatory Asset Base (RAB). It is acknowledged that in some jurisdictions, these asset bases are not regulated as such and therefore, in these cases, the term RAB would not be totally accurate. For the sake of consistency though – in this document, the term RAB will be used throughout.

⁶ *Report of the expert group on asset valuation methods and cost recovery definitions for the Australian Water Industry, 1995*

⁷ Refer to section 4.2.2 for a description of the DORC.



4.2 Approaches to providing for capital investment

The “building block” approach requires an assessment of the revenue required to fund capital investment.

There are at least two different approaches to calculating the revenue requirement to provide for capital investments:

- the annuity approach; and
- the RAB approach.

The choice of the approach depends on whether charges are set to reflect lower or upper bound pricing levels.

Annuity approach

The annuity approach forecasts asset replacement and growth costs over a fixed period and converts them to a future annualised charge (assumptions regarding rates of return on, and of, capital are implied within this process). The annuity approach is commonly applied to recover the costs of constructing and renewing non-financial assets over a medium to long time period. It does not directly seek to recover all of the forward capital expenditure associated with long-lived assets, or a return on that capital. Depending on the choice of parameters, the annuity approach tends to be more aligned with lower bound pricing. The annuity approach can still provide for return on capital (over the longer term), but tends to result in a different revenue requirement and pricing profile.

RAB approach

The RAB approach includes an allowance for a return of capital (depreciation) and a return on capital⁸. Under the RAB approach, the “building blocks” equations are as follows:

$$\begin{aligned} \text{Revenue requirement} = & \\ & \text{Benchmark operating expenditure (including operations,} \\ & \text{maintenance, administration costs)} \\ & + \\ & \text{Return on capital (RAB)} \\ & + \\ & \text{Return of capital (RAB) or depreciation} \end{aligned}$$

The RAB is then updated (or rolled forward) annually, to reflect additional capital expenditure less asset disposals and regulatory depreciation (see section 4.2.4).

⁸ The ‘return of capital’ applied to the capital value invested reflects annual consumption of economic benefit or service capacity. It is referred to as depreciation. The ‘return on capital’ reflects the opportunity cost of the investment.



This approach is generally consistent with the NWI principle of upper bound pricing.

Under the RAB approach it is common practice for regulators to apply a 'line-in-the-sand' to determine the initial value of the RAB, (which essentially locks in the past rate of return on previous investments). It can then be updated each year, based on capital additions, disposals and depreciation (see sections 4.2.3 and 4.2.4).

The following section summarises the approach applied by each state to establish the revenue associated with capital investment, as part of setting water charges.

4.2.1 Summary of approaches to recovering capital expenditure by State

As mentioned earlier, the means by which capital expenditure is recovered differs, depending on whether a business is using an annuity approach or a RAB approach. In New South Wales (State Water only) IPART use the RAB approach to recover capital expenditure. In Victoria, Queensland and Western Australia water businesses use a combination of the RAB and the renewals annuity approach, to fund capital expenditure. In Tasmania, an annuity approach is used.

Where a water business is recovering capital expenditure using a RAB approach, determination of the initial value for the asset base, the process for progressively rolling forward the asset base, and the assumptions used to calculate the WACC, all have an effect on the revenue requirement. These components are discussed in sections 4.2.3, 4.2.4 and 4.2.6.

New South Wales

Wholesale water

Until recently, State Water's capital expenditure was recovered through the annuity approach. However, for the 2006 determination, IPART changed to the RAB approach.

Retail water

Other than for Coleambally Irrigation Co-operative Limited, information was not available at the time of writing on the approach to recovering capital expenditure by other irrigation companies. Coleambally use an annuity approach to recover capital expenditure.

Victoria

Wholesale water

The wholesale water storage and delivery businesses, Goulburn Murray Water, Southern Rural Water and Melbourne Water, use the RAB approach to recover capital expenditure.

Retail water



Until recently, all rural water supply businesses recovered capital expenditure through an annuity approach. Some businesses have retained the annuity method for some assets; however, all constructed assets from 1 July 2006 are now subject to the RAB approach. GMMWater have adopted a RAB approach; Lower Murray Water, FMIT and Southern Rural Water, have continued with the renewals annuity approach to recover capital expenditure.

Queensland

In Queensland, the majority of SunWater schemes use an annuity approach to recover capital expenditure. In other schemes (for example, in the Burdekin Haughton Water Supply Scheme), a RAB approach is used.

South Australia

South Australian irrigation trusts are privately owned. Individual boards make all decisions on recovering capital expenditure. It is the responsibility of each trust to be able to fund the replacement of their individual assets.

For rural water businesses managed by the Central Irrigation Trust, capital expenditure is recovered using a renewals annuity approach. Capital expenditure budgets are set each year, following consultation with members. For the Renmark Irrigation trust, estimated capital expenditure (including a portion for the future replacement of infrastructure) is recovered through a form of a renewals annuity.

Western Australia

In Western Australia, the Water Corporation, Harvey Water, Gascoyne Water and Ord Irrigation use a renewals annuity approach to provide for asset refurbishment and replacement.

Tasmania

In Tasmania, asset consumption for irrigation schemes is generally recovered through renewal annuities.

Northern Territory

There are no significant public or private rural water providers in the Northern Territory. The Power and Water Corporation's focus is on urban water supply and delivery. Therefore, all relevant business operations are outlined in the urban storage and delivery section of the stocktake.

4.2.2 Renewals annuity approach

New South Wales

As noted above, Coleambally Irrigation Co-operative Limited uses a renewals annuity to recover capital expenditure. Coleambally Irrigation Mutual Co-operative Limited (CICML) is the non-trading component of the co-operative. It was established to collect a levy (or renewals annuity) designed to fund short-term maintenance and capital works as well as longer-term capital works, and asset replacement.



The board of CICML engages consultants to undertake engineering assessments of the expected lives of all of the irrigation assets. They assess replacement costs and actuarial estimates of the annual levy amounts necessary to replace assets over time.

Victoria

In Victoria, those businesses using a renewals annuity propose their renewals annuity amounts to the ESC. They include the key inputs and assumptions adopted by each business, and the implications for the total revenue requirement. For further information on the approach taken by the ESC to determine the annuity amount, see Appendix C.

Queensland

Capital expenditure for refurbishment and enhancement of SunWater's infrastructure is recovered through an annuity approach. Forecasts of SunWater's efficient refurbishment expenditure over a 30-year rolling period are converted into an annualised charge⁹.

The annuity approach is also used to generate cash flows for SunWater to fund the replacement of existing assets and to maintain asset serviceability to meet regulatory obligations and customer service standards.

Calculation of the annuity is via a three stage process:

1. The net present value of refurbishment and enhancement expenditure (excluding major new assets and significant enhancements), is calculated for the chosen annuity period.
2. The value of the Asset Restoration Reserve (ARR), at the beginning of the annuity period, is subtracted from the net present value of refurbishment and augmentation expenses to determine the total amount required.
3. The value of the annuity amount is then calculated by applying a standard annuity formula, to convert the total amount to an annualised charge.

The 30-year rolling annuity is included on an annual basis over a five-year price path.

SunWater's WACC is used as the discount rate to calculate the annuity.

Western Australia

The Water Corporation and Harvey Water Irrigation Co-operative Limited use a renewals annuity approach to recover capital expenditure. Harvey

⁹ The annuity calculation does not include any future replacement expenditure on redundant assets. However, contributed assets that will require replacement in the future are captured within the calculation. Expenditure on new assets and significant asset enhancements are not included in the annuity calculation. These are subject to separate pricing discussions with the relevant customers.



Irrigation Mutual Co-operative Limited is the non-trading component of the co-operative and was established to collect a levy (or renewals annuity) designed to fund short-term maintenance and capital works as well as longer-term capital works, and asset replacement.

The board of the Mutual Cooperative engages consultants to undertake engineering assessments of the expected lives of all of the irrigation assets and their replacement costs and actuarial estimates of the annual levy amounts necessary to replace assets over time.

No details were provided on the processes for calculating the renewals annuities for Gascoyne Water and Ord Irrigation.

South Australia

Nine irrigation trusts contract the Central Irrigation Trust to manage and operate their systems. They set budgets each year, which are designed to generate surplus funds to meet new capital works agreed to by members for that year, and to set aside funds for asset replacement over the longer-term.

Tasmania

For irrigation schemes, capital expenditure plans are identified from asset management plans. They cover refurbishment and augmentation expenditure, associated with maintaining the existing standards of services or enhancing those standards. Asset management plans are developed for each individual scheme and are reviewed annually.

Northern Territory

There are no significant public or private rural water providers in the Northern Territory. The Power and Water Corporation's focus is on urban water supply and delivery. Therefore, all relevant business operations are outlined in the urban storage and delivery section of the stocktake.

4.2.3 Summary of approaches to determining the initial asset base under the RAB approach

The responsibility for determining the initial value of the asset base can be with government, an economic regulator, or a water business. Irrespective of the decision-maker, there are a number of matters that need to be considered in establishing the initial asset base. These include:

- the methodology used to value the initial asset base (including decisions on whether, and where, to draw a 'line in the sand', e.g. the extent to which past capital expenditure is deemed to be 'sunk' (or written down) and therefore completely, or partially excluded from the initial asset base);



- the way in which contributed assets are dealt with in the establishment of the initial (or rolled forward) asset base¹⁰.

The initial asset base may be valued in a number of ways, including:

- the DORC methodology; a cost-based approach. It involves determining a theoretical set of assets, based on current technology, to provide the current level of service, then depreciating the value of those assets to reflect asset consumption since construction or acquisition¹¹;
- an Economic Valuation methodology, which is a value-based approach. It establishes the value of the asset/s by estimating forward net cash flows of the business at current prices; and
- the Optimised Deprival Value (ODV) approach which is a hybrid approach (in that it can use either a cost-based or a value-based approach). For each asset, or group of assets, the value becomes the greater of the market value/sale value or the Economic Value, where the asset is not to be replaced; and
- the Depreciated Actual Cost method where the actual financial cost incurred at the time the expenditure for the physical assets is made, is indexed and depreciated to its present value.

Also, an arbitrary or judgemental decision may be taken on the initial asset value to balance shareholder objectives on price outcomes, or long-term financial sustainability.

In the rural water sector, historical policy decisions meant that some past investments were made on the basis of social and equity objectives, rather than for commercial reasons. To account for this, several jurisdictions have applied a 'line-in-the-sand' approach to valuing assets to determine revenue requirements using the building blocks approach.

Where a 'line in the sand' has been drawn, assets constructed or acquired prior to the date where the line has been drawn are deemed to be sunk (assigned a value of zero), or are written down to a level that reflects their income earning potential at the time, and incorporated into an opening RAB. The objective of drawing a 'line in the sand' is to maintain prevailing prices (or minimise price increases) in shifting towards a RAB pricing approach.

¹⁰ Contributed assets are those assets that are provided/funded by the user, or provided/funded on behalf of users by a third party.

¹¹ The annuity method generally uses similar asset optimisation assumptions to a DORC valuation method, but unlike the RAV it represents a forecast of future asset replacement requirements. A pre-determined planning period is used (i.e. 30 years), over which forecast capital expenditure renewal is projected. The opening balance of accumulated annuity funds is also considered. Next, the present value of outstanding obligations is converted into an annuity using a discount rate (a return on capital). An annuity approach effectively writes down existing assets to zero value, but ensures cash flows are generated to maintain the service potential of the assets into the future.



This is done by excluding assets (or portions of assets) that were invested in to meet non-commercial objectives. If a 'line-in-the-sand' is not drawn, less than target (sometimes zero) rates of return on, or of, capital, may have to be assumed for such assets.

It is important to note that RABs are used for price setting purposes only. While accounting methodologies may have been used in the setting of opening RABs, the value assigned to the RAB does not necessarily equal the accounting asset values reported by authorities in their annual reports.

The approach taken in establishing the initial asset base differs in each jurisdiction. The various approaches are summarised below.

New South Wales

In New South Wales, IPART calculates the RAB for State Water on the basis of its economic value. The economic value reflects the future free cash flows expected to be generated by the business, assuming a continuation of existing prices.

In determining the initial asset value for State Water, IPART considers the value of free cash flows and calculates their net present value.

IPART removes all contributed assets from the initial RAB of State Water.

Victoria

In Victoria, the initial RAB of each water business was set by the Minister for Water. The ESC provided recommendations on the RAB that it considered to be consistent with the proposed total revenue requirements for each business. It took into account any reviews or changes to forecast expenditures, identified through the ESC's review of Water Plans. All assets invested in prior to 1 July 2004 were written down (depreciated) and incorporated into an opening RAB in order to meet a pre-determined revenue requirement reflective of the free cash flows being generated by prices existing at the time the valuation was made. In setting the opening RABs, the Victorian Government applied the following principles:

- prices associated with the RABs should be consistent with the Government's water conservation objectives and have regard to the water conservation incentives created by the market for water;
- prices should ensure water authorities are financially viable;
- prices should reflect the cost of maintaining and improving the level of service received by customers; and
- average price increases should not be unreasonable over the regulatory period.

Contributed assets do not form part of the initial RAB.



Western Australia

The ERA, in its determination of the RAB for the Water Corporation, treated developer contributions as revenue in the year that it occurred, and as capital expenditure to the asset value of the business. Existing assets are treated as sunk for the purpose of setting the bulk water price.

4.2.4 Determining the asset base going forward under the RAB approach New South Wales

As new investments and reinvestments are made by State Water, they are added to the RAB at cost. A return of, and on, this capital is then earned over the expected life of the asset pool. Assets disposed of are deducted from the RAB, as is depreciation. As assets are replaced, the business will be progressively recapitalised.

Victoria

The ESC recommends that the RAB be rolled forward each year. This is done by adding any capital expenditure undertaken since the last valuation, and deducting regulatory depreciation (return of capital) and any asset disposals.

Western Australia

Information was not available on the process for determining the asset base going forward in Western Australia.

4.2.5 Determining efficient capital expenditure

There is generally a desire to ensure that forecast capital expenditure is efficient. The following section outlines the means by which jurisdictions determine efficient capital expenditure.

New South Wales

Wholesale water

In New South Wales, capital expenditure proposals are assessed by IPART for prudence and efficiency. State Water is required to make a pricing submission to IPART, detailing the expected capital expenditures to be incurred over the determination period. Efficiency targets may be included.

Retail water

Information about the way in which privately-owned irrigation corporations in New South Wales determine efficient capital expenditure was not available, except for Coleambally Irrigation Co-operative Limited. For Coleambally, capital expenditure is benchmarked against the ANCID irrigation benchmarking report. It is also independently assessed by consultants and monitored internally.



Victoria

The process used in Victoria to assess the efficiency of capital expenditure of rural water businesses is detailed at Appendix D.

Queensland

Capital costs for SunWater include refurbishment and enhancement expenditure associated with:

- maintaining the existing standards of services provided by existing infrastructure assets; and
- expenditure on new assets.

Under the former, expenditures include: the ability to ensure ongoing compliance obligations are satisfied; asset substitutions required to cover the replacement of individual assets due to technological change and process redundancy; and improving general business and performance efficiency.

SunWater's expenditure on new water infrastructure assets covers both new schemes and major extensions to existing schemes. Also included is expenditure on significant asset enhancements to considerably improve the level of service to existing customers above the original standards of service.

Efficiency of SunWater's capital expenditure is tested during the three-tiered negotiation and communication process between SunWater and relevant stakeholders.

South Australia

Capital expenditure decisions, including the costs of purchasing assets to provide water storage and delivery services, are made by individual irrigation trusts.

For the nine trusts managed by Central Irrigation Trust, the efficiency of capital expenditure is monitored by comparing water prices with five other highland pumped horticultural irrigation districts. Those districts operate along the River Murray, in South Australia, Victoria and New South Wales.

The members of each of the trusts are consulted on the proposed capital works program. The consultation process ensures that sufficient scrutiny is applied to proposed capital expenditure, which, in turn, ensures capital expenditure is undertaken efficiently.

For the Renmark Irrigation Trust, capital expenditure is not independently scrutinised however, the board (acting on advice from management) ensure capital expenditure is efficient.

Western Australia

Harvey Water



Expenditure on infrastructure in the Harvey Water Irrigation Area has mostly been funded by SWIAC, through member contributions. This has totalled about \$18 million over the past eight years and has included repairs, upgrades, new schemes and extensions of existing schemes. Some repairs and maintenance expenditure is also funded by SWIMCO as part of its operating program.

Gascoyne Water

Capital expenditure is determined by the need for acquisition of plant and equipment, and major items of repairs and maintenance, where ageing infrastructure inherited from the Water Corporation must be replaced. It is also determined by the Gascoyne Water Cooperative's asset management plan and expected future growth of the industry. Replacing old technology with new technology is a major component of strategic planning.

Tasmania

For schemes operated by irrigator companies but owned by the Rivers and Water Supply Commission, any new capital developments impacting on government owned infrastructure, must be authorised by the Rivers and Water Supply Commission.

4.2.6 Providing for a return on capital

Where a water business is on a path towards, or at, the upper bound of full cost recovery, provision should be made for the cost of capital, using the WACC. As mentioned previously, the WACC represents the return on debt and equity. It is the rate that investors – both the providers of debt and of equity – require in order to be compensated for the non-diversifiable risks associated with the assets in which they invest.

Earning a rate of return on capital through the WACC provides businesses with returns in excess of those required to maintain minimum financial viability (lower bound). From these they may choose to pay interest on debt and/or dividends, or to retain funds in the business to promote future investment.

Differences in the WACC applied across water businesses are largely due to differences in prevailing market conditions at the time they were calculated. For example, the current bond rate is used as the nominal, risk free rate and therefore, differences in bond rates (and other market factors) will lead to variations in the WACC across jurisdictions.

Generally, the Capital Asset Pricing Model (CAPM) is used to determine equity betas. Equity betas provide a measure of the riskiness of the investment¹².

¹² Equity betas provide a measure of the variability of return on an investment relative to the market as a whole. They are used to compare the risks a business incurs in investing in, and owning, assets against the risk of the market as a whole.



The cost of the debt component of the capital structure will vary depending on the debt to equity ratio of an efficient supplier benchmark appropriate to the business under consideration, and prevailing interest rates.

Table 2 outlines the various WACCs being applied across jurisdictions. The tables presented in Appendix E provide a more detailed summary of the parameters used to calculate WACCs in Victoria and New South Wales. It is these parameters, as well as the form of the WACC (i.e – pre-tax or post-tax) that results in variations to the WACC between jurisdictions.

Table 2: Weighted Average Cost of Capital applied across jurisdictions

Jurisdiction	WACC
New South Wales	6.5% pre-tax real
Victoria	5.2% post-tax real
Western Australia	5.63% pre-tax real

4.2.7 Providing for a return of capital (depreciation)

Where a water business is on a path towards, or at, the upper bound of full cost recovery, provision should be made for the cost of asset consumption, i.e. depreciation. Depreciation reflects the consumption of the service potential embodied in an asset through time. A reinvestment decision will be made at the end of the useful life of an asset, based on expected cash flows to be generated from its replacement¹³.

Most water businesses apply a straight-line approach to calculate depreciation. Differences arise in the implied life of the asset over which depreciation is calculated, as summarised below.

New South Wales

Straight line depreciation is applied to State Water’s existing assets (prior to 1 July 2004), with estimated lives of 160 years, and to new assets (post 1 July 2004), with estimated lives of 75 years.

Victoria

Straight line depreciation applied over the effective life span of the asset base is used by rural water storage and delivery businesses in Victoria.

The ESC will consider whether, in future, it should review the classification of assets by each of the businesses. The aim would be to achieve greater

¹³ If a water business is using the annuity approach to recover capital expenditure, the annual annuity generates sufficient cash to fund a replacement asset when the original asset reaches the end of its useful life. As a consequence, no additional adjustment is required to provide for depreciation.



standardisation of asset classes and types, enabling a more comparable regulatory depreciation allowance for each of the businesses.

Western Australia

The Water Corporation applies a straight-line depreciation schedule for all its assets, based on the indexed RAB and standard asset lives.

4.3 Operating, maintenance and administration costs

For a regulated business, allowances for operating costs are usually set to represent efficient service delivery; based on the scale of operation and the nature of the activity being undertaken. Operating costs are generally evaluated on an individual basis, and are usually benchmarked against comparable organisations.

The manner in which operating costs are determined, is independent of the manner in which capital and the cost of capital are determined and recovered. The discussion on operating, maintenance and administration costs therefore applies to all businesses, regardless of the approach they use to calculate and recover capital expenditure and the cost of capital.

New South Wales

Wholesale water

In New South Wales, operating costs for the State Water Corporation are assessed for efficiency by IPART¹⁴.

State Water provides a pricing submission to IPART, detailing the expected operating costs to be incurred over the determination period. These costs are examined by IPART and its independent consultant. From this investigation, efficient operating costs for State Water are determined. Ongoing efficiency targets may also be imposed. The efficiency factor is the expected decrease in costs to be achieved through increased productivity¹⁵.

Retail water

Retail water businesses in NSW are either irrigator controlled co-operatives or companies with shareholdings held by irrigators. These retail service providers are not regulated by IPART.

Retail irrigation entities have been requested to provide information to assist this stocktake. Coleambally Irrigation Co-operative Limited was the only retail irrigation entity to provide information prior to publication.

¹⁴ The most recent State Water wholesale water pricing determination (completed September 2006) is to apply from 1 October 2006 to 30 June 2010.

¹⁵ For State Water, an efficiency factor of three per cent per year is included in the pricing determination, as a reduction in costs that can be recovered by the water business.



Coleambally has three key mechanisms by which they assess and scrutinise the efficiency of operating, maintenance and administrative expenditure:

1. Costs are benchmarked against the ANCID irrigation benchmarking report;
2. The costs are independently reviewed by consultants. The performance of the organisation is assessed against the published accounts of other irrigation service providers, using performance indicators such as Earnings Before Interest and Taxation (EBIT) or Earnings Before Interest Taxation, Depreciation and Amortisation (EBITDA); and
3. Costs are monitored internally against similar performance indicators.

Victoria

Rural water businesses, both wholesale and retail, provide submissions to the ESC, detailing expected operating costs for a fixed determination period¹⁶. These costs are examined by an independent consultant, and efficient levels determined¹⁷.

Trends in historical recurrent expenditure, changes in demand, and productivity improvements in the business, all represent key inputs into the regulator's approval process. In addition, the impact of specific new obligations upon the business by regulatory authorities, or through requests by customers, is independently assessed.

The ESC has proposed the use of an efficiency carry-over mechanism, to provide incentive to businesses to progressively seek productivity improvements. Effectively, the efficiency carryover mechanism is employed to provide stronger incentives for businesses to supply their services efficiently. Under such a mechanism, any efficiency gains (or losses) achieved by the business can be retained for up to five years, before those benefits (losses) must be shared with customers through lower (higher) water charges.

Queensland

Efficient operating costs for each SunWater scheme are determined during the Tier 1 negotiation process. An independent process is used to review SunWater's operating (and capital) expenditure forecasts. The fairest and most equitable way to apportion these costs across schemes is also determined at this stage.

Operating costs include direct costs attributable to individual schemes, based on causal relationships. They include the day to day activities of operating and managing the schemes and the associated infrastructure, including the scheduling and the delivery of water to customers.

¹⁶ The last determination period was from 1 July 2006 to 30 June 2008.

¹⁷ An efficiency factor of one per cent per year is included for business, as usual operating costs.



Maintenance costs include both preventive and corrective maintenance costs, associated with activities intended to maintain the ongoing performance and capacity of an asset. Preventive maintenance activities that occur less than once a year are not classified as maintenance activities but as refurbishment.

Administration costs include customer service related activities, general administration and support services, and all other general costs associated with administering SunWater's water supply schemes.

Indirect costs include those associated with other activities undertaken by SunWater, which are not directly attributable to the operation and management of a specific SunWater scheme. These costs may be attributable to a collection of all, or some, of SunWater's schemes or to its non-scheme activities.

South Australia

For Central Irrigation Trust, budgets are set each year following consultation with members. It is in the irrigation Trust's best interest to provide efficient service delivery, as any inefficiency will directly impact members of the trust.

For the nine trusts managed by Central Irrigation Trust, the efficiency of expenditure is monitored by comparing water prices with five other highland pumped horticultural irrigation districts. Those districts operate along the River Murray in South Australia, Victoria and New South Wales.

Western Australia

Wholesale water

In Western Australia, the Water Corporation provides a submission to the ERA forecasting operating expenditure over a 10 year determination period. The ERA reviews the forecasts to determine reasonable and efficient cost projections.

Retail water

Harvey Water

Harvey Water's operating expenses are generally in line with those in Victoria, except that Harvey Water is also expected to make a contribution to dam safety costs, which have not yet impacted on water charges. The issue of government asset risk management and the associated costs is up for discussion. It will be more closely investigated through the ERA's upcoming wholesale water pricing inquiry.

Gascoyne Water

Operational costs are associated with: water delivery through the distribution system to each member's metered service, administration of the dual cooperatives, staff costs, wholesale water costs and regulatory costs



(financial, asset and business auditing and reporting requirements to multiple agencies).

Gascoyne Water purchases wholesale water from the Water Corporation and distributes it to their members through the piped irrigation distribution system. Water costs are closely tied to the large overhead costs incurred by the Water Corporation¹⁸.

Ord

The Ord Irrigation Cooperative doesn't charge a headworks fee. Water charges consist of asset work, the fixed cost for the running of the business, and a small volumetric charge.

Tasmania

Operating costs of the Rivers and Water Supply Commission include:

- the day-to-day storage and delivery of water to customers, including:
 1. scheduling of water orders;
 2. ensuring efficient delivery of water;
 3. operation of pump stations;
- system monitoring and surveillance;
- electricity costs for pumps and water delivery equipment;
- water licence fees;
- environmental management;
- Occupational Health and Safety;
- operation and management of scheme assets and equipment;
- contracted services.

Northern Territory

There are no significant public or private rural water providers in the Northern Territory. The Power and Water Corporation's focus is on urban water supply and delivery. Consequently, all relevant business operations are outlined in the urban storage and delivery section of the stocktake.

4.4 Other elements

The combination of operation, maintenance, administration, capital expenditure and the cost of capital (where water businesses use a RAB approach), determines the revenue requirement of a water business. As mentioned previously, allowances are made for contributed assets and

¹⁸ If Gascoyne Water (which takes 75 per cent of all water extracted by the Water Corporation) had control of the source works, it believes that wholesale water costs (fixed component) could be dramatically decreased, due to a major drop in district, regional and head office overhead charges.



government funding, including government capital works grants and operating subsidies in determining revenue requirements.

By the end of each financial year, taxes or tax equivalents are paid, and dividend payments may be made by water businesses to shareholders and/or the relevant state/territory government. Provision for taxes is included, either directly or implicitly, within the calculation of the revenue requirement¹⁹.

For a water business that is at, or close to, the upper bound of cost recovery, the normal process for determining payment of dividends, tax equivalents and other finance related costs is set out in Figure 1.

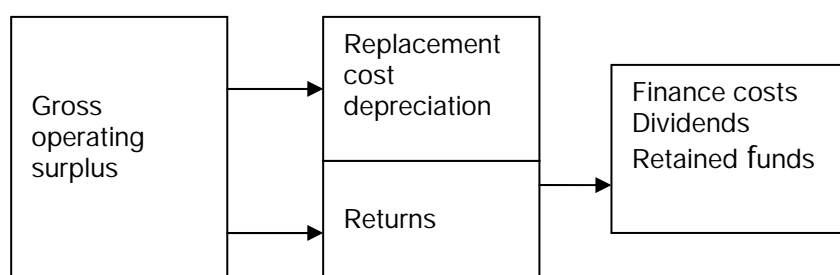


Figure 1. Elements of full cost recovery

The following sections discuss the payment of dividends and provision for taxation payments by water businesses²⁰.

4.4.1 Taxes

Privately owned rural water businesses pay taxes in accordance with standard taxation practices applicable to all businesses.

Publicly owned rural water businesses pay tax equivalents, under the National Tax Equivalence Regime (NTER). This regime is an administrative arrangement under which relevant taxation laws (Federal Tax Laws and relevant modifications) will be applied notionally to NTER entities, as if they were subject to those laws. The objective of the NTER is to promote competitive neutrality. Australia's business tax rate is currently 30 per cent.

Where jurisdictions employ the use of a pre-tax WACC, tax equivalent payments are not a separate item in the revenue requirement, but are provided for implicitly as part of the return on capital.

¹⁹ However, where a pre-tax WACC is applied to an asset base, taxes are by definition excluded.

²⁰ In certain circumstances, the regulator or price setter may wish, or be required, to include allowances for other costs that are not incurred and therefore not included within the water business' financial accounts. Examples are: provision for environmental externalities or resource management costs.



4.4.2 Dividend payments

The payment of dividends is provided for in both lower and upper bound pricing. In upper bound pricing, dividends are provided for through the return on capital.

Dividend payments are paid out of profits (or accumulated profits). This practice is considered to mirror commercial reality and therefore is competitively neutral, as required by the NWI.

As discussed above under the RAB approach, dividend payments are not provided for as a cost item in the building block. The capacity to pay dividends may be considered as a factor in determining the initial asset base. It is possible, however, that actual dividend payment may vary from those assumed in the WACC assumption from year to year. The actual ability of the business to pay dividends can be retrospectively used to assess its performance.

Where a business is using an annuity approach to recover capital expenditure, dividends are a separate item, as part of the minimum revenue requirement.

New South Wales

Wholesale water

Dividend payments for State Water are determined by negotiation between shareholders (Ministers of State, as representatives of the people of New South Wales) and State Water's board, through the Statement of Corporate Intent. Ultimate determination is reserved for the shareholders.

Negotiations typically include: maintaining an acceptable level of financial risk, as indicated by individual credit ratings; ability to service debt; capacity to finance the approved capital programme; the need for sufficient flexibility for contingencies; and dividend preferences of shareholders.

The *Public Finance and Audit Act 1983*, provides the legislative basis for dividend payments. The Act gives the Treasurer the power to require prescribed government businesses to pay dividends to the consolidated fund. This would not preclude the Treasurer requiring only the provision for payment of dividends, if so desired.

The New South Wales Treasury's financial distribution policy adopts the private sector definition of dividends, as provided by the *Corporations Act 2001*. Under that definition, a dividend may be paid only out of the profits of the company. A notional upper-limit for dividend payments is thus the current year profits plus retained earnings. In general, however, annual dividend payments are unlikely to exceed current year profits.

Retail water



Information on the payment of dividends by retail water businesses in New South Wales was not available, except for Coleambally Irrigation Cooperative Limited (and State Water).

Coleambally does not pay dividends to its shareholders/members.

Victoria

Dividends in Victoria are paid to the government by water businesses and are determined by the current government dividend policy. A commercial dividend arrangement – based on profitability and the government’s dividend benchmarks for government business enterprises – applies to Victoria’s water authorities.

Dividends for Victoria’s government business enterprises are determined with reference to two general benchmarks:

- dividend = 50 per cent of net profit after tax, and
- dividends + income tax paid or payable = 65 per cent of profit before tax.

The first benchmark is based on a review of the commercial dividend pay-out rate of selected entities in the private sector. The second benchmark is considered the appropriate distribution benchmark for water businesses because most of the water authorities are not yet in a tax paying position.

Individual dividend levels may vary from the benchmarks, due to the liquidity of the business, its capital requirements, and its gearing and interest cover.

The dividend policy reflects the principle that dividends should be paid only out of current profits or accumulated profits. This ensures that sufficient funds are retained in the authority to enable it to deliver services to its customers.

Queensland

SunWater does not pay a dividend on the revenue earned from irrigation services; this part of its business operations is charged to recover costs only. However, SunWater is required to pay dividends to its shareholders based on a share of each year’s profits, taking into account specific non-cash items.

South Australia

South Australian irrigation trusts created under the *Irrigation Act 1994* and the *Renmark Irrigation Trust Act 1936*, do not pay dividends to shareholders.

Western Australia

As the West Australian irrigation cooperatives are not government owned, they do not make dividend payments to the State Government but rather, operate to provide services at minimum cost to members.



Tasmania

Under the *Government Businesses Enterprises Act 1995*, the Rivers and Water Supply Commission is liable to pay dividends, interim dividends and special dividends to the Consolidated Fund. This is calculated in accordance with the Treasurer's instructions. Currently, dividends are not paid because there is no requirement for a return on capital.

Northern Territory

There are no significant public or private rural water providers in the Northern Territory. The Power and Water Corporation's focus is on urban water supply and delivery. All relevant business operations are outlined in the urban storage and delivery section of the stocktake.

4.4.3 Externalities

New South Wales

Where State Water is required to undertake specific actions to mitigate the effects of externalities, the cost of those mitigation measures is accepted as an operating cost incurred by State Water. The cost of mitigation is passed through to water users.

Victoria

Where costs are actually incurred by the operating entity in addressing environmental externalities, they are incorporated into the fees paid by irrigators. Such costs mainly involve water quality monitoring.

Queensland

Where costs are actually incurred by SunWater in addressing environmental externalities, they are incorporated into the fees paid by irrigators.

South Australia

Where costs are actually incurred by Irrigation trusts in addressing environmental externalities, they are incorporated into the fees paid by irrigators.

Tasmania

Where costs are actually incurred by the operating entity in addressing environmental externalities, they are incorporated into the fees paid by irrigators. Such costs mainly involve water quality monitoring.

Northern Territory

Where costs are actually incurred by the Power and Water Corporation in addressing environmental externalities, they are incorporated into the fees paid by water users.



5 Meeting revenue requirements through water charges

5.1 Structure of charges

Establishing a structure for charges is the first step in setting water charges. Generally, prices charged to rural water users for rural water storage and delivery comprise: a wholesale water charge (where applicable), an infrastructure access fee, a usage charge and an account fee. The infrastructure access fee typically represents a 'fixed charge' and the water usage charge represents the 'variable charge'²¹. Often infrastructure access charges are applied on the basis of entitlement held. Approaches to determining a structure for water charges for rural water storage and delivery differ across jurisdictions. The variations are discussed below.

New South Wales

Wholesale water

A two-part tariff is in place for wholesale water storage and delivery services provided by State Water to irrigation businesses. State Water's operating licence requires that the usage based component of water charges is not lower than 60 per cent of the revenue earned by 1 July 2008, and the fixed charge is not greater than 40 per cent by 1 July 2008.

The recent IPART determination set prices to comply with this requirement in most valleys. However, IPART kept the usage based component to 40% in some valleys, where a high proportion of sleeper and dozer licences precluded the introduction of a 60% usage component in the price tariff.

Retail water

Coleambally Irrigation Co-operative Limited applies a two-part tariff.

Irrigators on unregulated rivers in New South Wales are not yet subject to a two-part tariff. This situation will continue until a metering and monitoring programme is in place. New South Wales is in the process of rolling-out that programme, with a goal of introducing two-part tariffs for irrigation water on unregulated systems. No date has been set so far.

In groundwater systems, a two-part tariff (including a base property charge, a volume of entitlement charge, and a usage charge) applies to highly managed groundwater areas that are metered and monitored. A single tariff (including a base property charge and a volume of entitlement charge) applies to other groundwater areas that are not metered or monitored.

²¹ Fixed charges are not calculated as the residual component to be recovered after the revenue from water usage charges has been estimated, as is the case in the urban water sector.



Victoria

Businesses that supply wholesale water generally separate the accounts for their major headworks systems. This is reflected in a basin price structure for bulk water supplies, levied to all customers on the basis of entitlement held, or specific agreements through wholesale water entitlements.

Retail distribution networks are treated as individual services with individual recurrent expenditure accounts, and capital recovery through the applicable methodology. Retail and corporate services are also accounted separately and are allocated on varying bases.

Queensland

SunWater provides water to three main customer groups: irrigation retail; urban wholesale; and industrial wholesale. Direct costs, indirect costs and the calculated renewals annuity are allocated to each customer sector, based on the sectoral share of nominal water allocations, adjusted by conversion factors for differential reliability of water allocations held by each customer group.

As indirect costs have a reasonable degree of linkage with direct costs, they are allocated to schemes according to direct costs (excluding electricity and annuity costs).

SunWater allocated headworks and main channel costs on the basis of adjusted, or converted, nominal allocations, taking into account the priority of water allocations.

Most SunWater irrigation charges are structured as two-part tariffs.

South Australia

All irrigation trusts have the power to impose rates for water supply and drainage in their districts.

The *Irrigation Act 1994* allows a trust to impose water supply or drainage rates to cover the costs of supply of the service as well as the trust's other liabilities. A trust may impose a water supply rate on any land in its district that is connected to the irrigation system. It may impose a drainage rate even if land is not physically connected to its drains.

The Act sets out the variety of factors on which the trust may base rates. This allows different rates to be charged depending, for example, on the location to which the service is provided, or the quality of water supplied. Trusts are allowed to structure the rate as a fixed amount for supply, with increasing amounts based on the quantity supplied. The charging structure for drainage rates is less flexible. Drainage rates may be based on the area irrigated or drained, or the quantity of water supplied for irrigation.



Members of the four major irrigation trusts currently pay a fixed charge and a usage charge for water. The Central Irrigation Trust has based the split between fixed and variable charges on the 1994 COAG requirements for 'pay for use'. The proportion of fixed charge to variable charge is budgeted to be 17 per cent to 83 per cent in 2006/07. The Renmark Irrigation Trust recovers charges through a combination of an access charge, a usage charge and an account fee.

Western Australia

Rural schemes in Western Australia are currently grouped into five classes. Those schemes for which the costs of supply is higher, incur higher water usage charges.

For Harvey Water, irrigators pay tariffs to each cooperative. SWIAC has a fixed charge asset levy which is based on the full entitlement owned by the irrigator. An access charge differentiates between the level of service enjoyed by irrigators on the gravity pressurised, constantly available scheme, and those still on the open channel system. SWIMCO passes on the water storage charge levied by the Water Corporation and charges customers the delivery cost of each ML of water used. An additional, research and development levy, based on the volume of entitlement held, is also applied.

For the Gascoyne Water Cooperative, the biggest single external influence on water charges is the wholesale water fixed charge payable to the Water Corporation. This is in the form of a take or pay contract. Even if the cooperative sold no water at all in a season, it would still pay the Water Corporation the cost of maintaining the infrastructure required to meet the maximum allocation agreed to. The cooperative also pays a volumetric charge, based on the cost of electricity required to pump the water into the distribution system.

The cooperative passes these costs on to its members/customers using a two tier charging structure. Each member pays an annual fixed component (take or pay) for each water allocation share held, and a monthly usage charge based on the kilolitres of water taken through the customer meter. Each member also pays an asset contribution towards the sinking funds required to replace the distribution assets before they reach the end of life point.

Tasmania

Water charges for irrigation schemes in Tasmania cover: operational; management; maintenance; regulatory and compliance; finance; and, asset consumption costs (as depreciation or renewal annuities).

In the Clyde, Cressy-Longford and Winnaleah Irrigation Schemes, charges for irrigation water are on the basis of a two-part tariff. In the South-East Irrigation Scheme, charging is on the basis of fixed costs; variable costs are



incurred only for excess water, reflecting the high proportion of fixed costs for the scheme.

Northern Territory

There are no significant public or private rural water providers in the Northern Territory. The Power and Water Corporation's focus is on urban water supply and delivery. All relevant business operations are outlined in the urban storage and delivery section of the stocktake.

5.2 Calculating charges

5.2.1 Water usage charges

New South Wales

Wholesale water

Charges are calculated on a valley by valley basis for regulated water, consistent with the costs of serving these valleys.

Retail water

The water usage charge for Coleambally Irrigation Co-operative Limited is based on actual metered usage.

Victoria

Wholesale water

Usage charges for wholesale water are rarely used in Victoria. This is because the costs related to wholesale water are mainly large infrastructure costs and for the most part do not vary with volume of water used.

Retail water

Costs for delivery of water to a property are variable, based on the amount of water used.

Queensland

The usage component of the SunWater two-part tariff is 30 per cent of the total charge in most cases. It is based on the estimated average volume of the irrigation entitlement to be used over the price path.

Some schemes have a different variable component to accommodate scheme specific issues. In some cases the usage charge is set to meet the variable costs of operating the scheme.

South Australia

Usage charges for the Central Irrigation Trust and the Renmark Irrigation Trust are determined by management boards.

For Central Irrigation Trust, usage charges are based on actual metered use. For the Renmark irrigation Trust, both the water usage charge and the fixed



charge are set with reference to the recovery costs, and the funds required for future replacement of infrastructure.

Western Australia

Harvey Water

SWIMCO, as the irrigation business manager, charges a water delivery charge per megalitre of water delivered to irrigators of both cooperatives. The usage charge reflects the cost of delivering water to the irrigator, based on all company operating costs.

Gascoyne Water Cooperative

The usage charge is based on the electricity cost required to deliver the water at the agreed pressures, plus operating costs of the cooperative.

Tasmania

Usage charges for the River Clyde, Cressy-Longford and Winnaleah Irrigation Schemes are a charge per megalitre of water actually used (to cover variable costs). For the Cressy-Longford Irrigation Scheme, the volumetric charge varies over the irrigation season. The variable charge in the South-East Irrigation Scheme only applies to charges for water supplied in excess of a user's irrigation right. This is because in the South-East Irrigation Scheme, fixed costs make up the majority of the total costs.

Where variable costs are charged, they relate to the volume of water supplied and include:

- electricity charges for pumping;
- telephone, fuel and vehicle operating costs;
- additional casual employees.

5.2.2 The fixed charge component

New South Wales

Wholesale water

Fixed charges are calculated on a valley by valley basis, and are levied on the basis of the entitlement held by the customer.



Retail water

The fixed charge for Coleambally Irrigation Co-operative Limited is based on water entitlement held.

Victoria

Wholesale water

Fixed charges for wholesale water services tend to be set on basis of the entitlement held.

Retail water

Victoria is moving towards the implementation of a system of:

- unbundling water entitlements into water shares, share of delivery capacity, and a licence to use water on site;
- separating the tradeable share from the other elements; and
- enabling leasing of water and the development of a range of derivative products.

Under these new arrangements, fixed charges will remain for the delivery share (access fee), water share and the water use licence components of service costs. There will be a separate delivery charge based on the amount of water delivered.

Queensland

The fixed component of the SunWater charge, in most cases, is 70 per cent of the total charge. It is payable on the volume of irrigation entitlements held. Some schemes have a different fixed component to accommodate scheme specific issues, in cases where the fixed charge is set to meet the scheme's fixed costs.

South Australia

For Central Irrigation Trust, the fixed component of the charge is based on allocation held. For the Renmark Irrigation Trust, both the water usage charge and the fixed charge are set with reference to the required recovery costs, and the funds required for future replacement of infrastructure.

Western Australia

Harvey Water

SWIAC charges an Asset Levy per water entitlement share required to maintain and improve the assets. It is based on a renewals method of charging for the asset works and is directly related to the number of shares in the cooperative owned by the irrigator.

SWIMCO applies a water storage charge that reflects a similar charge paid to the Water Corporation. It is applied to all shares owned by the irrigator.



Gascoyne Water

The fixed charge is based on the cost of maintaining the assets required to extract and deliver the water, and to maintain the viability of the cooperative, regardless of variations in sales volumes.

GWAMCO and GWC - each member pays a fixed annual Asset Maintenance Contribution and a fixed charge per megalitre of allocation (take or pay).

Tasmania

For all four irrigation schemes in Tasmania, fixed charges apply per megalitre of irrigation right held.

5.3 Revenue shortfalls and efficient pricing

In deciding on the level of water charges, a number of additional factors are taken into consideration. These include: whether to implement locational pricing; how to factor in social equity considerations; and how to smooth prices so as to avoid sudden price shocks.

In some jurisdictions, water pricing principles require that socio-economic considerations are factored into pricing decisions. Further, environmental and other public benefit outcomes, may also need to be factored into pricing decisions.

Where social equity considerations result in a water business not recovering the full costs of providing water storage and delivery services to users through its charges, subsidies may be provided by government. This may be either as a direct operating subsidy to cover the revenue shortfall, or as a Community Service Obligation (CSO) to recognise that water may be provided to some regions/customers at less than full cost.

Different levels of price discrimination are used by most water businesses. Some degree of cross-subsidisation between customers may arise when nodal pricing is not used to charge water users. However, the costs of implementing nodal pricing may outweigh the benefits.

5.3.1 Socio-economic considerations, community service obligations and subsidies

New South Wales

In NSW, IPART considers socio-economic factors when setting both urban and rural water charges. As part of its pricing inquiries, IPART usually undertakes impact assessments of the effects of its proposed charges on rural communities. It also undertakes billing analysis, to assess the impact of typical bills on water users under its proposed tariffs.

Water pricing in New South Wales has gradually sought to move towards full cost recovery. Pricing determinations undertaken by IPART have been (and



continue to be) implemented over a price path period, the most recent extending over four years. IPART and the New South Wales government recognise the socio-economic impacts of movements towards full cost recovery. They have, therefore, sought to gradually phase in price increases to avoid the possibility of disruptive effects caused by sharp increases in water charges that may be necessary to achieve full cost recovery. . Such measures are designed to allow irrigators to adjust and implement progressive business planning strategies.

State Water allocates the costs of water storage and delivery for wholesale water on a valley by valley basis. In arriving at its determinations for wholesale water charges, IPART considers the ability of wholesale water users to absorb any price increases proposed by State Water.

The New South Wales Government provides an operating subsidy to State Water to cover revenue shortfalls on wholesale water supply services. The value of this subsidy is currently around \$10 million per year but is decreasing. Most valleys will achieve full cost recovery over the next four years, as a result of the price increases outlined under IPART's 2006 price determination.

However, there are a number of examples in New South Wales where a subsidy is provided, or where full cost recovery is never likely to be achieved. Examples include:

- in valleys with a small customer base where prices would need to increase considerably to reach full cost recovery, especially since they started from a low base.
- in valleys where schemes have been constructed in areas that receive high average rainfall levels, which reduces demand.
- riparian users who are not required to hold a licence and therefore, do not pay water charges.
- where IPART have determined that an incremental transition towards full cost recovery is required, to minimise the disruptive effects of sharp increases in water prices on users.
- in extreme drought conditions, New South Wales may elect to waive water charges. However, the government has other drought relief measures available to it. The decision to waive charges would only usually be made in extreme circumstances, and where other measures had not achieved the desired level of relief.

In the past, wholesale water discounts have been provided to irrigation businesses by State Water. These discounts were, in effect, a cross-subsidy from river pumpers to irrigation corporations, even though not all irrigation corporations received the discount. These cross subsidies were removed by IPART in the 2006 charging determination, replaced instead with an annual



rebate. The rebates will more closely reflect the value of the benefits that the irrigation corporations and districts provide to State Water²².

Victoria

Socio-economic considerations were taken into account by the Victorian Government in setting the opening RAB for rural water authorities.

More recently, they have also been taken into account by the provision of \$46 million as a one-off rebate of up to \$5,000, to cover the fixed charges of customers receiving less than 50% of their normal entitlement. The assistance being offered is in recognition of the exceptional circumstances facing the rural sector in 2006-07, as farmers adjust to the ongoing drought.

Queensland

SunWater recognises the socio-economic impacts of price changes. It has elected to implement long (five year) price paths, with price increases 'smoothed' over the duration of the price path.

The Queensland Government may choose to subsidise SunWater, to cover the costs of regulatory obligations for dam safety, on a case by case basis.

The Queensland Government has provided SunWater with a subsidy to lower the cost of water to irrigation customers for the five year price path. The decision to provide a CSO, and its size, are based on the level of price increases considered to be reasonable for users.

However, consideration is being given to the financial viability of a number of SunWater schemes subject to CSOs, and how those CSOs can be progressively reduced.

South Australia

South Australian irrigation trusts contribute to the funds of NRM Boards through the NRM water levy. They do not receive any operational or management subsidies. However, they do not currently contribute to MDBC costs that include the storage and delivery costs of providing water to South Australia. The community, through consolidated funds and the Save the River Murray Levy, cover South Australia's contribution to MDBC costs.

Renmark Irrigation Trust's irrigation works are exempt from local government rates, or rates under any other Act. Irrigation trusts administered under the *Irrigation Act 1994*, do not enjoy the same advantage. However, a local council may grant a discretionary rebate on rates to trusts. South Australian irrigation trusts are also eligible to apply for competitive Government Grants.

²² Any discounts that relate to water management activities undertaken by the Department of Natural Resources, will be phased out over the course of the determination period. For further detail see the Stocktake – Water resource planning and management.



Western Australia

The ERA is governed by the Economic Regulation Authority Act 2003, which, among other things, requires the ERA to consider the long term interests of customers on price, quality and reliability of services. It also specifies a need to promote transparent decision making processes in recommending prices. Measures to reduce the impact of price increases on customers include, phasing in these increases over a price path period.

The Western Australian Government currently pays operating subsidies to irrigation co-operatives. As a condition of receiving these subsidies, co-operatives are obligated to phase-in higher charges, as the subsidies are reduced. The Ord Irrigation Co-operative is phasing in increased charges to growers over 10 years. It will cease receiving operating subsidies in 2012-13. The Carnarvon Irrigation Co-operative is phasing in its increased charges to growers over fifteen years. It will cease receiving operating subsidies in 2018-19.

Tasmania

There are no specific CSOs that impact on the River and Water Supply Commission's activities.

In terms of CSOs for irrigation schemes that are run as Government Business Enterprises; the Treasurer's Instruction GBE 09-60-01 relating to CSO's would apply²³.

In Tasmania, financial costs (interest and repayment of the loans taken out to establish irrigation schemes) are not included in the revenue target for irrigation schemes. They are treated as a government subsidy to the scheme.

Northern Territory

There are no significant public or private rural water providers in the Northern Territory. The Power and Water Corporation's focus is on urban water supply and delivery. All relevant business operations are outlined in the urban storage and delivery section of the stocktake.

5.3.2 Cross-subsidies

There are many definitions of a cross-subsidy. At the simplest level, a cross subsidy can be said to be in place when the consumption (payment) of one user, or a group of users, subsidises the consumption (payment) by another.

Alternatively, and as Baumol and Sidak (1994: 62) note:

²³ Treasurer's Instructions can be found at <http://www.treasury.tas.gov.au/treasurersinstructions>



A cross-subsidy is present when the average incremental revenue contributed by a product or firm is insufficient to cover its average incremental cost, but the firm nevertheless earns sufficient revenue from all its products to cover its cost of capital together with its other outlays²⁴.

Under this definition, a cross subsidy does not exist as long as cost recovery is within a band where: the price floor equates to the incremental (or avoidable) cost, and the price ceiling equates to stand-alone cost²⁵.

Definitions in some jurisdictions may differ slightly from the above definition. The question of whether a cross-subsidy exists will depend on the definition applied.

New South Wales

Bulk water charges in New South Wales reflect locational and other physical characteristics that result in cost differences associated with service and delivery. In New South Wales, there are 11 regulated river valleys, 12 unregulated river valleys (reduced to 7 regional price levels) and 12 groundwater valleys (reduced to 5 regional price levels). There is, therefore, no cross subsidy between valleys.

New South Wales acknowledges that there could be some scope for making prices more cost reflective within valleys, but, the benefits of doing so would need to outweigh the costs.

For the private co-operative structures, cross-subsidies between services essentially remain an issue for the customer elected board. If customers are of the view that cross-subsidies exist, are material, and should be removed, they can pressure the board to act. The ultimate sanction would be to remove the board. Minority groups affected by cross-subsidies have limited ability to influence decisions of the board.

Victoria

Most water charges are set at a district level in consultation with customer service committees. This arrangement has led to a strong culture of each district paying its own way and the removal of any material cross-subsidies in the rural water sector. The ESC's recent decision only approved average water charges and did not scrutinise individual tariffs at a district level. However, the next price review will allow the ESC to look at the structure of individual prices and, in turn, assess whether any cross subsidies exist.

²⁴ Baumol, W.J and J.G Sidak, 1994, *Toward Competition in Local Telephony*, Washington DC: AEI Press.

²⁵ Calculation of the incremental and stand alone cost of serving each customer or small group of customers may be difficult. For this reason it may be difficult to identify the extent to which cross subsidies exist between sectors and between customers across different water supply schemes and within a water supply scheme.



Queensland

Within supply schemes SunWater applies nodal pricing to river and channel segments, and, in some instances, to different segments within channel systems.

The decision to maintain postage stamp pricing within segments (river and channel), is often related to the circumstances under which the scheme was initially established.

The process for setting water charges in rural schemes throughout Queensland, has been one of negotiation between SunWater and its customers (through the SunWater Tier 1 and Tier 2 price negotiation process). These negotiations have often, been carried out with the circumstances under which the scheme was implemented in mind. As a result, there is no consistent approach between schemes as to the extent to which postage stamp pricing is applied. As an example, re-lift areas that are added to an existing scheme might be differentially priced. Re-lift areas that were established as part of the original scheme, are often not differentially priced, despite the presence of variations in capital and delivery costs. This is based on the nature of the initial deal under which the scheme was implemented. Through the Tier 1 and Tier 2 negotiations, irrigators within the water supply schemes signed off on the new price paths.

South Australia

For South Australian irrigation trusts cross-subsidisation between services essentially remains an issue for the customer elected board. If customers are of the view that cross-subsidies exist, are material, and should be removed, they can vote to have them removed.

Western Australia

For the private co-operative structures cross-subsidisation between services essentially remains an issue for the customer elected board. If customers are of the view that cross-subsidies exist, are material, and should be removed, they can vote to have the board removed. Minority groups affected by cross-subsidies have limited ability to influence decisions of the board.

Gascoyne Water

There are no cross-subsidies involved in water supply by Gascoyne Water. Any differences in charging for services between irrigation and stock and garden customers, is simply a reflection of the volumes required by the customers and the related maintenance levels for that volume. For example, an irrigator pays \$1900 per annum asset contribution and \$240 per megalitre consumption charge. A stock and garden customer pays only \$144 asset contribution and \$550 per megalitre consumption charge, to reflect the high cost of asset maintenance and renewals relative to volume taken.



Tasmania

Changes to the cost-recovery model for the Cressy-Longford Irrigation Scheme have involved the staged removal of a cross-subsidy. It applied to a specific group of users relying on a pumping system (previously power charges for the pump were paid by all scheme users). There are now no cross-subsidies.

Northern Territory

There are no significant public or private rural water providers in the Northern Territory. The Power and Water Corporation's focus is on urban water supply and delivery, all relevant business operations are outlined in the urban storage and delivery section of the stocktake.



Appendix A: Characteristics of Rural Water Businesses

The following section provides a brief description of rural businesses involved in supplying water services for irrigation and stock and domestic purposes. The details are summarised in the tables below.

Murray Darling Basin Commission

River Murray Water is an operating business unit of the Murray Darling Basin Commission (MDBC) that manages the supply of wholesale water to Victoria, New South Wales and South Australia from MDBC controlled assets. Within each jurisdiction, a water business is contracted as the MDBC operating authority (e.g. State Water in New South Wales, Goulburn Murray Water in Victoria, and SA Water in South Australia). Recurrent and capital expenditure, and associated recovery of costs, are subject to relatively complex legislative arrangements. These arrangements are detailed in the relevant sections where possible.

It is also noted that as River Murray Water supplies wholesale water services to each state, the state is responsible for the allocation of charges to individual businesses. The application of these costs to individual businesses is not consistent across jurisdictions.

New South Wales

Wholesale water

State Water provides wholesale and retail water services to the rural water sector in New South Wales.

Retail water

State Water provides wholesale water services to a number of privately owned irrigation corporations: Murray Irrigation Limited; West Cororgan; Moira Irrigation Scheme; Eagle Creek Scheme; Murrumbidgee Irrigation Limited; Coleambally Irrigation Co-operative Limited; and Jemalong Irrigation. These irrigation corporations provide retail water services to irrigators in New South Wales.

Further information was provided by Coleambally Irrigation Co-operative Limited on the nature of rural water supplied by the business. Coleambally provides retail, irrigation and stock and domestic water and associated services, to 342 customers and 477 properties. Further details on Coleambally's business operations are provided in the Table 2.

In addition, State Water provides retail services to a number of rural irrigators who pump directly from regulated and unregulated rivers and from the groundwater system.



Victoria

Wholesale water

Three water businesses, Goulburn Murray Water, Southern Rural Water and, to a lesser extent, Melbourne Water, supply wholesale water for rural sector application.

Retail water

The majority of retail water services to the rural sector are provided by the following water businesses:

Goulburn-Murray Water is responsible for delivery of rural water services to customers on around 20,000 serviced properties. These properties are located within the six management areas of Shepparton, Central Goulburn, Rochester-Campaspe, Pyramid-Boort, Murray Valley and Torrumbarry, along the river and groundwater systems of northern Victoria. Each management area has separate pricing structures for network water supply services, irrigation drainage services, surface water diversion services, groundwater diversion services and stock and domestic services.

First Mildura Irrigation Trust (FMIT) provides network water supply and drainage services direct to irrigators in Mildura, as well as stock and domestic services.

Lower Murray Water is responsible for delivering network water supply and drainage services to irrigators along the Murray, and stock and domestic services to the Millewa and Carwarp/Yelta districts.

GWM Water provides network water supply services, surface water diversion services, groundwater diversion services and stock and domestic services to 7,000 rural customers.

Southern Rural Water provides network water supply to almost 1,400 customers; surface water diversion and groundwater diversion services to 4,988 customers; and stock and domestic services to 1,600 properties in three irrigation districts in Victoria –Macalister, Bacchus Marsh and Werribee.

Coliban Water and Wannon Water also provide a material volume of rural water supply for irrigation and stock and domestic purposes from their infrastructure.

Queensland

Wholesale water

The main rural wholesale business in Queensland is SunWater. SunWater provides wholesale (and retail) water to a large number of government owned water boards; the largest being the North Burdekin Water Board, Pioneer Valley Water Board and South Burdekin Water Board.

Retail water



SunWater supplies retail water through its 27 water supply schemes. In addition, Water boards supply water to a range of users, including local governments, irrigators and landholders (for stock and domestic purposes). A number of water boards also operate for the sole purpose of providing drainage services to irrigators.

South Australia

Retail water

Irrigation companies

In South Australia individual private trusts source water directly from the River Murray and provide retail supply to customers. There are nine individual irrigation trusts (Mypolonga, Cadell, Waikerie, Kingston, Moorook, Cobdogla, Berri, Loxton, and Chaffey) that are collectively managed by the Central Irrigation Trust. The nine irrigation trusts are privately owned by the 1478 irrigation members (who contract the Central Irrigation Trust to manage and operate their systems under a 3 year agreement). Golden Heights, Renmark, and Sunlands make up the other three major irrigation trusts in South Australia.

South Australia also has many smaller private irrigation trusts with approximate allocations of 8GL or less. They are listed in Table 1.



Table 1: Private irrigation trusts in South Australia

Organisation	Irrigation District/Area/Trust	Approx Allocation (GL)
Lyrup Village	• Lyrup	4.0
Riverglades	• Riverglades (Murray Bridge)	0.5
Lock 4	• Lock 4 (Loxton)	1.0
Greenways	• Greenways (Nildottie)	2.0
Rilli	• Rilli (Loxton)	0.5
Woodlane	• Woodlane (Murray Bridge)	1.0
Paringa Heights	• Paringa	1.0
Cowirra South, Cowirra North, Neeta Wall Flat, Jervois Pompoota, Toora, Long Flat, River Glen, Montieth Woods Point, Glen Lossie, Mypolonga, Mypolonga North, Long Island	• Lower Murray Reclaimed Areas (swamps), which cover their own district and are individually administered by private trust	0.2 – 8.0
Burdett	• Lower Murray Reclaimed Areas (swamps).	0.2
Other	• Pyap • Sherwood • Media	0.6 0.7 0.7

All of South Australia's irrigation trusts (except Renmark) operate under the *Irrigation Act 1994*. The main purposes of this Act was to provide:

- an overarching framework for management of irrigation districts; and
- a framework for the transition of government-owned businesses to grower-owned businesses.

The Irrigation Act 1994 sets out the governance arrangements for all irrigation authorities, including: provisions establishing trusts as bodies corporate,, providing for elections of presiding members; voting rights; and conduct of meetings. It also details the powers of trusts, including the power to enter and occupy land to build and maintain infrastructure, and to levy rates on users of the irrigation and drainage services.

Renmark Irrigation Trust was established under the *Renmark Irrigation Trust Act 1936*. This Act has remained a stand-alone Act for management of the



Renmark irrigation district, the purpose of which is to consolidate the water rights issued under the previous arrangements of the Renmark districts, and to supply water to ratepayers. This Act specifies that individual growers have no legal right to the Trust's water licence itself, and the Trust may not impose rates without the Minister's approval²⁶.

High-grade recycled water is also delivered to irrigators on the Northern Adelaide Plains from the Bolivar Waste Water Treatment Plant²⁷. Water Reticulation Systems Virginia currently runs this private operation. It will be transferred to SA Water after a period of 20 years. Recycled water constitutes only a small component of the irrigation water use in South Australia.

SA Water

SA Water systems supply essentially urban, and to a lesser extent stock and domestic supplies across the state (24,000 customers in country areas). Although the quantities are small, given the application of urban water charges, some of these supplies are used for irrigation purposes.

SA Water also provides services to some irrigators and an irrigation water supplier, by transporting their water via SA Water systems at a fee. Again the quantities involved are small in the state context.

SA Water's focus is mainly on urban water supply. It has a more limited role in providing rural, stock and domestic water, and certainly irrigation water. All these activities are taken into account in its overall business operations, as outlined in the urban water storage and delivery section of the stocktake.

Western Australia

Wholesale water

The Water Corporation supplies wholesale water to the grower cooperatives, Ord Irrigation Cooperative, and the Gascoyne (Carnarvon) Water Cooperative.

The Water Corporation provides Harvey Water with a Water Storage Service, in which Harvey Water's water, provided by right of licence from Department of Water, is stored in, and accessed from, Water Corporation's dams.

Retail water

The four irrigation co-operatives supplied by the Water Corporation provide retail irrigation water in Western Australia. Harvey Water comprises two cooperatives called South West Irrigation Asset Cooperative Ltd (SWIAC) and South West Irrigation Management Cooperative Ltd (SWIMCO). SWIMCO is

²⁶ Both the *Irrigation Act 1994* and the *Renmark Irrigation Trust Act 1936* are currently being reviewed.

²⁷ Approximately 12 GL last irrigation year; September to September



the trading entity and has the trading name of "Harvey Water". Gascoyne Water comprises of two cooperatives, Gascoyne Water Cooperative (GWC), and the Gascoyne Water Asset Mutual Cooperative (GWAMC).

Tasmania

Retail water

The vast majority of irrigation water in Tasmania is sourced from unregulated streams or on-farm storages, utilising privately funded infrastructure. Less than 10 per cent of irrigation water used is sourced from publicly-owned infrastructure. The Rivers and Water Supply Commission, Cressy-Longford Irrigation Scheme Limited and Winnaleah Irrigation Scheme Limited, provide retail water supply services to irrigators.

Northern Territory

Retail water

The Power and Water Corporation provides water for irrigation through its Darwin, Katherine, Tennant Creek and Alice Springs operations to a small number of customers. The majority of water used for irrigation purposes in the Northern Territory is provided through privately owned, on-property, groundwater based systems.

There are no significant public or private rural water providers in the Northern Territory. The Power and Water Corporation's focus is on urban water supply and delivery. All relevant business operations are outlined in the urban water storage and delivery section of the stocktake.



Table 2: Rural wholesale water businesses

Jurisdiction	Organisation responsible	Services provided	Corporate Form	Area of operations	Number of customers serviced	Average annual water volumes supplied (GL)
Multi-jurisdictional	River Murray Water	Wholesale water				
NSW	State Water	Wholesale storage & wholesale water delivery	State Govt-owned corporation	Regional & rural NSW	Serviced 6,200 customers in 2003/04	Supplied 5,000 GL of water in 2003/04
Victoria	Southern Rural Water	Wholesale storage, wholesale water & rural water supply for irrigation customers, licensing of diversions and groundwater supplies	State Govt-owned statutory authority	Entire southern Victoria (western district & Gippsland)	3 major supply systems – 3 schemes 3 wholesale customers	,
	Goulburn-Murray Water	Wholesale storage, wholesale water & rural water supply for irrigation customers, licensing of diversions and groundwater supplies	State Govt-owned statutory authority	Northern Victoria – Goulburn & Murray Valley & Loddon River	3 major supply systems – 6 schemes 2 rural, 5 urban authorities	
Queensland	SunWater	Wholesale storage & wholesale water supplier mainly for urban, power stations & mines & wholesale water and rural water supplier for irrigation	State gov't-owned corporation	All regions of Queensland.	Serviced 5,500 customers in 2004/05	Supplied 1,513 GL of water in 2004/05

Jurisdiction	Organisation responsible	Services provided	Corporate Form	Area of operations	Number of customers serviced	Average annual water volumes supplied (GL)
South Australia	Water sourced directly from River Murray by Irrigation Trusts and SA Water. SA Water also sources water from other water assets of the state.	Delivery of water to Rural water users		South Australia	Limited Stock and domestic water, as well as irrigation supply – SA Water Irrigation – 4 major Irrigation Trusts	510GL was diverted to SA rural water sector from the Murray in 2004/05
Western Australia	Water Corporation	Wholesale storage & wholesale water	State Govt-owned corporation	Metropolitan Perth, surrounding towns & regional areas		
Northern Territory	Power and Water	Wholesale storage & wholesale water	NT Govt-owned corporation	Northern Territory cities & towns		

Table 3: Rural retail water businesses

Jurisdiction	Organisation	Services provided	Corporate form	Area of operation	No. of schemes/ regions	Number of customers/properties serviced	Average annual water volumes supplied (GL)
NSW	State Water	Rural water supply for irrigation and stock and domestic customers	State Govt-owned corporation	Regional & rural NSW	14 regulated river systems	Serviced 6,200 customers in 2003/04	Supplied 5,000 GL in 2003/04
	Coleambally	Rural water supply for irrigation and stock and domestic customers	Each irrigator is a shareholder in a private cooperative	Coleambally Irrigation Area, Coleambally Outfall Area and Kerarbury Area. Approximately 100,000 hectares of irrigated farms and 300,000 hectares of stock water in Outfall Region.	1 supply system – 1 scheme	Services 342 customers and 477 properties	Supplied 362 GL in 2003/04
	Murray Irrigation	Rural water supply for irrigation customers	Each irrigator is a shareholder in a private company	North of Murray River from Mulwala to Moulamein	1 supply system – 1 scheme	Services 2,400 customers	Supplied 1,126 GL of water in 2003/04
	Murrumbidgee	Rural water supply for irrigation customers	Each irrigator is a shareholder in a private company	Griffith & surrounding areas	1 supply system – 1 scheme	Services 24,757 properties	Supplied 862 GL of water in 2003/04
	Western Murray	Rural water supply for irrigation customers	Private company	South-western NSW	1 supply system – 1 scheme	330 irrigation customers in 2003/04	Supplied 30 GL in 2003/04
	West Corugan	Rural water supply for irrigation customers	Statutory authority	Area bounded by Corowa, Jerilderie, Berrigan & Rennie	1 supply system – 1 scheme	Serves approximately 300 properties	Supplied 46 GL in 2003/04
	Jemalong Irrigation	Rural water supply for irrigation customers	Unlisted public company	Near Forbes in central NSW	1 supply system – 1 scheme	119 irrigation customers in 2003/04	Supplied 3.6 GL in 2003/04

Jurisdiction	Organisation	Services provided	Corporate form	Area of operation	No. of schemes/ regions	Number of customers/properties serviced	Average annual water volumes supplied (GL)
NSW	Eagle Creek Scheme						
	Moirra Irrigation Scheme						
Victoria	Goulburn-Murray Water	Rural water supply for irrigation customers, licensing of diversions and groundwater supplies	State Govt-owned statutory authority	Northern Victoria – Goulburn & Murray Valley & Loddon River	3 major supply systems – 6 schemes	Services 19,000 properties	Supplied 1400 GL in 2004/05. Total Entitlements about 1800GL
	Southern Rural Water	Rural water supply for irrigation customers, licensing of diversions and groundwater supplies	State Govt-owned statutory authority	Entire southern Victoria (western district & Gippsland)	3 major supply systems – 3 schemes	Services 1,300 customers	Supplied 165 GL in 2004/05 Total entitlement about 266GL
	Lower Murray	Rural water supply for irrigation customers & urban water supplies, licensing of diversions and groundwater supplies	State Govt-owned statutory authority	North-western Victoria – Mildura, Redcliffs and Meribeen	1 major supply system – 3 schemes	Services 4600 customers	Supplied 87 GL of water in 2004/05 Total entitlement about 98GL
	First Mildura Irrigation Trust	Rural water supply for irrigation customers, licensing of diversions and groundwater supplies	Trust	Around Mildura	1 major supply system – 1 scheme	Services 1,800 customers	Supplied 50 GL in 2004/05 Total entitlement of 66GL
	Grampians-Wimmera-Mallee	Rural water supply for irrigation customers & urban water supplies, licensing of diversions and groundwater supplies	State Govt-owned statutory authority	Wimmera & Mallee (western Victoria)	2 major supply systems – 1 scheme	Services 6,800 customers	Delivered about 35GL in 2004/05, In a year of full supply would deliver about 149GL

Jurisdiction	Organisation	Services provided	Corporate form	Area of operation	No. of schemes/ regions	Number of customers/properties serviced	Average annual water volumes supplied (GL)
Queensland	Sunwater	Wholesale storage & wholesale water supplier mainly for urban, power stations & mines and retail water provider for irrigation	State govt-owned corporation	All regions of Queensland	27 water supply schemes and a number of private retail water providers	Serviced 5,500 customers in 2004/05	Supplied 1,513 GL in 2004/05
South Australia	Central Irrigation	Rural water supply for irrigation, drainage, industrial, stock, domestic and other customers	Administrative organisation	From Renmark to Mypolonga	Manages 9 irrigation trusts, which have 13 separate irrigation systems.	1,538 irrigation customers in 2003/04.	Supplied, on average, 105 GL per year to irrigators between 2002 and 2006
	Golden Heights	Rural water supply for irrigation customers	Incorporated trust	Waikerie and surrounds	1 district	60 irrigation customers in 2003/04	8GL in 2004/05
	Renmark	Rural water supply for irrigation customers	Incorporated trust	Renmark and surrounds	1 district	Approximately 700 irrigators and 20 private diverters	41GL 2004/05
	Sunlands	Rural water supply for irrigation customers	Incorporated trust	Waikerie and surrounds	1 district	65 irrigation customers	8 GL in 2004/05
Western Australia	Ord Irrigation	Rural water supply for irrigation customers	Fully incorporated private cooperative	Farming land around Kununurra in north western WA	1 supply system – 1 scheme	Serviced 127 irrigation customers in 2003/04	Supplied 210 GL in 2003/04
	Harvey Water	Rural water supply for irrigation customers	Private cooperative	Based inland of Bunbury in southern WA	7 supply dams – 1 scheme	558 irrigation customers in 2003/04	Supplied 100 GL in 2003/04

Jurisdiction	Organisation	Services provided	Corporate form	Area of operation	No. of schemes/ regions	Number of customers/properties serviced	Average annual water volumes supplied (GL)
Western Australia	Gascoyne Irrigation	Rural water supply for irrigation and non-potable water customers	Private cooperative	North-west coast of Western Australia	1 supply distribution system – 1 scheme	169 irrigation customers in 2003/04	2.3 GL in 2003/04 from distribution system
	Preston Valley Irrigation Cooperative	Rural water supply for irrigation customers	Private cooperative	Preston Valley			
Tasmania	Rivers and Water Supply Commission	Rural water supply for irrigation customers	Government Business Enterprise	South-East Tasmania and Clyde River Valley, central Tasmania	2 irrigation schemes	143 irrigation customers in 2003/04 (SE Tas) 30 customers in 2005/06 (Clyde)	3.2 GL in 2003/04 (SE Tas) 5.8 GL in 2005/06 (Clyde)
	Cressy-Longford Irrigation Ltd	Rural water supply for irrigation customers	Private company – operating assets and day-to-day operations Rivers and Water Supply Commission – owns fixed assets	Inland, south-west of Launceston	1 supply system – 1 scheme	118 irrigation customers in 2003/04	9.3 GL supplied in 2003/04
	Winnaleah Irrigation Ltd	Rural water supply for irrigation customers	Private company – operating assets and day-to-day operations Rivers and Water Supply Commission – owns fixed assets	Derby/Winnaleah area of North Eastern Tasmania	1 supply system – 1 scheme	45 irrigation customers in 2003/04	4.8 GL supplied in 2003/04

Jurisdiction	Organisation	Services provided	Corporate form	Area of operation	No. of schemes/ regions	Number of customers/properties serviced	Average annual water volumes supplied (GL)
Northern Territory	Power and Water Corporation	Provides water for irrigation for a small number of customers.	Govt-owned corporation	Darwin, Tennant Creek and Alice Springs	Most irrigation systems are private, on-property, groundwater based systems.	N/A	N/A



Appendix B: Legal and Regulatory Framework

Table 1(a) –New South Wales, Victoria and Queensland

	NSW	QLD	VIC
Who sets prices?	Independent Pricing and Regulatory Tribunal for State Water Individual private irrigation co-operatives	SunWater	Essential Services Commission
Under what head of power?	<i>IPART Act</i>	In accordance with the Government Owned Corporations Act 1993, and in accordance with Queensland Government policy made the subject of a joint Minister's and Treasurer's direction issued under the <i>Water Act 2000</i>	<i>Essential Services Commission Act 2000 (Vic); Water Industry Act 1994 (Vic)</i>
Are there pricing principles?	Yes – for State Water	Yes	Yes
Who sets principles?	Parliament (Act); also some discretion with independent regulator IPART	Queensland Government	Minister recommends to Governor in Council
Under what instrument?	IPART Act – s15(1)	Joint Minister's and Treasurer's direction issued under the <i>Water Act 2000</i>	Order in Council (Water Industry Regulatory Order)
Who applies them? <i>(e.g. regulator, Minister)</i>	Independent state-based regulator (IPART) for entities it regulates	SunWater applies principles as part of negotiations with customers	Independent state-based economic regulator (ESC)
Binding or discretionary?	Binding	Binding	Binding
Applied to what?	IPART regulation applies to bulk water supply	Rural irrigation water prices for SunWater water supply schemes	Retail water services Retail recycled water services Retail sewerage services

	NSW	QLD	VIC
			Storage operator and bulk water services Bulk sewerage services Bulk recycled water services Metropolitan drainage services Irrigation drainage services Connection services Services to which developer charges apply Diversion services

Table 1(b) –South Australia, Tasmania and Western Australia

	SA	TAS	WA
Who sets prices?	Irrigation trusts set water charges for their respective irrigation districts	The relevant irrigation entity sets water charges for their respective irrigation schemes.	
Under what head of power?	<i>Irrigation Act 1994 and Renmark Irrigation Trust Act 1936</i>	<i>Irrigation Clauses Act 1973</i>	
Are there pricing principles?	None set in transparent instruments	None set in transparent instruments However, where the Tasmanian government owns scheme infrastructure, water charges are to be set to recover at least the lower bound of cost recovery, consistent with the NWI The Treasurer’s Instruction GBE 09-60-01 relating to CSOs applies to irrigation schemes that are run as Government Business Enterprises	
Who sets principles?	Irrigation trusts	Treasury	
In what instrument?	Set by trusts, under legislation	CSO policy: Treasurer’s Instruction GBE 09-60-01	
Who applies them? <i>(e.g. regulator, Minister, supplier)</i>	Irrigation trusts	Irrigation entities who are Government Business Enterprises	ERA undertakes analysis; but Minister chooses whether or not to apply
Binding or discretionary?	Binding	Discretionary	
Applied to what?	Fixed and variable charges	Consideration for CSOs	

Appendix C: ESC Approach to Calculating the Renewals Annuity for Victorian Water Businesses

The ESC believes a renewals annuity amount should:

- provide sufficient revenue to undertake reasonable forecasts of renewals expenditure
- reflect efficient forecasts of expenditure
- have regard to a long term planning horizon (beyond the regulatory period)
- enable customers, or potential customers, to readily understand the manner in which it is calculated
- be reviewed on a regular basis.

The key inputs and assumptions in arriving at a renewals annuity amount include:

- assets that are included in the annuities calculation
- term of the annuity and
- discount rate adopted.

To accurately calculate a renewals annuity, businesses must have an accurate future renewals profile, based on a good understanding of existing assets and their condition and degradation characteristics. Businesses also need to have a good understanding of how current assets and future expenditure relate to demand in the long term.

The key choices regarding method, assumptions and inputs underpinning the calculation of a renewals annuity include:

- nature of assets included in the annuities calculation. The renewals approach is best applied to assets that form an integrated system, where the life of the whole system can be indefinitely extended by the refurbishment and 'renewal' of the component parts. In other jurisdictions regulators such as OFWAT have taken the position that non-infrastructure assets — assets with a defined useful life and which do not form part of a contiguous system — should be depreciated using conventional approaches. A common delineation between infrastructure and non-infrastructure assets is critical to comparability of renewals estimates between businesses.
- annuity term — the term over which the annuity is calculated. In theory, the term should capture a full asset cost cycle for the business. Care should be taken to ensure that there are no 'spikes' in capital maintenance expenditure requirements just outside the chosen annuity period. However, the term also needs to take into account the confidence that businesses have in forecasts, the accuracy of which will necessarily decrease as the term increases.



- discount rate — the discount rate is applied to determine the present value of the payment stream that equates to the expected stream of future renewals expenditure. The discount rate impacts on the renewals calculation. It is used to both discount a stream of future capital maintenance expenditures to a present value, and then to convert this present value to an annuity.

In forming a decision on the basis for annuity calculations, the ESC is informed by independent assessment of the company asset management plan assumptions used to construct the annuity estimate. The Commission noted in its price determinations that the three businesses that continued to use annuity approaches, were inconsistent in their application of each of the three points listed above.

While some businesses have retained the annuity method, all constructed assets from 1 July 2006 are now subject to the RAV based approach. The RAV valuation methodology reflects the economic value of the business at current prices, while ensuring long-term financial viability criteria can be met. The opening valuation is subject to ministerial approval. Any future investment is then rolled into the asset base.

In the case of the RAV approach, the return on capital is set by the ESC using the Capital Asset Pricing Model (CAPM). The return of capital is generally proposed by the business and subjected to tests of reasonableness by the ESC.

In determining the expected level of capital expenditure an efficient business will incur across a regulatory period, the ESC is again informed by independent assessment of company asset management plans, and forecast capital expenditure assumptions.

The move from annuities to RAV approaches has been driven by the difficulty in making accurate long-term forecasts about future investment needs. The situation has been complicated by the changing nature of assets, with moves from channels to pipelines and reconfiguration of rural systems (e.g. many existing assets will never be replaced).



Appendix D: Victorian Capital Expenditure Process

For Victorian rural water service and delivery businesses, the ESC considers the capital expenditure necessary for each business over the determination period, and builds the benchmark assumptions into its price determinations.

The ESC determines whether the forecast level of capital expenditure is prudent and efficient, given the proposed outcomes over the determination period. It ensures that capital investment is consistent with asset management objectives over the medium to long term. While the method of determination does not approve capital works or a capital expenditure budget for the business, or the amount that is to be spent on individual capital projects, it can adjust the overall level of business capital expenditure, based on its own assessment of individual project information.

When assessing proposed capital expenditure forecasts, the ESC considers the detailed capital program that each business proposes to undertake over the determination period, as set out in its Water Plan. It specifically considers whether:

- the proposed expenditure reflects trends in historical expenditure, the reasons underpinning any difference in the expected level from those trends, and other relevant factors (such as changes in the asset age profiles or in service levels);
- there is evidence of, and consistency with, well developed asset management planning and processes. This aims to demonstrate that forecasts have been determined over a planning horizon that extends beyond the three year regulatory period;
- the expenditure associated with new obligations, clearly reflects additional obligations that are required by the Minister for Water, other regulators (such as the EPA, DHS), or customers; and
- the proposed expenditure program is deliverable over the determination period.



Appendix E: WACC Parameters

New South Wales

Wholesale water

Table 1: WACC parameters for State Water Corporation

Parameter	Variable
Nominal risk free rate	5.7%
Real risk free rate	2.6%
Inflation	3.1%
Market risk premium	5.5-6.5%
Debt margin and allowance for debt raising costs	1.1-1.2%
Debt to total assets	60%
Dividend imputation factor, or gamma	0.5-0.3
Tax rate	30%
Equity beta	0.8-1.0
Cost of equity (nominal post-tax)	10.1-12.2%
Cost of debt (nominal pre-tax)	6.8-6.9%
WACC (real pre-tax)	5.6-7.1%

Victoria

Wholesale and retail water

Table 2: WACC parameters for all water businesses

Parameter	Value
Real risk free rate	2.7%
Equity beta	0.75
Market risk premium	6.0%
Debt margin	1.2%
Financing structure	60%
Franking credit value	0.5
WACC real post-tax	5.2%

