Infrastructure Australia

Review of Urban Water Security Strategies

May 2010

PricewaterhouseCoopers

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Comments and queries can be directed to:

Craig Fenton
Partner – PricewaterhouseCoopers
PH 07 3257 8851
Email: craig.fenton@au.pwc.com

Oliver Jones
Director, PricewaterhouseCoopers
PH 02 8266 2285
Email: oliver.jones@au.pwc.com

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1 Executive summary

Urban water supply is a critical enabler of economic activity in Australia's metropolitan and regional areas, and a significant economic sector in its own right. The availability of reliable and affordable water is also, of course, fundamental to maintaining a high living standard for all Australians.

The purpose of this review is to identify opportunities to enhance existing water supply security strategies and to form practical recommendations for change at the federal, state and local government levels.

Infrastructure Australia initiated the review as part of its role to provide advice to governments on the issues and impediments – policy, pricing and regulatory – to the efficient utilisation of nationally significant infrastructure. The review identifies opportunities to build on the reforms already underway through the National Water Initiative and State and Territory water reform programs.

Review findings

- All of the nation's major capital cities are experiencing the pressure of increasing water demand, combined with below-average inflows to some surface water storages. This demand-supply imbalance has triggered a mobilisation of investment in supply augmentation projects, including desalination and water recycling schemes. Demand management initiatives, such as water restrictions, have also been implemented by most jurisdictions.
- The capacity to meet current and future demand is a significant challenge for many urban areas. Most utilities continue to rely on only a few sources of water to meet almost all of their supply requirements. Historically this has not been a concern, but uncertainty regarding the future performance of traditional surface water sources suggests source diversification is now desirable, as part of a wider water security strategy. Most jurisdictions have plans in place to maintain or improve future supply security, although uncertainties remain regarding forecast demand, expected inflows and the effectiveness of demand management initiatives.
- Under current arrangements, in all States and Territories, there is dispersed responsibility for achieving security of supply, including formal planning and procurement processes. This has resulted in instances of poor coordination, duplication of processes, and the preparation of plans by water businesses that are not fully consistent with government objectives. Further, not all water supply and demand management options are properly and fully considered, and some 'gold plating' of infrastructure capacity arguably is occurring.

- There is evidence that price setting processes in most jurisdictions are consistent with, or moving towards being consistent with, “upper bound” pricing for metropolitan water storage and delivery. However, the major investments in supply augmentation that are occurring around the nation mean that price increases to fund these investments are “playing catch-up”. There is political pressure to minimise the rate of increase in water prices which is deferring the realisation of fully cost-reflective pricing.
- There is little in the way of competition in the supply of (urban) bulk water, nor competition in servicing the requirements of large water users. The current impediments to this competition are of an institutional nature, such as the provision of services by incumbent monopoly water business. There are legislative constraints for third parties to gain access to water and wastewater, including the absence of specific statutory frameworks for third party access in some jurisdictions.
- There is a current assumption in the water sector that all customers have homogenous needs and value water supply reliability, quality and other service levels equally. In reality, there is a high likelihood that consumers have different values for these service attributes. The lack of competition at the bulk and retail ends of the supply chain perpetuate the status quo situation, as there is no strong commercial incentive to differentiate service offerings across consumers.

Recommendations

- The recommendations contained in this report centre around four themes:

  (i) Improved planning frameworks – improved institutional structures for centralising planning and procurement functions, comprehensive national guidelines for supply planning and standardised approaches to defining, measuring and reporting water security objectives.

  (ii) Enhancements to water pricing – strengthen the independence of pricing and regulatory agencies, provide independent regulators with deterministic powers, and further promote consistency of approach to regulated pricing.

  (iii) Competition in urban bulk supply – remove institutional and legislative barriers to rural-urban trade, develop a model for defining and implementing tradable entitlements for large urban water users and parties responsible for bulk water delivery functions, investigate further mechanisms for private sector participation in the water sector, and introduce state-based regimes for third party access to wastewater and to monopoly network infrastructure.

  (iv) Promote consumer choice – continue to critically reappraise the need for and appropriateness of permanent

water restrictions and design ‘opt in’ arrangements for large water users that allow individual customers to decide the level of supply reliability they receive

Approach to further reform

- The urban water sector in Australia has been undergoing reform for many years. At the national level, both DEWHA and the National Water Commission have responsibility for progress. As a result, the recommendations of this review fall into two distinct categories:
  - First, recommendations whose principles are agreed by all jurisdictions, but where the pace of progress and the certainty of success is mixed. Our recommendations for enhancements to water pricing fall into this category. Cost-reflective pricing of urban water services, backed by independent regulation of prices, are generally accepted end goals. However, the rate of progress is slower in some jurisdictions than others. In light of this, the work agenda needs to identify and remove the barriers to faster progress, rather than winning the basic argument for reform.
  - Second, recommendations which stem from principles that are not yet generally agreed by jurisdictions. This applies to recommendations around improved planning frameworks, standardising water security objectives and targets; competition in bulk water supply and consumer choice.

Next steps in a crowded policy environment

- Most jurisdictions can point to ongoing pricing reform, and it is important to acknowledge that phased implementation is a justifiable policy. Major “overnight” changes to water prices would impose a considerable shock on individuals and businesses, which have only limited short-term capacity to change water-using behaviours. Unfortunately, institutional inertia, and the lack of political acceptability and public understanding of reforms, is also acting as a block to progress.
- Two fundamental steps are required to overcome this situation. First, policy makers need to communicate the true impact of below-cost pricing to users and the wider community. Second, strong leadership is required to get this message out and to support change in public institutions.

2 Introduction

Urban water supply is a critical enabler of economic activity in Australia's metropolitan and regional areas, and a significant economic sector in its own right. The availability of reliable and affordable water is also, of course, fundamental to maintaining a high living standard for all Australians.

Historically, water provision has been concerned with supplying water at the lowest cost by utilising passive, surface water dominated collection methods. Until recently, a mixture of demand and supply management techniques has ensured the reliable provision of water for the Australian community. However, there is an emerging need to adopt more holistic strategies, which encourages efficiency improvements in network performance, in usage and in establishing alternative, non-conventional supply options like desalination and recycling. This represents a shift from demand-driven planning to a more supply-constrained, integrated planning approach.

The water sector is facing a period of great challenge and change. Confronted with the worst drought on record, in many areas institutional arrangements – the mix of structural ownership, pricing, regulation and planning arrangements - have been found wanting.

Systemic weaknesses in past supply planning, particularly in the way in which supply security perspectives were accommodated, have created a need to develop institutional, regulatory and pricing models for the water sector which can support investment in expensive, regionally-beneficial water security infrastructure. Coupled with the practical reality of deteriorating performance of surface water supplies, most State and Territory administrations have moved to develop plans and strategies to ensure urban water supply security.

Purpose of this review

The purpose of this review is to identify opportunities to enhance existing water supply security strategies and to form practical recommendations for change at the federal, state and local government levels.

Infrastructure Australia initiated the review as part of its role to provide advice to governments on the issues and impediments – policy, pricing and regulatory – to the efficient utilisation of nationally significant infrastructure. The review identifies opportunities to build on the reforms already underway through the National Water Initiative and State and Territory water reform programs.

As part of the review, PwC conducted targeted consultation across each of the jurisdictions to understand and document existing urban water supply strategies, current and proposed pricing strategies and regulatory reform programs.

Terms of reference

PwC was engaged to undertake the following tasks:

1 catalogue the various urban water security strategies being developed around the country;

2 assess whether adequate controls exist to ensure future critical water supply sites (e.g. for dams, desalination plants) are not “sterilised” by competing or adjacent land/urban development;

3 assess and comment on pricing arrangements in place in each jurisdiction, specifically from the perspective of whether these support full cost recovery and the investment needed in water supply security infrastructure; and

4 recommend where changes are needed to urban water pricing and related practices, having regard to the arguments for and against independent pricing of water supply services.

A narrow interpretation of “water security strategies” is ‘bricks and mortar’ infrastructure solutions principally aimed at augmenting supply. In undertaking this review, PwC has adopted a broader interpretation, which extends to

- governance arrangements for planning and decision making regarding the type and timing of supply options,
- demand management options;
- pricing and regulatory frameworks;
- provisions to promote competition; and
- institutional and legislative arrangements.

3 Background to urban water

3.1 A snapshot of the urban water sector

The supply of water and wastewater services to most of urban Australia is largely undertaken by government-owned water authorities that operate as regulated monopoly businesses. Services are provided under a variety of industry structures and with different mixes of state and local government ownership.

In South Australia, Western Australia, the Northern Territory and the Australian Capital Territory, urban water services are provided by vertically-integrated State/Territory-owned suppliers for an entire state or region. In Sydney, Melbourne and South East Queensland, there is vertical separation of the bulk harvesting and supply functions from the distribution and retail functions. And in Tasmania, regional New South Wales and Queensland, urban water services are provided by local government, generally beyond the bulk supply point.

The current institutional arrangements have delivered safe and healthy water supplies, with only isolated incidents of public concern.

Urban water supply and planning has historically been characterised by heavy reliance on large dams and complete and deliberate separation of the various elements of the water cycle in the interests of public health.

More recently, however, the physical water, wastewater and stormwater systems supplying urban centres in Australia are becoming more complex and diverse to better manage the inherent supply risks. A mixture of sources that are both dependent and independent of rainfall are being developed and physically linked with pipes and natural waterways to form ‘water grids’. Some of these grids are linked to rural water catchments, thus allowing the potential for trade between rural and urban users.

Characteristics of urban water

Water has a number of unique characteristics, which prevents a straightforward transfer of the reforms implemented in otherwise comparable utility or infrastructure sectors like energy. Some of the main differences pertaining to water are as follows:

- Australia’s urban water supply is subject to uncertainty due to its heavy reliance on rain-fed dams. While desalination and recycling are independent of rainfall and are beginning to form an increasing share of supply in most capital cities, the majority of supplies are still drawn from surface water catchments (particularly on the eastern seaboard), and this will continue to be the case in the medium term. Thus, compared to the energy sector, water supply is climate-dependent and influenced by seasonal conditions.

- Short-term fluctuations in rain-fed supply can be moderated by storage, as water is relatively inexpensive to store once a storage facility has been built. The ability to store water means that decisions need to be made between using it today and keeping it in reserve for future periods — a decision complicated by uncertainty surrounding future rainfall.
- Unlike electricity and gas, transporting water against gravity involves high pumping costs. Conversely, transporting water with gravity can occur at a relatively low operating cost, though built conveyance systems are costly. The network economics can constrain the geographic extent of a network and the number of users that are able to participate in a wholesale market for water, however, water networks in many ways are not fundamentally different from other networks.
- Product quality is a feature of electricity, gas and water. In the case of electricity and gas, blending of product from different sources is commonly practiced to achieve a specific quality requirement (in the case of electricity, this blending is undertaken to deliver a particular reliability). In the case of water, blending is more difficult as not all disinfection treatments are compatible with each other (WSAA, 2009)[1].
- Because much of Australia's urban water supply comes from rain-fed systems, supply is characterised as having complex environmental externalities (for example, the recent decision by the federal government to not approve the building of Traveston Crossing Dam in Queensland due to environmental issues). Sewage treatment and disposal also needs to be tightly regulated to ensure environmental objectives are met.
- With the introduction of wastewater recycling, the water production-consumption chain begins to resemble in some areas a closed-loop system. This complicates the definition of rights and pricing policies pertaining to supplies of potable bulk water and ownership of the wastewater produced by water consumers. These issues do not arise in the energy sector.

3.2 Drivers for reform

A number of factors have converged in recent years to give rise to an urgent and compelling need for reform in the urban water sector.

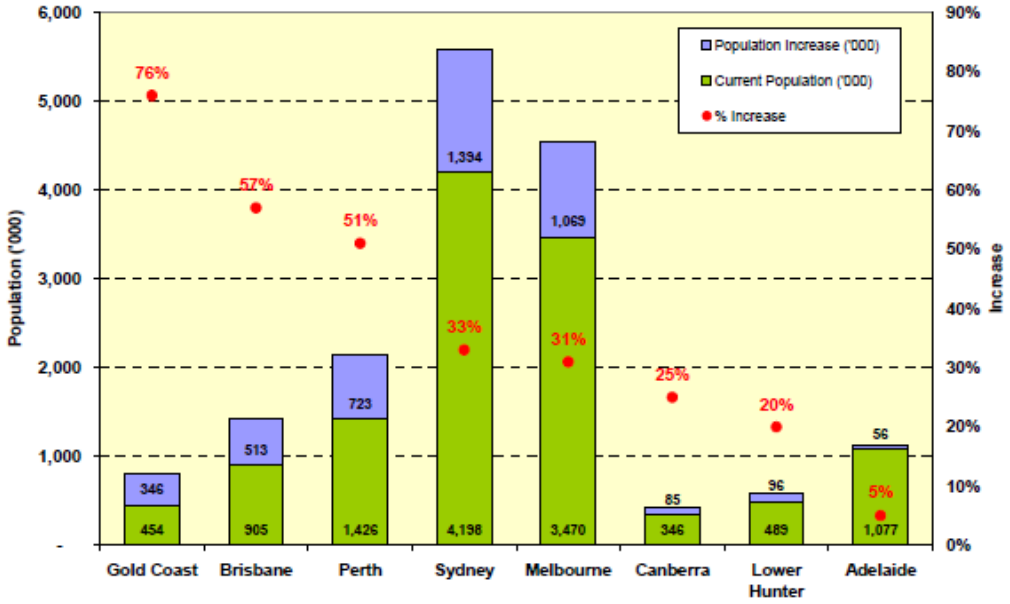
- *Drought and climate change*. In the past decade, rainfall and inflows to water storages in southern Australia have been considerably lower than long term average. For example, in Perth there has been a 20 per cent decline in rainfall and a 60 per cent drop in inflows. In the period since 1997, Melbourne has experienced a 34 per cent decline in inflows relative to the long term average. This has meant that infrastructure

[1] For instance, there are technical issues in blending water that has been disinfected using chlorine with that disinfected using chloramine.

requirements were built on the basis of previous, wetter years in Australia's recent history. It is not known with certainty whether we have entered into a new period of prolonged drier climate or whether conditions in Australia will return to long term average. Most cities are working off the assumption that future inflows will not return to former levels.

- *Higher than expected population growth*. In September 2008, the Australian Bureau of Statistics updated its projections for the states and capital cities based on the results of the 2006 census. These revised projections showed the national population would increase to 35 million by 2056 (up from the 28 million previously projected). Brisbane and Perth are forecast to have the highest growth rates over the next twenty years, with populations expected to increase by more than fifty per cent in these cities by 2030. Sydney and Melbourne are also expected to experience strong growth – with increases of about 30 per cent (Figure 3.1).
- *A legacy of under investment in water infrastructure*. Until recently, expenditure on water infrastructure to service urban populations has been relatively small (compared to other essential services). This has been due to a combination of capital/funding constraints (at least partially as a result of prices that do not allow for a commercial rate of return on existing assets), political constraints to the construction of new dams and the belated recognition of a changing climatic pattern.
- *Inadequate institutional structures and management arrangements*. The scale of changes in water demand and rainfall are such that the existing institutions in some states are not sufficiently equipped to respond effectively and efficiently to achieve adequate levels of urban water security and consumer choice. Nor has there been an effective means of allowing entry of the private sector firms into the bulk water market.

Figure 3.1: Population growth projections to 2030



Source: Australian Academy of Technological Sciences and Engineering, Water for our Cities, June 2007

3.3 Broad directions for reform

There have been a number of recent and past reports urging reform in the sector, for example:

- National Water Commission (2009) Australian Water Reform – second biennial assessment of progress in implementation of the National Water Initiative.
- Water Services Association of Australia (2009) Vision for a sustainable urban water future, Position Paper Number 3.
- Productivity Commission (2008) Towards water reform: A discussion paper, Melbourne.
- Global Access Partners and Allen Consulting Group (2008) "Urban Water – a vision and road map for national progress"
- CEDA and Serco (2008) Business Best Practice: Water that works: Sustainable water management in the commercial sector.
- Allen Consulting Group (2007) "Saying goodbye to water restrictions" – prepared for Infrastructure Partnerships Australia.
- Prime Minister's Science, Engineering and Innovation Council (2007) Water for Our Cities: Building resilience in a climate of uncertainty.

- Marsden Jacob Associates (2006) Securing Australia's urban water supplies: Opportunities and impediments : a discussion paper prepared for the Department of the Prime Minister and Cabinet.
- Business Council of Australia (2006) “Water under Pressure”.

A number of “directions for change” have emerged from this body of work, although to date no unified position has been established on the best way forward. There is debate about the degree to which a national approach is warranted or indeed helpful, given the significant geographical and hydrogeological differences that exist between Australian cities.

The main areas that have been identified for reform in the various reports listed above are:

- Better water security planning.
- Improving water pricing and investment signals
- Fostering increased competition and private sector involvement in urban water.
- Reduced reliance on water restrictions as a tool for managing supply-demand imbalances.
- National systems for reporting consumption and water business performance data.

3.4 Agents of change

Reforms are currently being pursued on a number of broad fronts. Some are at the embryonic stage while others are quite advanced.

The periodic meetings of the Council of Australian Governments (COAG) are the primary mechanism by which water policy reforms are being crafted and agreed by the states and territories. COAG has recently agreed to a set of actions underpinning a national urban water reform framework (see below). These reform actions are to be progressively implemented by Department of Environment, Water, Heritage and the Arts (DEWHA) in collaboration with the states and territories. The National Water Commission also fulfils a leadership role in urban water reform.

COAG and related reforms

At the COAG meeting of 29 November 2008 it was agreed to adopt an enhanced national urban water reform framework to improve the security of urban water (see table 3.1 below).

One of the agreed actions under this framework is to adopt national urban water planning principles. These principles were developed by the former Working Group on Climate Change and Water (WGCCW) and submitted to COAG for consideration in October 2008 (see table

3.2 below and Appendix A for a detailed version of the principles). The principles have now been agreed to by COAG.

Table 3.1: COAG Agreed actions to progress urban water reform, November 2008

To improve the security of urban water by the adoption of the enhanced national urban water reform framework, jurisdictions have agreed to:

- adopt national urban water planning principles;
- establish and publish the levels of service for metropolitan water supplies;
- publish guidance to facilitate best practice scenario planning for climate variability;
- finalise and adopt NWI pricing principles;
- review consumer protection arrangements in relation to services provided by water utilities;
- investigate possible enhancements to pricing reform, including scarcity value of water and the valuation and recovery of environmental externalities;
- explore the issue of establishing entitlements for recycling, stormwater and managed aquifer recharge;
- promote the use of competition through an examination of barriers to third party access and the costs and benefits of establishing a nationally consistent regime;
- examine the case for a micro-economic reform agenda in the urban water sector;
- examine the role of improved urban water metering and billing practices in the allocation, use and management of water;
- finalise a review of water restrictions in Australia;
- investigate the establishment of a national clearing house for best practice urban water management;
- investigate the development of a national system for reporting urban water consumption;
- establish centres of excellence for Recycling and Desalination; and
- develop a strategy to improve water supply and wastewater services in remote communities.

Source: www.environment.gov.au/water/.../coag-work-program-actions-nov-08.pdf

Table 3.2: COAG Urban Water Planning Principles, October 2008

The Council of Australian Governments recently adopted the National Urban Water Planning Principles. These principles should be universally applicable when developing plans to manage the supply/demand balance of a reticulated supply for an urban population.

Key principles to achieve optimal urban water planning outcomes are:

1 Deliver urban water supplies in accordance with agreed levels of service including specified levels of reliability and safety.
2 Base urban water planning on the best information available at the time and invest in acquiring information on an ongoing basis to continually improve the knowledge base.
3 Adopt a partnership approach so that the community is able to make an informed contribution to urban water planning, including consideration of the appropriate supply/demand balance.
4 Manage water in the urban context on a whole-of-water-cycle basis.
5 Consider the full portfolio of water supply and demand options, from both natural and manufactured water sources.
6 Develop and manage urban water supplies within sustainable limits.
7 Use pricing and, where efficient and feasible, market mechanisms to help achieve planned urban water supply/demand balance.
8 Periodically review the assumptions upon which urban water plans are based and make adjustments if the assumptions change.

Source: Working Group on Climate Change and Water, Report to Council of Australian Governments on a Stocktake of Water Reform and Proposed Forward Work Program, March 2008

Department of Environment, Water, Heritage and the Arts

The Department of Environment, Water, Heritage and the Arts is the lead agency at federal level responsible for progressing the urban water actions within the agreed work program identified by COAG at its November 2008 meeting.

The Department is engaging with the States and Territories to promote the implementation of the COAG National Urban Water Planning Principles. The principles provide Australian governments and water utilities with the tools to better plan the development of urban water and wastewater service delivery in a sustainable and economically efficient manner.

DEWHA is also seeking comment on the National Water Initiative (NWI) pricing principles (see table 3.3, below). The NWI pricing principles are being developed to provide a roadmap for pricing practices and to assist jurisdictions implement these commitments in a consistent way.

The NWI pricing principles are currently the subject of a consultation regulatory impact statement. Once completed, the principles will be

transferred to the Natural Resource Management Ministerial Council for endorsement. Stage Two relates to whom and when the NWI pricing principles will apply, and the mode of application. Jurisdictions are yet to agree on these arrangements and any formal agreement regarding implementation arrangements will likely require a detailed regulation impact statement.

Table 3.3: National Water Initiative (NWI) Pricing Principles, November 2009

The NWI pricing principles are comprised of four sets of principles, including

- Principles for the recovery of capital expenditure to provide guidance to water service providers on asset valuation and cost recovery for urban and rural capital expenditure.
- Principles for urban water tariffs to provide guidance for price setting in situations where there are monopoly providers and the absence of competitive pressures.
- Principles for water planning and management to provide guidance, for urban and rural water service providers, in identifying and allocating the costs of water planning and management activities between government and water users.
- Principles for recycled water and stormwater reuse to provide broad policy guidance to stimulate efficient water use, in urban and rural settings, no matter what the water source

Source: http://www.environment.gov.au/water/policy-programs/urban-reform/nwi-pricing-principles.html

National Water Commission

The National Water Commission is an independent statutory authority within the Environment, Water, Heritage and the Arts portfolio. It has the role of promoting water reforms through assessment of each jurisdiction's progress against the National Water Initiative, implementing the $250 million Raising National Water Standards Program and coordinating cross-organisational actions in water reform. It has commissioned numerous studies in urban water, including water markets, pricing, water industry performance and water accounting.

In November 2009, the NWC announced its intention to commission a study into exploring opportunities for further competition in the urban water sector.

The Commission recently released its Second Biennial Assessment of Progress in Implementation of the National Water Initiative, with a chapter dedicated to urban water. The key recommendations made by the Commission are summarised in table 3.4.

Table 3.4: National Water Commission Recommendations on Urban Water Reform, September 2009

- The Commission recommends further improvement in the use of urban water plan review processes and advanced tools for analysing and selecting efficient investment portfolios and strategies that best manage climatic uncertainty. Water plans should not just respond to current circumstances, but should outline flexible strategies that will apply under future conditions expected as a result of climate change.
- The Commission considers that realising water sensitive cities requires improved methodologies to quantify the full costs, benefits and risks (including environmental costs and avoided costs of infrastructure upgrade) associated with new and alternative sources to enable integrated and decentralised options to compete on an equal footing with more traditional options. The Commission recommends development of a national strategy to identify and quantify the potential for, and advance the development of, water sensitive cities in Australia.
- The Commission recommends that jurisdictions implement mutual interstate recognition and better processes to validate, verify and approve smaller recycling systems. Local government approvals would benefit from streamlining and the opportunity to rely on generic state and national approvals for new water reuse systems.
- The Commission recommends that institutional arrangements in the water sector be subject to a national review to identify opportunities for competition and private or public sector participation and innovation.

Source: Australian water reform 2009: Second biennial assessment of progress in implementation of the National Water Initiative, September 2009, National Water Commission.

4 Water security strategies around the nation

4.1 Stocktake of security strategies

Current supply-demand situation in each capital city

All of the nation's major capital cities are experiencing increasing demand pressures, combined with lower inflows to surface water storages. This demand-supply imbalance has triggered a mobilisation of investment in supply augmentation projects, with desalination plants being constructed (or operational) in Perth, Melbourne, Adelaide, Sydney and South East Queensland. Water recycling schemes are also being embraced by most jurisdictions.

Table 4.1 summarises the current demand-supply statistics for each major capital city/region in Australia. The statistics were assembled by PricewaterhouseCoopers using published information contained in various water supply planning and synopsis reports (references to be inserted as footnotes to the table). The information presented for each jurisdiction is the most recent available (no earlier than 2006). Because of the different planning and reporting cycles used by each State and Territory, it is not possible to present information for a common year.

The table allows a comparison of annual demand (actual water delivered to consumers) against sustainable yield, which is defined as the long term capacity of a water system to deliver a particular volume of water each year, subject to the environmental and infrastructure constraints of the system. The yields presented in table 4.1 include manufactured sources of water (for those jurisdictions that have these sources). The yield figures should be regarded as indicative as opposed to definitive because different jurisdictions measure sustainable yield in different ways.

What the data shows is that, at present, some cities have a 'reasonable' buffer between demand and sustainable supply, meaning that there is excess capacity in the system. This buffer is important for ensuring that a system can maintain a particular level of supply security. The greater the buffer, the less risk there will be of needing to implement restrictions on supply, or rationing.

For example, buffers have been built up in South East Queensland and metropolitan Sydney following the recent completion of a range of new supply sources. In comparison, Melbourne and Perth have depleted buffers. The large augmentation projects being constructed in Victoria are yet to come on-line so the amount of water being drawn from water storages currently exceeds the sustainable yield (based on the recent period of low inflows, which is thought to represent a possible shift in climate rather than a singular drought event). In Perth, the gap is due to current extractions from the Gnangara groundwater aquifer exceeding sustainable levels and

downward revisions of the sustainable yield of surface water storages based on significantly lower inflows. This shortfall is being addressed by a combination of measures, the main one being the expansion of the Kwinana desalination plant, which will come on-line in 2011-12.

Table 4.1: Comparison of annual water consumption relative to sustainable yield

City or urban region	Current annual demand (GL)	Estimated sustainable yield (GL)	Buffer or gap (GL)
South East Queensland	320	480	+160
Sydney	480	575	+95
Melbourne	430	387	-43
Canberra	45	44	-1
Adelaide	160	160	0
Perth	286	280	-6

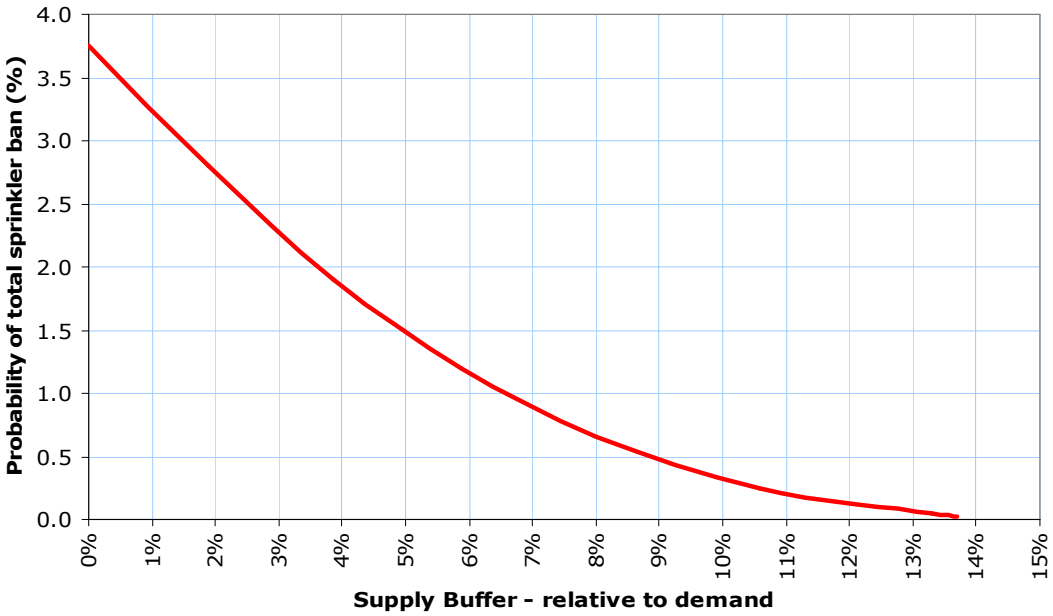
Source: Various water supply strategies and reports.

Defining supply buffers

In compiling this summary it became clear that there is no standard system or method applied across the nation for defining supply buffers or sustainable yield. Furthermore, water security targets are often not explicitly defined in the water strategy plans.

The Western Australian Water Corporation is one of the few water utilities that publish information on a target buffer and the assumptions underpinning the calculation. The Water Corporation has adopted a target of achieving a level of water security that reduces the probability of a total sprinkler ban to a 1 in 50 year event, which requires a supply buffer of 3.5% per cent above demand (Figure 4.1).

Figure 4.1: Supply buffer and probability of sprinkler bans



Source: Marsden Jacob Associates (2006) Securing Australia's urban water supplies: Opportunities and impediments: a discussion paper prepared for the Department of the Prime Minister and Cabinet.

Water option portfolios

Table 4.2 summarises the various supply options and demand management approaches being utilised in each major capital city to meet urban water security objectives. Information is also presented on the longer term options being pursued to address future shortfalls between supply and demand.

Table 4.2: Existing and planned water options to managed future supply and demand

City/Region	Dams	Groundwater	Desalination	Wastewater and stormwater recycling	Purchase of irrigation water	Demand management
Sydney	11 major dams 2400 GL at full capacity 80% of storage in Warragamba Dam Plan to access deep water by 2015 (40GL)	7 - 13 GL capacity Only for use in times of severe drought	Desalination plant due for completion in 2010. 91 GL per year, or 15% of Sydney's supply requirements	14 recycled water schemes are operating and produce 15 GL per year. 70 GL per year planned for 2015.	Very limited opportunity for rural-urban trade due to geography.	Targeting a 35% reduction in per capita consumption by 2030
Melbourne	Nine dams, supplying 383 GL, or 80% of total water use. 1773 GL at full capacity. 60% of storage in Thomson Reservoir Tarago Dam reconnection will bring 15 GL online.	Currently supplying about 7 GL	Desalination plant due for completion in 2011. Up to 150 GL per year, or about 30% of Melbourne's supply	Currently supplying about 62 GL. Upgrade of Easter Treatment Plant will deliver 100GL per year from 2012, used to offset potable water demand.	Sugarloaf pipeline will deliver 75 GL from irrigation areas.	Water restrictions are planned to be lifted as storage levels recover due to introductions of new sources of supply,
South East Queensland	The planned Traveston Crossing Dam will no longer proceed due to environmental reasons. Options to make use of strategic reserve in the Mary Basin will be investigated, including an upgrade of Borumba Dam and water harvesting.	Groundwater does not form part of South East Queensland's supply.	Tugun desalination plant recently completed, supplying 45 GL per year. Due to cancellation of Traveston Dam, additional supplies will be required as early as 2017. Detailed planning for desalination facilities at Lytton and Marcoola will commence in 2010.	Western Corridor Recycled Water Scheme recently completed and supplying 85 GL per year	No arrangements for rural-urban water trade at this stage. Likely to be expensive to move water to urban areas.	Targeting a 24% reduction in per capita consumption relative to consumption levels before the Millennium Drought.
Adelaide	River Murray supplies between 40% and 90% of	9 GL of groundwater is used in Metropolitan	Desalination plant due for completion in 2012 with a	Stormwater recycling to be increased from current	SA Government periodically purchases	Planned reductions in demand of 37 GL by 2025.

Water security strategies around the nation

City/Region	Dams	Groundwater	Desalination	Wastewater and stormwater recycling	Purchase of irrigation water	Demand management
	the city's water, depending on season. 10 local reservoirs have a combined capacity (198GL) to meet slightly less than one year's annual demand.	Adelaide.	capacity of 100 GL per year (or 25% of Adelaide's total supply)	2GL to 20 GL by 2025. Wastewater recycling to be increased from the current 14GL to 30GL by 2025.	water on the temporary market for delivery via the River Murray. 230 GL was purchased from interstate irrigators in 2008-09 for critical urban needs in Adelaide.	
Canberra	Four dams supply most of Canberra's water needs. Reduced inflows to these dams have triggered the need for the following works: Enlargement of the Cotter Dam from 4 GL to 78 GL by 2011. Tantangara Transfer, 20 GL per year by 2009. Murrumbidgee to Googong Water Transfer, 20 GL per year by 2011.	Canberra does not source groundwater for urban use	Desalination is not an option due to geographic location.	Limited recycling (non-potable reuse) being undertaken. Construction of a demonstration water purification plant has been deferred subject to the successful implementation of other water security projects.	Purchase of water from irrigators out of Tantangara Dam is one option under consideration.	A target for a reduction in per capita consumption by 12 per cent by 2013 and 25 per cent by 2023
Perth	Ten dams that supply about 160GL or 20-35% of total supply. No new dams are planned. Catchment thinning is projected to increase yields by 25 GL.	Accessed from a range of sources and treated at 6 treatment plants (50-60% of supply). Experiencing reduced yields. Development of North West metropolitan coastal groundwater could yield 25 GL.	Kwinana desalination plant completed in 2006 (45GL, or 15-20% of supply). The Southern Seawater Desalination Plant is expected to be completed in 2012 and will supply an additional 50 GL (with capacity to increase to 100 GL)	Kwinana water recycling plant planned to expand to 10 GL of water for non-potable reuse. Woodman Point Wastewater Plant currently supplies 25 GL of non-potable water. This is expected to double by 2040.	17 GL of water savings purchased from Harvey Water irrigation cooperative in 2007. Future purchases from rural users of groundwater are expected to yield 20 GL.	Two-day per week sprinkler restrictions apply as a permanent demand measure. Future savings of 50 GL per year by 2030 are targeted.

Concentration of bulk water supplies

Until recently, with the exception of Perth, all of the major capital cities had a heavy reliance on one or two single sources of water to meet all supply requirements (Table 4.3). For some cities this is expected to change over the next three years as additional supply sources are brought on-line. However, others will continue to rely on just a few sources to meet most of their needs. This is likely to limit the extent to which competition can be introduced into bulk supply.

Table 4.3: Degree to which cities are reliant on one or two large water sources

City or urban region	Current	By 2015
Sydney	Nearly 80% storage in Warragamba Dam	Nearly 30% of supply needs met through recycling and desalination
Melbourne	60% stored in Thomson Dam	>40% of supply needs met through recycling and desalination
South East Queensland	3 dams store nearly 60% of water, reminder from small dams and weirs	Around 20% of demand met from desalination and recycling by 2012. Further dam raisings and desalination facilities anticipated.
Canberra	4 dams supply >90% of water	No change
Adelaide	Approximately 80% from the River Murray	50% desalination and 30% Murray River
Perth	Less than 20% from any single source	Desalination 30-45% of total supply

Source: Various documents from each jurisdiction and discussions with state representatives.

4.2 Planning processes

The institutional arrangements for urban water supply planning and planning processes are detailed below. Further information can be found at Appendix B.

Queensland has established the Queensland Water Commission to manage all aspects of urban water supply planning in the south east of the State. The Commission's role is to ensure sustainable water supplies by developing long term water supply strategies, establishing a regional water grid, implementing water restrictions, managing water demand, providing advice to government and reforming the water industry. Initially, this structure was met with resistance from existing water supply agencies that saw the Commission as an unnecessary institutional overlay. However, with

greater clarity as to the respective roles of the Commission and the South East Queensland Water Grid Manager, the benefits of an independent planning viewpoint to guide future water supply strategy formulation are now more widely acknowledged and accepted.

New South Wales has adopted a standing committee approach to formulate a water security framework for metropolitan Sydney. This committee is made up of chief executive officers from all water businesses and key government departments, with the NSW Office of Water acting as a secretariat. The Minister for Water is responsible for approving the Metropolitan Water Plan. This structure appears to be working well but the “ad hoc” nature of the committee – the fact it is a political construct and that it relies heavily on institutional goodwill – implies that this is a weak governance model (vulnerable to the changing interests of representatives on the committee).

Victoria. The Office of Water within the Department of Sustainability and Environment is responsible for strategic water planning for the metropolitan sector. The Office coordinates and reviews the metropolitan water supply-demand strategy and works with the water businesses through this process. The obligation to collaborate and prepare the strategy remains with Melbourne Water and the water retailers. In 2004, the Victorian government in collaboration with the water businesses published a white paper – “Our Water, Our Future”, which set out actions for sustainable water management to secure water supplies and sustain growth over the coming 50 years. In 2007, a ‘Next Stage’ document was released which provides long-term solutions to secure water supplies.

South Australia. SA Water was previously responsible for planning and managing metropolitan water supply. The South Australian Government recently established the Office for Water Security which will have responsibility for strategic water security planning. Planning responsibility will sit with the Minister, however, the Minister may establish an independent planning process if demand and supply forecasts indicate a gap is likely to exist in the foreseeable future. The Office recently released Water for Good, a state-wide water security plan. The plan outlines proposals for providing a secure water supply in the future through diversification of water sources, improve water conservation and efficiency measures, and reform of the water industry.

Western Australia. Urban water supply planning and demand management strategies are principally undertaken by the state’s single major government-owned water business – the Water Corporation. The Water Corporation conducts short and long term planning to determine supply needs, identify alternative solutions, selects the best option(s), seeks government endorsement, calls for tenders from the private sector, evaluates bids and commissions the projects. The state government’s role is to manage the regulatory planning and environmental approvals process for the proposed projects. The government also determines the level of water restrictions that apply, although in practice the Water Corporation

manages the setting of restrictions under delegation from the government.

ACT. The responsibility for water supply planning (including demand management) is shared between ACTEW and the ACT Government. In July 2007, ACTEW prepared a report which made recommendations regarding future water security measures. The ACT Government subsequently convened the Water Security Taskforce which was responsible for preparing a long-term water security plan for the region. As a result of the uncertainty associated with future water inflows, the Taskforce proposed that the plan devised should include some projects that could be constructed immediately and others that could be designed and plans readied for construction should the infrastructure be required.

NT. The Department of Natural Resources, Environment, the Arts and Sport is responsible for the assessment, monitoring, management, planning, protection and sustainable utilisation of water. The Northern Territory does not have a comprehensive water security plan in place, although Power and Water Corporation has developed a forward capital program including various future source augmentation options, including potential dam sites at Marakai, Warrai and Mt Bennet.

Tasmania. The responsibility for planning for water supply within Tasmania resides with Urban Water Policy Unit within the Department of Primary Industries, Parks, Water and Environment. This unit assists in the development and coordination of policies as they relate to the regulation of the water and sewerage industry. There have recently been significant reforms of institutional and regulatory arrangements for urban water supply. The Tasmanian Government has indicated it will prepare a state-wide plan to assess the future urban supply and demand balance, and outline strategies for future supply (if necessary) as part of further reform activities.

Issues analysis

Under current arrangements, water supply planning and the setting of security 'buffers' is mostly undertaken by water businesses. A number of issues arise under this arrangement:

- Information asymmetry – Water service providers have a commercial interest to withhold information from third parties that may be interested in putting forward alternative bulk supply solutions. Some of the government water agencies are also experiencing difficulty in obtaining information from the water utilities to support water resource management functions.
- Dispersed responsibilities for achieving security of supply – Under current arrangements, responsibility for achieving security of supply is dispersed amongst water businesses, public water agencies (which often oversee rebates for uptake of water efficient appliances, water sensitive urban design and other demand management programs) and economic

regulators and/or state government (which set prices). This diminishes (or at least makes more ambiguous) accountability for water security outcomes.

- Potential risk of future water supply sites being 'sterilised' – This problem arises due to lack of coordination in the water and land-use planning functions and unclear responsibilities of different government entities in the planning process.
- Poor coordination and duplication – In some instances, the current arrangements are resulting in water businesses preparing plans that are inconsistent with government objectives for water security and/or duplicate the efforts of government water agencies.
- Gold plating – In the last three years or so, the critically low levels of supply to meet urban demand has led to policy decisions being made 'on the run' with less than adequate levels of rigour and scrutiny. There has also been a tendency for water businesses, with support of governments, to select expensive and lumpy infrastructure projects (in terms of the additional volume produced) that possibly represent a form of gold plating, or a departure from the least cost solution. The alternative of combining multiples of smaller projects appears to have featured less prominently as a supply solution, despite the capacity of this approach to provide greater flexibility in terms of being 'dispatched' if and when they are needed.
- Less than a full suite of options investigated – The lack of independence of planning functions from (i) water delivery functions and (ii) government policy formation is resulting in some supply options and demand management options being omitted from the suite of options under consideration. For example, a water business has a commercial incentive to reject supply options prepared by another party that may compete with its own services. Alternatively, government may place outright 'policy bans' on some options without full assessment and robust justification (for example, using recycled water for potable use).
- The cost of sub-optimal options is not transparent – In the absence of a full cost-benefit assessment of the complete suite of options, it is difficult to determine the cost (or lost opportunities) of selecting sub-optimal solutions. For example, the cost of water restrictions is often not sufficiently transparent.
- Lack of standardisation – At present, there is no standard method for defining or measuring water security. Each jurisdiction uses different conventions for reporting its water supply security objectives and there is poor transparency around how these targets are determined.
- No testing of customers' valuation of water security – There is an implicit assumption that any project which enhances supply security is beneficial, irrespective of cost. Related to this is the fact that the standard approach assumes that water security is commonly valued by all customers (hence, standardised

restrictions) yet it is very likely that values for water security vary substantially across the customer base, and potentially across time.

4.3 Pricing, regulation and competition

Issues analysis – pricing

Water businesses have historically set prices at below 'upper bound', meaning that commercial rates of return on and of existing assets constructed prior to pricing reforms being implemented in the mid to late 1990s have not been achieved.

This has contributed to an under-investment in water infrastructure over several decades and a consequent unpreparedness to have an adequate supply buffer in times of drought. Setting prices at levels below 'upper bound' can limit capital availability for supply augmentation because low levels of cost recovery for existing assets means a higher reliance on borrowings or equity for new capital funding, which is a constraint for some states. For example, Sydney's deferral of supply augmentation in the early part of this decade arguably was at least partly influenced by State Government-level capital constraints.

In addition to placing capital constraints on water businesses, underpricing encourages over-consumption, which leads to excess pressure being placed on existing networks and supply schemes. Furthermore, poor pricing makes supply augmentation and demand management options difficult to compare in terms of their relative economic efficiency.

This situation is now changing, with evidence that price setting processes are consistent with, or moving towards being consistent with upper bound pricing for metropolitan water storage and delivery (the exceptions being Northern Territory and Queensland, with the latter having taken the decision to cap rates of return on newly constructed "drought" assets in South East Queensland to 4 per cent real, pre-tax while targeting a commercial return on existing assets and otherwise new capital expenditure[2]).

As time goes by and existing assets are replaced, old infrastructure will form an increasingly small component of the regulatory asset base, thus resulting in all assets eventually being priced to achieve a commercial rate of return.

However, the major investments in supply augmentation that are occurring around the nation mean that price increases to fund these investments are "playing catch-up" and it will take some time before price paths will reach levels that reflect full cost recovery. There is political pressure to minimise the rate of increase in water prices.

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[2] Ministerial Media Statement. 13 March 2007. http://statements.cabinet.qld.gov.au/MMS/StatementDisplaySingle.aspx?id=50844

Water pricing is frequently subject to political interference, which creates uncertainty for private investors.

There is considerable inconsistency in pricing approaches across the states and territories (see table 4.4). Notable differences apply to the treatment of the following:

- Tariff structures – Most jurisdictions are setting volumetric prices with at least some reference to an estimate of long run marginal cost (LRMC) of supply, which serves to signal to users the cost that an additional unit of consumption imposes on the supply system. However, where inclining block tariffs are adopted, only a subset of customers are charged at long run marginal cost, with others charged below or above this price (hence reducing the effectiveness of the economic price signal).
- Resource management costs and environmental externalities – Not all jurisdictions recover the costs of managing water resources. Few charge for environmental externalities (the Australian Capital Territory and Victoria are the exceptions).
- Pricing recycled water – Pricing approaches for recycled stormwater and wastewater are inconsistent across the nation.

Adoption of the National Water Initiative pricing principles would improve consistency of approach across the jurisdictions. But to date, consensus has not been reached on the best set of options for operationalising the principles.

There was some suggestion in consultations that a national regulator would offer advantages in scope for specialisation and resourcing of the regulatory task, as well as in promoting greater consistency in regulatory application across utilities in different State and Territories.

Although water does not have the national ‘interconnectedness’ of energy transmission, the likely future increase in participation by national and multi-national private sector entities suggests benefit in greater national consistency and harmonisation in regulatory approaches.

One potential model to achieve such consistency is for States to cede regulatory powers to a new, single national water regulator – akin to arrangements for energy distribution/transmission regulation. This option perhaps sits best as a medium-term consideration; it is unlikely to be a priority, immediate reform direction, but for the future there should be further reconsideration of a potential role for a national water regulator.

Infrastructure subsidies made by governments to water businesses can distort pricing, investment signals and consumption decisions unless they are carefully targeted to encouraging innovation, address externalities, or meet community service obligations.

Uniform pricing across all metropolitan users in a given city is common (despite there potentially being cost differentials in servicing these customers). In Western Australia and South Australia the (higher) cost of servicing country customers is subsidised by government (through a Community Service Obligation payment) to enable price parity with metropolitan users. While price equalisation is designed to achieve government policy objectives of social equity, it can reduce incentives for market-driven, private sector investment.

With the exception of the Australian Capital Territory, none of the jurisdictions charge water businesses a 'resource rent charge' for their water access entitlements. This means that water users effectively pay only for the storage, treatment and delivery of water and not for the resource itself (unless the water business has purchased water entitlement off the market).

At present, no jurisdictions are using administered seasonal pricing to reflect short term variability in the availability of supply.

Table 4.4 Stocktake of urban water pricing practices – Australian State/Territory capital cities

	NSW	VIC	QLD	ACT	SA	WA	TAS	NT
LRMC approach	This has been applied through most recent determination. Used to set the usage charge.	Where scheduled prices do not apply – variable prices should reflect LRMC of providing services	It is unknown at this stage to what extent Queensland will incorporate LRMC following the reform.	Considered LRMC, but has not based its usage tariffs specifically on this.	Has estimated LRMC, but has not based usage tariffs specifically on this estimate.	Uses lower estimate of LRMC for 1st tier, use upper estimate of LRMC for 2nd tier. 3rd tier is priced at above LRMC.	No mention of estimating the LRMC	No attempts to estimate the LRMC
Tariff structure	2 part tariff with a single usage charge. The usage charge is based on the LRMC	2 part tariffs, with majority applying 3-tier inclining blocks	Brisbane – Inclining 3-tiered block tariff. Retail tariff structure may change from July 2010 due to new pricing arrangements	2 part tariff with inclining blocks (two – previously had three)	2 part inclining block tariff with 3 tiers. Third tier is set at $1.65 which is less than the LRMC of $1.90.	2 part inclining block tariff structure. Water Corporation applies a 5-tier approach with inclining prices. As of 2010, the Corporation will move to a 3-tier structure.	New arrangements will introduce a 2 part tariff with locational or nodal pricing. Further details of expected tariff structure are unknown at this time.	2 part tariff. Usage charge was originally determined with reference to the variable components of total supply costs. This has subsequently been indexed by CPI in determinations in 2003 and 2006.
Percentage of water component of household bill fixed (250kL)	Sydney Water Corp has 16.8% of the water component of the bill fixed (2009/10).	Water component 2009/10 CWW – 40% SEW – 24.4% YVW – 30% At end of pricing period (2012/13) CWW – 36% SEW – 21.5% YVW – 28%	Brisbane has 25% of the water component of the bill fixed (2009/10).	ActewAGL has 13.3% of the water component of the bill as fixed (2009/10).	SA Water has 28% of the water component of the bill as fixed (2009/10).	Perth currently has 50.4% of the water component of the bill as fixed (2009/10). By 2012/13, this will be reduced to 16.9%.	Hobart does not have water meters, meaning volumetric charging is not feasible. Launceston has 32.7% of the water component of bills fixed (2009/10).	Power and Water has 38% of the water component for Darwin water bills as fixed (2009/10).

Water security strategies around the nation

	NSW	VIC	QLD	ACT	SA	WA	TAS	NT
Percentage of total household bill (including wastewater) fixed (250kL)	Sydney Water Corp has 56% of the total bill fixed (2009/10).	The percentage of the total bill that is fixed was between 44 and 46% for each business throughout the pricing period.	Brisbane has 54.6% of the total bill fixed (2009/10).	ActewAGL has 48.8% of the total water bill as fixed (2009/10).	Wastewater charges are based on a proportion of property values, and therefore unable to be included in comparison	Perth currently has 79.5% of the total bills as fixed. By 2012/13, this will be reduced to 62%.	Launceston has 65.3% of the total bill fixed (2009/10)	Power and Water has 71.5% of the total Darwin water bills as fixed (2009/10).
Postage stamp pricing	Sydney, and some surrounding areas, is serviced exclusively by Sydney Water Corporation. This results in one price applying to all Sydney residents.	Melbourne is broken into three retailers. Residential customers within each of the retail areas pay the same tariffs.	Brisbane has the same water price throughout the city. Outside of Brisbane, prices differ based on pre-amalgamation Council boundaries.	Applies the same tariffs for residential customers throughout ACT.	State-wide prices apply in SA.	Metropolitan customers (Perth) are charged the same tariff. Country customers pay a uniform fixed charge and a uniform usage (up to 300kL). Differential usage pricing applies above this threshold.	Currently applies prices based on Council boundaries. This results in Hobart residents paying the same tariff.	Currently applies a uniform tariff policy for water and sewerage services. Therefore all customers in urban centres pay the same tariffs and charges, regardless of location and cost of supply.
Return on assets	7.5% (real pre-tax)	5.1% (real post-tax)	Varies. Different businesses target different returns.	7.27% (real pre-tax)	6% (real pre-tax)	6.62% (real pre-tax)	7% (real pre-tax)	Not available
Extent industry is fully cost-recovered[3]	Currently operates under full cost recovery approach	Currently operates under full cost recovery approach	Have attempted to manage impact on prices during transitional phase of reform and by limiting the rate of return on certain 'drought' assets.	Operates under full cost recovery arrangements	SA Water has not achieved full cost recovery, over time SA will move closer to full cost recovery	Water Corporation achieves full cost recovery overall, however some services are not charged at full cost – e.g. country residents pay less than full costs	Currently (under the Interim Pricing Order) recovering 56% of costs. Full cost recovery is not expected to be implemented until after initial price review for July 2012.	NT is not moving towards full cost recovery. As current uniform tariff rates are insufficient to recover costs, the NT Government makes CSO payments

[3] Note that a comprehensive comparison of full cost recovery practices needs to consider both the target/actual rate of return adopted, and the valuation basis for the asset base to which it is applied. Some jurisdictions apply a 'commercial' rate of return, but apply this to an asset base which has revalued (downwards) using a 'line in the sand' approach or similar.

Water security strategies around the nation

	NSW	VIC	QLD	ACT	SA	WA	TAS	NT
Dividend	Hunter – 96% Sydney – 105%	CWW – 92% SEW – 45% YVW – 93%	Brisbane – 56%	ActewAGL – 100%	SA Water – 93%	WaterCorp – 73%	(Undergoing reform, will pay dividends to local government)	Power Water – 50%
Pricing of "gifted" infrastructure	Not included in asset base	Not included in asset base	Included in asset base with offsetting mechanism so that a return is not generated on these assets	Not included in asset base	Post-corporatisation: not included in asset base Pre-corporatisation: treated as a legacy issue	Recommended treating developer contributions both as revenue in the year they occur, and as capital expenditure to the asset value of the business	Preferred approach is to remove from asset base	Not included in asset base

Issues analysis - competition in the provision of bulk water

There is little in the way of competition in the supply of bulk water, nor competition in servicing the requirements of large water users – regardless of whether they are large water retailers or the end users of water.

Bulk water is mainly supplied through one of two mechanisms (i) vertically integrated, state-owned water utilities or (ii) unbundled monopoly bulk water businesses (for example, in cases where bulk provision has been split from network and retail functions – for example Melbourne Water and Sydney Catchment Authority).

One of the foremost challenges of opening up competition in bulk supply is that there are limited sources of supplies that are cost competitive with existing bulk sources. In most urban centres, supply is heavily concentrated in a few sources.

The main prospects for introducing competition in the provision of bulk water are the emerging new sources of manufactured water (desalination and recycling – where these are cost-competitive) and increasing inter-connectedness of bulk water sources (for example, development of regional water grids in South East Queensland and Victoria). Development of these transmission networks opens up a further specific question of transfers between rural and urban sectors.

But there are some factors that detract from, or limit, this opportunity:

- a tendency for governments to select big supply augmentation projects to address the 'water crisis', which has possibly crowded out private sector involvement at the bulk level;
- there remain in some States market rules which indirectly or directly restrain the capability of urban water utilities (or customers) looking to rural water catchments as potential supply options (see below);
- water is expensive to transport and this will impede the capacity for establishing extensive water grids in some states (and thus the ability to open up rural-urban trade or more geographically distant new bulk supply options); and
- it is mostly inefficient to duplicate distribution infrastructure, except in some circumstances where third pipe technologies can be economically viable.

Table 4.5: Restrictions on rural-urban trade

Some States maintain restrictions which have the purpose or effect of limiting the potential for transfer of water from rural to urban applications. These restrictions are important as, for some metropolitan or regional urban areas, there are closely proximate 'rural' water sources, which could provide a cost-effective option for future urban source augmentation using a market-based entitlement acquisition strategy.

Both Victoria and NSW, for instance, have for some time administered volumetric restrictions on water trade out of irrigation areas. Proponents of these restrictions argue they are necessary to slow the pace of adjustment for irrigation-dependant communities, and to prevent the large-scale transfer of water to urban applications, rendering the remaining irrigation schemes unviable.

Victoria continues to maintain both a 4% annual volumetric limit on trade out of irrigation areas, and a restriction that no more than 10% of water entitlements can be held by non-landowners. Both of these restrictions have in the recent past directly impacted water entitlement trade – pushing up entitlement prices in 'non-restricted' entitlements, and resulting in proposed trades out of certain areas being disallowed.

NSW administers a similar 4% restriction on trade out of irrigation areas, although the trading cap is understood to have been reached only once, in one irrigation district. Relatedly, and responding to concerns about the perceived disproportionate impact of the Commonwealth's environmental water buy-back program on NSW, the NSW Government imposed an embargo which prevented NSW irrigators from selling water entitlements to the Commonwealth environmental program. In late 2009 the NSW Government struck a deal with the Commonwealth to remove this embargo, though in the short-term strict volumetric limits on trade to the environment will remain.

Given the substantial entitlement volumes notionally held within these irrigation areas, it would seem evident that these trade restrictions have the effect of reducing the *potential* volume of water which otherwise might be available to be transferred from rural to urban applications.

In addition to these volumetric restrictions, rural/urban trade is constrained by its perception as a controversial policy option, as well as by institutional inertia which appears to prevent trading options being properly considered. Clear articulation by policy makers that rural/urban trade options are 'on the table', not just the removal of overt restraints to trade, would assist in ensuring that cost-effective inter-sectoral trading opportunities were fully and properly considered in urban water planning strategies.

Source: The Age (2009), *Murray plans in tatters*, September 24; Frontier Economics (2009), *Volumetric restrictions on water entitlement trade*, August

Competition is more likely to emerge, under the right conditions, at the level of supplying specific requirements of large water users. This could involve differentiated supply standards or integrated water, wastewater and recycled water products. The current impediments to this competition are of an institutional nature as opposed to economic or physical. Institutional impediments include the following:

- In most states and territories, wastewater is a product that is managed by the incumbent monopoly water business. There are legislative constraints for a third party to gain access to this wastewater for the purposes of recycling it and/or offering a competitive offering for treating the waste prior to disposal. There are also constraints on third parties on their ability to gain access to pipes owned by the incumbent utility for transporting water and wastewater.
- Local level, decentralised supply/demand management options are precluded by centralized utility management and various regulatory constraints. This precludes options such as customers whom value reliability highly contracting outside of the conventional network for supplementary supply during periods of restrictions.

Details of new legislative provisions for industry competition in New South Wales are detailed below.

Table 4.6: Water Industry Competition in New South Wales

In November 2006, the *Water Industry Competition Act 2006* (the Act) was passed by the NSW Parliament. The Act was developed by the NSW Government as part of its Metropolitan Water Plan to encourage competition in the water industry and to promote the development of infrastructure for the production and reticulation of recycled water.

The *Water Industry Competition Act 2006* and the Regulations supporting its implementation (the *Water Industry Competition (General) Regulation 2008* and the *Water Industry Competition (Access to Infrastructure Services) Regulation 2007*) commenced on 8 August 2008. The objectives of the Act and supporting Regulations are to encourage competition in the water industry and to foster innovative recycling projects and dynamic efficiency in the provision of water and wastewater services.

The core reforms introduced by the Act are:

- the establishment of a new licensing regime for private sector providers of reticulated drinking water, recycled water and sewerage services
- provisions to authorise IPART to arbitrate certain sewer mining disputes
- the establishment of a third-party access regime for water and sewerage infrastructure.

Key aspects of General Regulation include:

- ensuring new entrants and the public water utilities face similar obligations, where like services are provided
- strict licensing rules to ensure that drinking water meets

Table 4.6: Water Industry Competition in New South Wales

Australian standards, that recycled water is 'fit for purpose' and that all services are delivered in a safe, reliable manner with minimal environmental impacts

- provisions to prevent retailers from disconnecting small customers for non-payment of debt and to require the implementation of NSW Government social policies, such as pensioner rebates.

Through the process of the NSW Government seeking certification of the WICA framework as an “effective” access regime, the National Competition Council (NCC) raised various issues relevant not only to the specific circumstances of the NSW framework, but also to the development of access frameworks in other jurisdictions.

Source: www.water.nsw.gov.au/Urban-water/Review-and-reform/Water-Industry-Competition/Water-industry-competition/default.aspx www.ncc.gov.au/index.php/application/nsw_water_industry_access_regime)

Issues analysis - competition and consumer choice

- There is a current *modus operandi* in the water sector that assumes all customers have homogenous needs and values for water supply reliability, quality and other service levels – such as response times to repair a fault. In reality, there is a high likelihood that consumers have different values for these service attributes.
- The lack of competition at the bulk and retail ends of the supply chain perpetuate the status quo situation, as there is no strong commercial incentive to differentiate service offerings across consumers.
- Permanent restrictions on outdoor water use are an example standardisation of service across all consumers. Water restrictions curtail demand uniformly across all users, irrespective of differences between consumers in their willingness to pay for water – and are therefore inefficient.
- Furthermore, adoption of permanent restrictions reduces the capacity of water businesses to respond to extreme droughts because there is less ability to reduce demand over and above what is already being achieved. Implies a larger supply buffer must be maintained.
- A better model would allow consumers to have a choice of service offerings. There is scope for different bulk and possibly retail products defined in terms of average reliability of supply and capacity to receive water in peak periods.
- Examples of this model are limited, but some are emerging. The Gladstone Area Water Board (GAWB has signalled in a submission to the Queensland Competition Authority that it is prepared to allow customers to elect to take up voluntary demand side reductions measures, as an alternative to developing new source options. This policy has arisen because the GAWB has responded to proposals from some of

its large customers to consider demand side management options as a means of deferring, or avoiding altogether, a major augmentation linking its supply network via a pipeline to the northern Fitzroy Catchment. Various negotiated mechanisms are being considered, and could include "opt in" contracts where customers who have a high value for increased reliability pay for the pipeline to be developed, and then benefit from it in the situation where GAWB's existing source (Awoonga Dam) fails or is constrained. Opt in arrangements allow individual customers to decide whether to participate in a supply-reliability focused upgrade.

- The core issue is that even within a 'common' supply system, there are ways to develop different reliability products for users. This is most practical in situations where there are a relatively small number of very large customers, so individual negotiation is a real option. Alternatively, where the customer base is large, utilities could consider a number of different supply/service options, allowing customers to self-select a more appropriate price/quality/risk supply arrangement.

5 Priority reforms

5.1 Improved planning frameworks

Recommendation 1

Investigate improved institutional structures for centralising planning and bulk water procurement functions, with the objective of bringing together all the levers for achieving security of supply under the one roof.

Under current arrangements, there is dispersed responsibility for achieving security of supply, including formal planning and procurement processes. This has resulted in instances of poor coordination and duplication, including the preparation of plans by water businesses that are inconsistent with government objectives for water security. Other issues include:

- Less than a full suite of options investigated – The lack of independence of planning functions from (i) water delivery functions and (ii) government policy formation is resulting in some supply options and demand management options being omitted from the suite of options under consideration.
- Gold plating – There has been instances of water businesses, with support of governments, to select expensive and lumpy infrastructure projects that possibly represent a form of gold plating, or a departure from the least cost solution.
- The cost of sub-optimal options is not transparent – In the absence of a full cost-benefit assessment of the complete suite of options, it is difficult to determine the cost (or lost opportunities) of selecting sub-optimal solutions.

Centralised independent authorities ideally would be responsible for undertaking/oversighting planning in each state. Planning functions would be separated from operational functions.

The diversity of institutional models across the country, and the different issues faced by different jurisdictions, means that a single, common model for all jurisdictions is unlikely to be optimal. There is no support for a single, national level planning entity and insufficient interconnectivity between urban water systems to warrant this. Rather, different options may suit, including:

Formation of state-based independent planning entities (IPEs)

The model put forward by the Economic Regulation Authority (WA), for instance, is one in which the IPE would be responsible for managing all supply sources and demand management options.

It would receive a supply security requirement from Government and would be tasked with identifying future supply shortfalls and seeking

ways to meet these shortfalls via supply augmentations and demand management options developed by water businesses and the private sector.

The IPE would seek bids on supply/demand management options from the public and private sector. Water security options would be assessed using a transparent process and be subject to robust benefit cost analysis and decisions on successful bids open to appeal.

The IPE would take over responsibility for funding and approving existing demand management programs such as restrictions, rebates and public investment in water efficiency projects. It would also be responsible for developing annual source operating plans, ensuring confidence that all options are investigated in an impartial and competitively neutral manner.

A lesser option is similar to that adopted in south east Queensland, where an independent Commission (the Queensland Water Commission) is responsible for delivery of a whole-of-region supply strategy, which is then used to guide the investment strategies and operational plans of each of the bulk supply/transport entities.

The primary advantage of this model over, say, a committee-based structure which is adopted in some jurisdictions, is the institutional accountability it provides over outcomes, and the formality and clarity of stakeholder roles and responsibilities. It is less dependant on the participatory goodwill of stakeholders to be effective.

Further work is required, however, on how this model would support outcomes such as competitive sourcing of new bulk supply projects.

Ring-fencing of planning functions within water businesses.

A “weaker form” of separation, where the objective is to ring-fence water security planning and procurement from commercial service delivery functions. Properly structured, this could promote competitive procurement, where the “supply need” is defined (in terms of quantity, timing and reliability) but not the means by which it is to be delivered.

Recommendation 2

Preparation of comprehensive national guidelines for urban water planning.

The guidelines should detail the principles by which water supply planning should occur and clearly outline the expectations of parties involved in these processes. These guidelines should provide clarity as to the expected level of detail, robustness and accepted evaluation methodologies for water planning analyses.

The guidelines should enforce that planning assessments should consider all possible demand management/supply augmentation

options, ensuring that ‘policy bans’ do not limit the scope for independent appraisal of optimal supply development strategies.

These guidelines could sensibly be the next step in the evolution and development of the COAG National Urban Water Planning Principles, reproduced at Appendix A. Indeed, as an important element of this, we note that jurisdictions have already committed under the COAG Work Program on Water to "publish guidance to facilitate best practice scenario planning for climate variability and climate change impacts on urban water supply and demand by water utilities and government".

The national guidelines need however to extent beyond these matters, and focus on practical application issues and the development of enforcement mechanisms to ensure jurisdictions comply with the guidelines.

Recommendation 3

Develop national guidelines on defining, measuring and reporting water security objectives and targets.

The intention of these guidelines is not to prescribe water security targets, but rather to ensure that:

- the target-setting process takes due regard to a standard set of factors and considerations;
- security ‘buffers’ and other target mechanisms are reported transparently and consistently by each jurisdiction; and
- the concepts of sustainable yield and available water are defined and measured consistently.

These national guidelines would logically form part of the broader comprehensive national guidelines for urban water planning (described above), noting further the existing commitment of States and Territories to publish by 2011 levels of service for metropolitan water supplies.

The Bureau of Meteorology with its existing powers under the *Water Act 2007* to collect and collate water resource information, and its expertise in water accounting, would possibly be the best-placed organisation to develop and enforce these standards.

5.2 Enhancements to water pricing

Recommendation 4

Strengthen the independence of pricing and regulatory agencies in those jurisdictions that do not have independent pricing regulators.

Regulators should be statutorily independent and able to review and challenge any aspect of a regulated business’ cost structure,

including capital and operating budgets and particularly those costs relating to the delivery of water security outcomes.

Recommendation 5

Provide independent regulators with deterministic powers for both the level and structure of water and wastewater tariffs.

Tariff design affects both the financial performance of the regulated utility – determining its exposure to volumetric revenue risk and more generally the level of revenue recovery required from users – as well as the effectiveness of pricing as a component of the overall demand management strategy.

Regulators should pursue better coupling of prices to water availability and the costs of bringing additional water supplies on-line, through one or a combination of:

- pass through of long run marginal cost prices to all customers; and
- tradable bulk entitlements issued to large water users (which result in a market driven price).

Recommendation 6

Promote consistency of approach to regulated pricing through the widespread adoption of the NWC pricing principles[4].

The NWC pricing principles have been developed jointly by the Australian Government and state and territory governments to provide a set of guidelines or road map for rural and urban pricing practices and to assist jurisdictions to implement the NWI pricing commitments in a consistent way.

There are four sets of principles, including:

- Principles for the recovery of capital expenditure to provide guidance to water service providers on asset valuation and cost recovery for urban and rural capital expenditure.
- Principles for urban water tariffs to provide guidance for price setting in situations where there are monopoly providers and the absence of competitive pressures.
- Principles for water planning and management to provide guidance, for urban and rural water service providers, in identifying and allocating the costs of water planning and management activities between government and water users.

[4] http://www.environment.gov.au/water/policy-programs/urban-reform/nwi-pricing-principles.html

- Principles for recycled water and stormwater reuse to provide broad policy guidance to stimulate efficient water use, in urban and rural settings, no matter what the water source.

These principles are comprehensive and provide clarity regarding expectations for pricing and accepted methodologies for setting prices (e.g. valuation of assets). There are, however, currently no mechanisms in place to ensure states comply with the principles and no timelines for the implementation of new pricing methodologies or the achievement of the pricing objectives sought (e.g. upper bound pricing).

The National Water Commission has recommended the NWI parties move to implement these principles as soon as practical[5]. The NWI pricing principles are currently subject of subject of a consultation regulatory impact statement. Once completed, the principles will be transferred to the Natural Resource Management Ministerial Council for endorsement. Stage Two relates to whom and when the NWI pricing principles will apply, and the mode of application. Jurisdictions are yet to agree on these arrangements and any formal agreement regarding implementation arrangements will likely require a detailed regulation impact statement.

5.3 Competition in bulk water supply

Recommendation 7

Remove institutional and legislative barriers to rural-urban trade.

Barriers that remain comprise formal/policy-based constraints, as well as institutional rigidities. Clear articulation by policy makers that rural/urban trade options are 'on the table', not just the removal of overt restraints to trade, would assist in ensuring that cost-effective inter-sectoral trading opportunities were fully and properly considered in urban water planning strategies.

Recommendation 8

Develop a model for defining and implementing tradable entitlements for large urban water users and possibly water retailers.

The entitlement structure would be similar to that used in rural areas, in that it would specify a nominal volume and, depending on system performance, the user would receive an 'allocation' in each year of some percentage of this nominal volume.

Such a model would allow water users to self-determine the level of reliability appropriate to their circumstances; through the choice of

[5] National Water Commission. Second biennial assessment of progress in implementation of the National Water Initiative. Recommendation 8.2

the volume of water entitlements to hold directly or other have access to through indirect contractual means.

Restrictions would apply uniformly to all entitlements (noting that restrictions are inefficient and costly and should be removed). If the target reduction was 10%, then allocation volumes against each entitlement would be reduced by this percentage. A user with a low tolerance for supply restrictions could opt to hold a larger water entitlement that required in a 'normal' year, to provide some buffer for those years where restrictions are applied.

Conceptually, trading amongst users in a secondary market would allow for the reallocation between users of entitlements, with the market price providing a reference point to guide decisions on demand management strategies, supply substitution (such as on-site recycling) and so forth.

Recommendation 9

Investigate the feasibility and effectiveness of allocating tradable entitlements to parties responsible for bulk water delivery functions.

The entitlements would define rights to volumes 'in storage', storage capacity and future inflows. This model may break down the market power of currently enjoyed by monopoly businesses that control supplies held in the large dams that dominate a number of urban water markets. It would introduce market-driven scarcity pricing for bulk water.

Recommendation 10

Design and introduce state-based regimes for third party access to wastewater and to monopoly network infrastructure.

There is growing acceptance that the existence of monopoly elements in water supply systems should not be a barrier to enabling effective competition in other elements. As it would be inefficient to replicate certain infrastructure elements in the supply chain, competition would be made possible through unbundling it from the other parts of the supply chain and providing access to it at regulated prices.

It is recommended that state-based third party access regimes for water be introduced to facilitate the competition within markets, where existing industry structures can feasibly support competition.

All jurisdictions should give robust consideration to the potential benefits and regulatory costs of introducing, where not present already, effective and workable arrangements for third-party access to water and wastewater networks and facilities. Although the existing *Trade Practices Act* Part IIIA provisions could be applied, the threshold test of national significance is a barrier, as is the practicality of managing dual regulatory jurisdiction.

Recommendation 11

Payments for community services obligations (for the supply of water to country areas) should be made contestable where this is not already the case.

Governments could look at using explicit payments for water and wastewater services to rural and remote areas as a means of opening up opportunities for non-incumbents to compete in the provision of these services. To be effective, consideration needs to be directed to possible supporting reforms that might be needed, such as third-party access to existing infrastructure, and appropriate licensing and regulatory standards.

Recommendation 12

Assess the costs and benefits of a centralised and independent institutional model for option assessment and bulk water procurement

Options assessment and subsequent procurement functions are currently undertaken by governments or incumbent bulk water suppliers. These functions could be undertaken by a separate entity which would be responsible for selecting and procuring appropriate supply options where a supply need has been identified through strategic planning.

The independent entity may identify a single option and seek bids from entities to achieve competitive procurement outcomes, or alternatively may identify a 'supply gap' and seek proposals ('solutions') from entities which can be assessed to identify an appropriate solution. The latter approach may potentially result in more innovative solutions as the market would be able to put forward a range of options for assessment.

Properly designed, such a model could introduce greater transparency and robustness to these processes, and result in more innovative and cost-effective supply solutions.

5.4 Consumer choice

Recommendation 13

Continue to critically reappraise the need for and appropriateness of permanent water restrictions.

In the medium term, and as the need diminishes for permanent water restrictions as a 'second best' mechanism to address unpriced supply/use externalities, restrictions should be replaced with mechanisms which allow customers to have a choice of water supply reliability.

Recommendation 14

Design 'opt in' arrangements for large water users that allow individual customers to decide the level of supply reliability they receive.

Currently the majority customers receive the same level of supply reliability at the same unit cost. Consequently, all users receive the same reduction in reliability (i.e. volume) when restrictions are introduced, and must incur the same price changes when water new supply are options are introduced to improve reliability.

There are options to develop different reliability for users even within a 'common' supply. This is most practicable in situations where there are a relatively small number of very large customers, so individual negotiation is a real option. Alternatively, where the customer base is large, utilities could consider a number of different supply/service options, allowing customers to self-select a more appropriate price/quality/risk supply arrangement.

Table 5.1: Application of recommendations by jurisdiction – opportunities and impediments

Recommendation	NSW	VIC	QLD	ACT
1. Investigate improved institutional structures for centralising planning and procurement functions	New South Wales has adopted a standing committee approach to formulate a water security framework for metropolitan Sydney. This structure appears to be working well but the "ad hoc" nature of the committee, the fact it is a political construct and that it relies heavily on institutional goodwill, suggests that that this is a weaker governance model. Options to improve the independence and objectivity of the Committee should be explored.	The Office of Water within the Department of Sustainability and Environment is responsible for strategic water planning for the metropolitan sector. The Office of Water coordinates and reviews the metropolitan water supply-demand strategy and works with the water businesses through this process. The obligation to collaborate and prepare the strategy remains with Melbourne Water and the water retailers. The efficiency of current arrangements and potential costs and benefits of reforming arrangements to achieve greater independence should be examined.	The Queensland Water Commission is an independent, statutory authority responsible for urban water supply planning, including the management of demand. The operation of the regional water grid is the responsibility of the SEQ Water Grid Manager. This model is largely considered effective by industry participants, although it is recognised that the QWC is not fully independent of government. Further review of current arrangements would be beneficial in achieving more independent, transparent and objective decision-making for urban water supply planning in South East Queensland.	The responsibility for water supply planning rests with the Minister for the Environment, Water and Climate Change, although planning activities are undertaken by both the ACT Government and ACTEW. ACTEW is also responsible for implementing the water supply security plan for the region. The costs and benefits of reforming the planning arrangements to introduce greater independence should be examined.
2. Preparation of comprehensive national guidelines for urban water planning	This recommendation would have a national application with potential benefits for all jurisdictions.			
3. Develop national guidelines for defining, measuring and reporting water security objectives and targets	This recommendation would have a national application with potential benefits for all jurisdictions.			

Priority reforms

Recommendation	NSW	VIC	QLD	ACT
4. Strengthen the independence of pricing and regulatory agencies 5. Provide independent regulators with deterministic powers for both the level and structure of water and wastewater tariffs	The Independent Pricing and Regulatory Tribunal determines the maximum prices that can be charged for metropolitan water supply, wastewater and stormwater services supplied by declared public water authorities. These arrangements are robust, although the role of IPART could be extended to include review/monitoring powers for non-metropolitan urban water businesses (especially relevant if further aggregation of Council water businesses occurs, which on face value would be a desirable outcome).	The Essential Services Commission makes binding price determinations for water and wastewater services and regulates standards and conditions of service. These arrangements are considered appropriate at the present time.	Under the *Queensland Competition Authority Act 1997* the Queensland Competition Authority has the power to investigate, monitor and make recommendations concerning water and wastewater prices across the State. The Authority is responsible for price monitoring of distribution and retail activities in South East Queensland to 1 July 2010, and has been directed to recommend an interim price monitoring framework to apply for the following period. The future role of the QCA in the economic regulation of the SEQ Water Sector (including for bulk activities) has not been determined, although there is a growing view that greater responsibility should eventually sit with the QCA. The role of the QCA in SEQ should be formalised and its scope widened to include regional Queensland. QCA powers should be deterministic across all areas.	The Independent Competition and Regulatory Commission is responsible for determining the tariffs that ACTEW Corporation applies for the provision of water and wastewater services. Prices may be binding or discretionary, depending on the terms of referral by the responsible Minister to the Commission. The ICRC may not make a binding decision unless directed by the responsible Minister. The role of the ICRC should be strengthened through the provision of deterministic powers.

Priority reforms

Recommendation	NSW	VIC	QLD	ACT
6. Promote consistency of approach to regulated pricing through the widespread adoption of the *NWC pricing* Principles	A stocktake of urban water pricing practices was presented in Table 4.3. While all jurisdictions are making progress against original NWI requirements, progress in some jurisdictions remains inconsistent in areas. For example, full cost recovery is not achieved in South East Queensland, South Australia, Tasmania and the Northern Territory. The pricing principles further outline requirements for achieving national consistency for urban water pricing including the recovery of capital expenditure, setting urban water tariffs and pricing for recycled water and stormwater reuse. Immediate implementation of these principles by all jurisdictions is necessary.			
7. Remove institutional and legislative barriers to rural-urban trade	This recommendation should be examined nationally, with specific case studies to identify the existing barriers to trade, the potential for trade and the costs and benefits to relevant jurisdictions.			
8. Develop a model for defining and implementing tradable entitlements for large urban water users and possibly water retailers	These recommendations should be examined nationally in concept, with specific case studies to assess how this may work in different systems and institutional landscapes.			
9. Investigate the feasibility and effectiveness of allocating tradable entitlements to parties responsible for bulk water delivery functions				

Priority reforms

Recommendation	NSW	VIC	QLD	ACT
10. Design and introduce state-based regimes for third party access to wastewater and to monopoly network infrastructure	The *Water Industry Competition Bill 2006* provides a framework for private sector players to access water and wastewater infrastructure. These arrangements are considered appropriate at the present time.	The Victorian Government announced in July 2008 that it would develop an access regime for water and sewerage infrastructure services and has commissioned the Essential Services Commission to report on the design of the regime. The Victorian Government's has not yet responded to the recommendations made by the Commission. Clarification as to the introduction and characteristics of any third-party access regime should be provided.	The Queensland Water Commission is currently developing the economic regulatory framework for bulk, distribution and retail water supply. The QCW has indicated that it will give consideration a regime allowing third-party access to water and wastewater infrastructure. Clarification as to the introduction and characteristics of any third-party access regime should be provided.	A third-party access regime has not been contemplated in the ACT. The costs and benefits of a regime allowing third-party access should be examined.
11. Payments for community services obligations (for the supply of water to country areas) should be made contestable	This recommendation would have a national application with potential benefits for all jurisdictions.			

Priority reforms

Recommendation	NSW	VIC	QLD	ACT
12. Adopt a centralised and independent institutional model for bulk water procurement and option assessment	Independent experts were initially used to help identify a suitable mix of demand and supply initiatives in the Metropolitan Water Plan. Since this time, the Government has established a new Metropolitan Water Independent Review Panel to provide independent expert advice to Government on metropolitan water planning matters. Overall responsibility for planning and options assessment remains with government. Options to provide for greater independence in option assessment and subsequent procurement processes should be explored.	The Office of Water is responsible for strategic water planning and coordinates and reviews the metropolitan water supply-demand strategy with the water businesses. The obligation to prepare and implement the strategy remains with Melbourne Water and the water retailers. Procurement of new infrastructure remains the responsibility of government and the water businesses. Options to provide for greater independence in option assessment and subsequent procurement processes should be explored.	The Queensland Water Commission is responsible for urban water supply planning including the identification of supply options. The Queensland Government created a number of special purpose vehicles companies which have had responsibility for the design, planning (e.g. approvals processes) and procurement of infrastructure. A number of these companies have assumed responsibility for the operation of this infrastructure. The QWC is currently reviewing the process for supply planning, including the role of different institutions in this process. The outcomes of the QWC review including any changes to planning processes and institutional responsibilities should be outlined as a matter of priority.	The responsibility for water supply planning, including options identification and assessment, rests with the Minister for the Environment, Water and Climate Change. The *Future Water Options Strategy* sets out the most viable options for meeting future water supply needs in the ACT, and thus directs investigations and development. ACTEW is responsible for implementing the water supply security plan for the region including the procurement of new water supply infrastructure. Options to provide for independence in options assessment and subsequent procurement processes should be explored.

Priority reforms

Recommendation	NSW	VIC	QLD	ACT
13. Continue to critically reappraise the need for and appropriateness of permanent water restrictions	The NSW Government considers that water restrictions are a cost-effective means of reducing pressure on water supplies during drought. Restrictions enable the Government to avoid or defer the need to invest in more costly options to increase supply. New supply infrastructure now means that there is reduced need for tougher restrictions. Water restrictions will continue to be a key element of drought response plans. Water restrictions will be reviewed during the update of the Metropolitan Water Plan to ensure that the most effective restrictions regime is applied in the future. Critical review of temporary and permanent water restrictions is required during the review of the Water Plan.	The Victorian Government is implementing a range of measures to secure water supplies with the objective of taking Melbourne off severe water restrictions (Stages 3 and 4) and eventual restoration of unrestricted water supply on a sustained and secure basis. These arrangements are considered appropriate at the present time although a timeframe should be established for the removal of permanent water restrictions.	The SEQ Water Strategy outlines a series of Level of Service (LOS) Objectives, which relate to the expected frequency, duration and severity of restrictions during future droughts. The selection of the LOS Objectives has involved trade-offs between financial costs, environmental impacts and the willingness of the community to accept restrictions periodically. The LOS Objectives mean that future investments in the water supply system will be made so that the frequency of restrictions will be no more than once every 25 years, on average. These restrictions would be much less severe than the extreme restrictions applied during the recent drought (prohibiting almost all outdoor water use). A critical review of the need for temporary and permanent water restrictions is required.	Stage 3 water restrictions remain in place in the ACT. Where temporary water restrictions are not required, a regime of permanent water conservation measures will be implemented. A critical review of the need for temporary and permanent water restrictions is required.

Priority reforms

Recommendation	NSW	VIC	QLD	ACT
14. Design 'opt in' arrangements for large water users that allow individual customers to decide whether to participate in a supply-reliability focused upgrade or decide to opt out and receive a lower level of water supply reliability.	This recommendation should be examined nationally in concept, with specific case studies to assess how this may work in different systems and institutional landscapes.			

Priority reforms

Table 5.1: Application of recommendations by jurisdiction – opportunities and impediments

Recommendation	SA	WA	TAS	NT
1. Investigate improved institutional structures for centralising planning and procurement functions	The South Australian Government recently established the Office for Water Security which will have responsibility for strategic water security planning. Planning responsibility will sit with the Minister; however, the Minister may establish an independent planning process if demand and supply forecasts indicate a gap is likely to exist in the foreseeable future. There appropriateness of proposed arrangements and potential costs and benefits of reforming arrangements to achieve greater independence should be examined	Urban water supply planning and demand management strategies are principally undertaken by the Water Corporation. The Department of Water has adopted a lead role in actioning the State Water Plan which is a strategic plan to ensure that the state's water demands are met up to 2030. The West Australian government is considering proposals by the economic regulator to establish an independent procurement entity with a central role in supply planning and procurement. Greater independence of planning is desirable. Clarification as to the introduction and characteristics of an independent planning / procurement entity should be provided.	The responsibility for overall planning for water supply in Tasmania lies with the Department of Primary Industries, Parks, Water and Environment. Through the current reforms of the Tasmanian water industry, three new water corporations were recently formed. These corporations have assumed the responsibility of urban water supply, including any requirements for expansion due to increased demand. The costs and benefits of reforming the planning arrangements to introduce greater independence should be examined.	There is no formal urban water supply planning process in place in the Northern Territory, although Power and Water Corporation has developed a forward capital program including various future source augmentation options, including potential dam sites. The costs and benefits of reforming the planning arrangements to introduce greater independence, in concert perhaps with the recently expanded responsibilities of the NT Utilities Commission, should be examined.
2. Preparation of national guidelines for urban water planning	This recommendation would have a national application with potential benefits for all jurisdictions.			

Priority reforms

Recommendation	SA	WA	TAS	NT
3. Develop national guidelines for defining, measuring and reporting water security objectives and targets	This recommendation would have a national application with potential benefits for all jurisdictions.			
4. Strengthen the independence of pricing and regulatory agencies 5. Provide independent regulators with deterministic powers for both the level and structure of water and wastewater tariffs	The Essential Services Commission of South Australia reviews the South Australian Government's process for setting prices to ensure that it is consistent with the NWI. Currently, water and wastewater services are not regulated services and the Commission has no other regulatory role in relation to them. However, the South Australian Government has indicated its intention to appoint the Commission as the independent economic regulator for monopoly suppliers of urban and regional water and wastewater services, with this role applying to SA Water's potable water and wastewater services in the first instance. The role of ESCOSA should be formalised and to include deterministic powers for setting water and wastewater prices.	The Economic Regulation Authority) does not have a mandate to set water and wastewater charges, or an ongoing role in monitoring compliance with government pricing decisions. While the Treasurer of Western Australia gave written notice to the ERA in 2007 to undertake annual tariff inquiries regarding the Water Corporation, the Treasurer recently revoked this notice. After completing its inquiries, the ERA can make recommendations to the government. However, it is the Minister for Water who ultimately sets water and wastewater charges for the Water Corporation. The ERA should have deterministic powers for setting prices.	The Office of the Economic Regulator of Water and Sewerage was recently established and provides advice to the Tasmanian Government on interim pricing arrangements and interim licensing. The ERWS also has powers and functions to regulate water and sewerage prices. It is expected that the ERWS's first formal price determination will commence on 1 July 2012. It is not clear if these determination will be binding. These arrangements are appropriate for the period of the Interim Price Order although the role of ERWS should be strengthened for the first formal price determination.	The Northern Territory government sets prices and may seek advice from the economic regulator, the Utilities Commission. The Commission is responsible for monitoring and enforcing compliance with the charging determination of the regulatory Minister. The role of the Commission has recently been expanded to include independently reviewing Power and Water Corporation capital and asset management programs. The role of the Utilities Commission should be strengthened through the provision of deterministic powers.

Priority reforms

Recommendation	SA	WA	TAS	NT
6. Promote consistency of approach to regulated pricing through the widespread adoption of the *NWC pricing* Principles	A stocktake of urban water pricing practices was presented in Table 4.3. While all jurisdictions are making progress against original NWI requirements, progress in some jurisdictions remains inconsistent in areas. For example, full cost recovery is not achieved in South East Queensland, South Australia, Tasmania and the Northern Territory. The pricing principles further outline requirements for achieving national consistency for urban water pricing including the recovery of capital expenditure, setting urban water tariffs and pricing for recycled water and stormwater reuse. Immediate implementation of these principles by all jurisdictions is necessary.			
7. Remove institutional and legislative barriers to rural-urban trade	This recommendation should be examined nationally, with specific case studies to identify the existing barriers to trade, the potential for trade and the costs and benefits to relevant jurisdictions.			
8. Develop a model for defining and implementing tradable entitlements for large urban water users and possibly water retailers	These recommendations should be examined nationally in concept, with specific case studies to assess how this may work in different systems and institutional landscapes.			
9. Investigate the feasibility and effectiveness of allocating tradable entitlements to parties responsible for bulk water delivery functions				

Priority reforms

Recommendation	SA	WA	TAS	NT
10. Design and introduce state-based regimes for third party access to wastewater and to monopoly network infrastructure	The South Australian Government recently announced plans to develop a state-based third-party access regime that allows water and wastewater suppliers to access the water and wastewater infrastructure. Clarification as to the introduction and characteristics of any third-party access regime should be provided.	The Western Australian Economic Regulation Authority has recommended that a State-based access regime for urban water distribution infrastructure be developed, including provisions for negotiated access between the infrastructure owner and the access seeker, independent dispute resolution and an appeals mechanism. Clarification as to the introduction and characteristics of any third-party access regime should be provided.	A third-party access regime has not been contemplated in Tasmania. The costs and benefits of a regime allowing third-party access should be examined.	A third-party access regime has not been contemplated in the Northern Territory. The costs and benefits of a regime allowing third-party access should be examined.
11. Payments for community services obligations (for the supply of water to country areas) should be made contestable	This recommendation would have a national application with potential benefits for all jurisdictions.			

Priority reforms

Recommendation	SA	WA	TAS	NT
12. Adopt a centralised and independent institutional model for bulk water procurement and option assessment	Accountability for water demand and supply planning will rest with the Minister responsible for administering the new Act. The Minister will be responsible for preparing and maintaining water supply plan including the identification of water supply options. SA Water is currently responsible for delivery of new water supply and demand management projects. Options to provide for greater independence in option assessment and subsequent procurement processes should be explored.	Urban water supply planning is principally undertaken by the Water Corporation. The Water Corporation performs a wide range of functions including the conduct of short- and long-term planning, demand forecasting, identifying alternative strategies, seeking government endorsement, calling for tenders from the private sector, evaluating bids and commissioning projects. The Department of Water responsible for managing the regulatory planning and environmental approvals process for proposed projects. The West Australian government is considering proposals by the economic regulator to establish an independent procurement entity with a central role in supply planning and procurement. Clarification as to the potential introduction of an independent procurement entity should be provided.	The responsibility for overall planning for water supply in Tasmania lies with the Department of Primary Industries, Parks, Water and Environment. The new water corporations have assumed the responsibility of urban water supply, including any requirements for expansion due to increased demand. Options to provide for greater independence in option assessment and subsequent procurement processes should be explored.	There is no formal urban water supply planning process in place in the Northern Territory. Power and Water Corporation identifies major augmentation and new source projects through its forward capital program and is responsible for implementing these projects. Options to provide for greater independence in option assessment and subsequent procurement processes should be explored.

Priority reforms

Recommendation	SA	WA	TAS	NT
13. Continue to critically reappraise the need for and appropriateness of permanent water restrictions	Implementation of the range of initiatives contained in the Water for Good plan should, by the end of 2012, have ensured that severe water restrictions (greater than Level 2) should not be necessary more than once in every 100 years. Permanent water conservation measures will, however, remain in force beyond 2012. A critical review of the need for temporary and permanent water restrictions is required.	There are currently seven levels of water restrictions that can be applied to reduce consumption. Stages one to four are considered mild to moderate restrictions and generally involve reducing watering hours and days. Remaining restrictions are classified as stages five to seven are classified as more severe. The Water Forever plan seeks to avoid the imposition of more severe measures during summer periods. A critical review of the need for temporary and permanent water restrictions is required.	Despite dry conditions, there has been only minimal need for water restrictions for domestic consumption. In most cases, restrictions were introduced in towns where there was inadequate infrastructure which resulted in limited supplies (and the ability to transfer water) or contaminated supplies. Nil action required.	The Northern Territory's water resources are generally considered to be under relatively little pressure due to a comparatively small population base and low intensity of land use. Consequently, there has not been a need for restrictions. Nil action required.
14. Design 'opt in' arrangements for large water users that allow individual customers to decide whether to participate in a supply-reliability focused upgrade or decide to opt out and receive a lower level of water supply reliability.	This recommendation should be examined nationally in concept, with specific case studies to assess how this may work in different systems and institutional landscapes.			

6 A work agenda for urban water

The urban water sector in Australia has been undergoing reform for many years, based on a very significant body of analysis and literature. At the national level, both DEWHA and the National Water Commission have responsibility for progress.

As a result, the recommendations set out in chapter 5 of this review fall into two distinct categories:

First, recommendations whose principles are agreed by all jurisdictions, but where the pace of progress and the certainty of success is mixed. This report's recommendations around enhancements to water pricing (recommendations 4 – 6) fall into this category. Cost-reflective pricing of urban water supplies, backed by independent regulation of prices, is a generally accepted end goal - for instance, they are enshrined in the NWC pricing principles[6].

However, the rate of progress is slower in some jurisdictions than others. Truly cost reflective pricing, and truly independent pricing regulators, remain some way off in most jurisdictions. In light of this, the work agenda needs to identify and remove the barriers to faster progress, rather than winning the basic argument for reform.

Second, recommendations which stem from principles that are not yet broadly agreed by jurisdictions. This report's recommendations around improved planning frameworks (recommendations 1 & 2); standardising water security objectives and targets (recommendation 3); competition in bulk water supply (recommendations 7-12); and consumer choice (recommendations 13-14) broadly fall into this second category.

For example, there are differing positions and tensions between proponents of demand management and water conservation measures, and those advocating increased supply augmentation (accompanied by higher prices), to improve water security. At a more fundamental level, there is poor clarity on what level of water security should be targeted.

Whilst some of these recommendations will be uncontentious, others will be more difficult. In light of this, the work agenda needs to describe and win the case for reform, before addressing the practical steps required to deliver those reforms.

This chapter now considers each task in turn, concluding in a set of recommendations for Infrastructure Australia's ongoing role in water policy.

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[6] The case for an Australian Water Regulator is not yet widely accepted, however.

Next steps in a crowded policy environment

Barriers to existing reform commitments

Most jurisdictions can point to ongoing pricing reform, and it is important to acknowledge that gradual change is a justifiable policy.

Major "overnight" changes to water prices would impose a considerable shock on individuals and businesses. Instead, a continued, gradual move to cost reflective pricing would allow both groups to adjust gradually to the new price signals, for instance through the phased introduction of water saving practices or investment in water saving technologies. There is, therefore, a substantive case for gradual reform.

Unfortunately, there can be no doubt that institutional inertia, and the political acceptability and public understanding of reforms, is also acting as a block to progress. It is understandable that governments would find water price increases (actual or perceived) unattractive; reflecting the fact that the public may also not support actual or perceived rises unless the true impact of below-cost pricing are clear. And institutions, by their nature, rarely promote major reform, due to ingrained behaviours and expertise and possibly commercial advantage from being an incumbent, monopoly water provider.

Two fundamental steps are required to overcome this situation:

First, policy makers need to communicate the true impact of below-costs pricing to users and the wider community. The opportunity cost of below fully cost-reflecting pricing inevitably is met by the taxpayer, diverting resources from other worthwhile social or economic Government programs and biasing signals to users on the true cost of water consumption. The benefits of independent regulation (namely a much better chance of a long term outlook replacing short term considerations) also need to be explained.

Second, strong leadership is required to get this message out and to support change in public institutions. Strong leadership in each jurisdiction is a prerequisite, but the Commonwealth can also play an important role, through DEWHA and the NWC. However, both DEWHA and NWC, whilst analytically strong, are perceived by some to lack influence and leverage at the present time, since they have not been given sufficient levers to influence the jurisdictions.

This raises two potential solutions to these barriers for the work agenda.

First, intergovernmental agreements, often backed by new intergovernmental institutions, have a long history of expediting complex infrastructure reforms in Australia, by developing momentum, garnering support and moving the debate beyond narrow local confines. The issue for the water sector is more that the urban water aspects of the National Water Initiative were not extensive and therefore did not drive significant urban water reform.

Further, in many cases those timelines for implementing the urban water reforms that were included have not been achieved.

Second, the scarcity of capital for major investments may in fact offer the prospect of faster progress. First, State and Territory governments with internal capital constraints will need to maximise the return on their investments, leading to pressures to introduce prices which will cover the cost of investment. This capital scarcity may well act to move governments towards cost–recovery on a faster timetable than at present, particularly in an environment where the same message (capital scarcity, cost pressures, leading to customer price increases) are evident in other utility sectors, especially electricity.

In addition, requests for Commonwealth capital contributions – through DEWHA or Infrastructure Australia / the Building Australia Fund – provide a crucial opportunity for the Commonwealth to leverage reforms. This last point is more than simply an issue of bargaining positions, but primarily a question of national equity. For instance, it seems inequitable for taxpayers in one State, whom currently have water prices set by an independent regulator at levels (close to) full cost recovery, to subsidise taxpayers in another jurisdiction whom currently do not pay prices that approach full cost recovery. Thus, all capital grants (or loans/equity injections) from the Commonwealth to jurisdictions should be conditional on the introduction of cost-recovery pricing and independent regulation.

There is already a model for this in the rural water sector. The State Priority Water Infrastructure projects that are to be part-funded by the Commonwealth under the Intergovernmental Agreement have conditions attached, requiring the states and territories to adhere to the National Water Initiative and deliver water savings to the Commonwealth Government environmental water manager. Compliance with the conditions is administered by the NWC.

Winning the argument for further reforms

The recommendations around improved planning frameworks; competition in bulk water supply; and consumer choice stem from principles which are not yet broadly agreed by jurisdictions. In part, this is because they have not been widely raised at the national level; but this also reflects a lack of political incentives and institutional inertia.

As a result, the work agenda needs to describe and win the case for reform, before addressing the practical steps required to deliver those reforms. In this context, it is important to understand that there is a hierarchy of impact: planning framework reforms are likely to have considerably more impact than reforms concerning bulk water supply competition and consumer choice, but noting also that planning improvements have an impact over a longer timeframe. For jurisdictions which have ‘built up’ supply capacity in response to the current drought, the next phase of significant capital expenditure which is open to being shaped by an improved planning framework might a decade or more away.

Appendices

Appendix A COAG National Urban Water Planning Principles

The Council of Australian Governments has adopted the National Urban Water Planning Principles.

The Principles provide Australian governments and water utilities with the tools to better plan the development of urban water and wastewater service delivery in a sustainable and economically efficient manner. Proper planning will facilitate a balance in supply and demand and build community confidence in diverse sources of water supply.

These principles are as follows.

1. Deliver urban water supplies in accordance with agreed levels of service.

The service level for each water supply system should specify the minimum service in terms of water quantity, water quality and service provision (such as reliability and safety). Levels of service should not apply uniformly, but rather should be set for each supply system and potentially for different parts of an individual supply system. Agreement on levels of service will allow the community to understand how seasonal variability and climate change will impact on supply into the future and how different levels of service relate to costs. Measures undertaken to minimise risk and maximise efficiency in supplying water should be in accordance with agreed levels of service.

2. Base urban water planning on the best information available at the time and invest in acquiring information on an ongoing basis to continually improve the knowledge base.

Up-to-date information on current and future water resources, water supplies and water demand is critical for effective urban water planning. Information on possible future changes, such as population growth and climate change, is also important in understanding the ongoing water supply/demand balance and to determine an acceptable level of risk due to uncertainty.

Knowledge of existing customers (including who is using water, how much and for what end uses and an understanding of the differences between customers and geographic locations) is important when forecasting future water demands by end users in a particular category of use and the impact of possible demand management measures under consideration.

Urban water planning should be based on scenario planning, incorporating uncertainty in supply and demand, as well as integrated with future economic development and land use planning to ensure full knowledge of the availability of water supplies and water savings opportunities.

Where possible, information should be gathered in such a way that it enables improved information-sharing and research coordination between jurisdictions.

3. Adopt a partnership approach so that stakeholders are able to make an informed contribution to urban water planning, including consideration of the appropriate supply/demand balance.

Stakeholder input is essential to ensure that the proposed levels of service and the supply and demand management options required to deliver that level of service are considered in terms of consumers' attitudes, including willingness and ability to pay.

Community information and education programs should be an integrated part of urban water planning and should be designed appropriately, based on community input, to increase knowledge, understanding and informed participation in urban water planning, as well as increase water efficient behaviours.

Urban water planning should be based on a process that is transparent and inclusive, recognising different consultation approaches are appropriate in different circumstances.

4. Manage water in the urban context on a whole-of-water-cycle basis.

The management of potable water supplies should be integrated with other aspects of the urban water cycle, including stormwater management, wastewater treatment and re-use, groundwater management and the protection of public and waterway health.

The risks associated with different parts of the urban water cycle (such as trade waste, stormwater, etc) should be considered and managed. Water quality of potable supplies should be protected through appropriate catchment management practices and management of wastewater. This will involve a range of activities, from land use planning and management that protects the quality of natural water resources, through to addressing the disposal, treatment and reuse phases of the water cycle.

Such an approach should result in delivery of diverse water supplies which are fit-for-purpose and optimise the use of water at different stages of the urban water cycle.

5. Consider the full portfolio of water supply and demand options.

Selection of options for the portfolio should be made through a robust and transparent comparison of all demand and supply options, examining the social, environmental and economic costs and benefits and taking into account the specific water system characteristics. The aim is to optimise the economic, social and environmental outcomes and reduce system reliability risks, recognising that in most cases there is no one option that will provide a total solution. Readiness options should also be identified as part of contingency planning.

Options considered could include the following:

- optimising the use of existing infrastructure through efficiency measures;
- residential, commercial and industrial demand management initiatives;
- purchasing or trading water entitlements from other sectors, and
- development of additional centralised and/or decentralised water supply options, including manufactured water sources (such as recycling and /or desalination), where appropriate.

By considering the full range of options, access to a range of sources should be able to be optimised dynamically (even on a short term basis) through the availability of diverse infrastructures that may include both centralised and decentralised water supply schemes. These sources would be drawn upon in differing combinations depending on the local and regional climatic conditions and the mix of sources selected would be those resulting in the lowest environmental, social and economic costs over the long term.

6. Develop and manage urban water supplies within sustainable limits.

Ensuring the ongoing protection of the environment and waterway health is an integral part of urban water planning. Natural water sources for all water supplies, such as surface and groundwater supplies, should only be developed within the limits of sustainable levels of extraction for watercourses and aquifers.

Sustainable levels of extraction should be established through publicly available water plans prepared at a catchment and / or basin scale for all water use, including environmental requirements. In determining the sustainable extraction levels, regard should be had to the inter-relationships of different water sources.

To ensure sustainability, extraction levels should also be monitored over time and periodically re-assessed to reflect changes in scientific knowledge and climate variability.

7. Use pricing and markets, where efficient and feasible, to help achieve planned urban water supply/demand balance.

Tariff structures for water supplies should be designed to signal the full value of finite water resources to end users to encourage efficient water use. The price charged for urban water services should be transparent and linked to the level of service provided.

Rights to urban water supply should be clearly defined to the extent that it is economically efficient, cost-effective and feasible to do so, at the various levels of the supply chain. This in turn will facilitate the use of markets and trading where appropriate. This could include developing bulk water and wastewater markets, removing barriers to competition and institutional, structural and governance reforms.

8. Periodically review urban water plans.

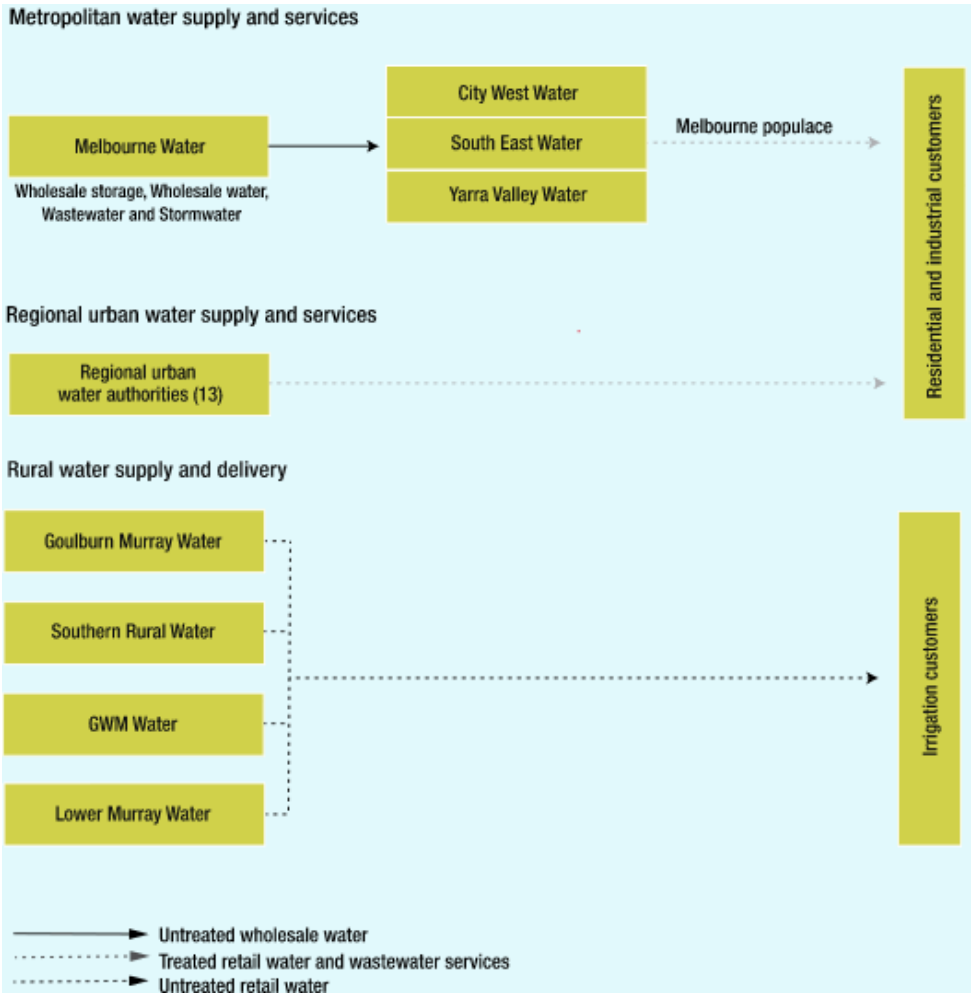
Recognise that there is a need for periodic review of urban water plans and their underpinning assumptions. All parties involved in the development of an urban water plan should be committed to ensuring that the plan can adapt as necessary to reflect additional information/knowledge and changing circumstances.

Planning should recognise that some demand/supply responses are short-term and are required to be adaptive, while other responses such as water infrastructure planning and investment have a longer planning horizon because the assets have a considerable lifespan.

Appendix B State and Territory Water Planning Processes

Victoria

Urban Water Supplies



Source: http://www.nwc.gov.au/www/html/1958-water-supply-and-services---introduction.asp

Melbourne Water provides bulk water and wastewater services to metropolitan Melbourne. Melbourne Water was established specifically to manage the wholesale storage, wholesale water, wastewater and stormwater for the metropolitan Melbourne region. Supply of water and wastewater services to households and other customers is managed by three individual 'retail' water businesses within Melbourne - City West Water, South East Water and Yarra Valley Water.

Currently, Melbourne's water supply is heavily reliant on rainfall and river systems (surface water), with over 80 per cent of Melbourne's water coming from this source. The remaining supply is accounted for through recycled water (14 per cent), groundwater (2 per cent) and stormwater and rainwater (0.2 per cent).

In 2008 the Victorian Competition and Efficiency Commission (VCEC) undertook an inquiry into the structure of the metropolitan retail water sector to ensure it continues to provide secure and reliable water services at least cost to the community. The VCEC recommended retaining the three retailers, but requiring them to co-operate in achieving future cost savings via shared services and co-ordinated procurement of common inputs. Further recommendations were made regarding governance and regulatory arrangements which are currently being considered by Government.

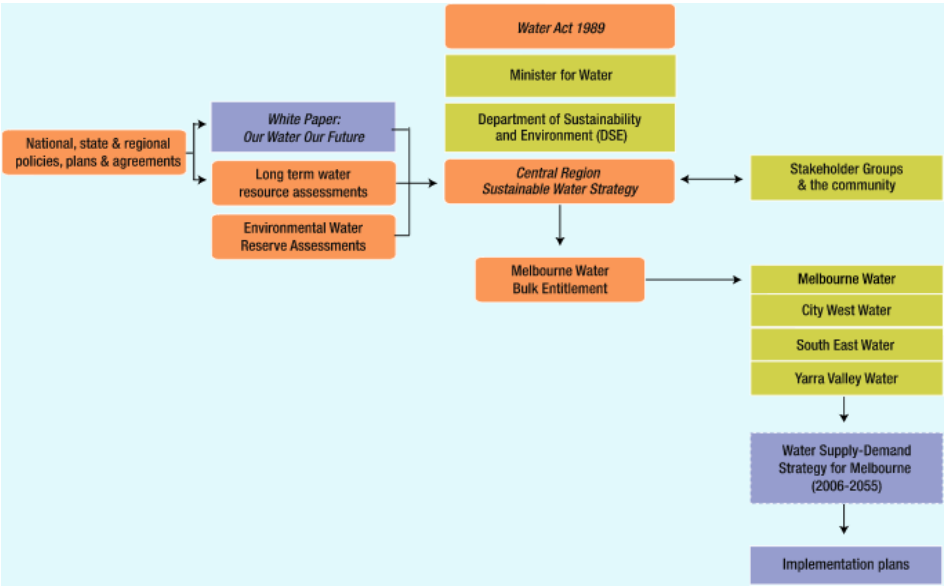
The Environment and Natural Resources Committee for the Victorian Government was required to conduct an inquiry into Melbourne's future water supply. This inquiry focused on further water savings, the collection of stormwater, reuse of treated wastewater, use of groundwater and desalination plants.

The inquiry recommended that amendments to planning be completed to promote stormwater harvesting in Melbourne, while also placing a moratorium on the issue of new bore construction and extraction licences in Melbourne due to both the unknown impacts of extraction and the sustainable extraction limit. It also outlined that the major constraint in supplementing Melbourne's water supply with a number of smaller desalination plants was the disposal of the brine effluent in Port Phillip Bay.

The Committee concluded that given the current climate change predictions, and the fact that most of Melbourne's water supply is rainfall dependent, there is an urgent need to diversify supply rather than invest in the construction of new dams.

Outside of Melbourne, regional urban water businesses provide water supply to urban residents and businesses. A number of these regional businesses procure bulk water from a rural water business (Goulburn-Murray Water, Southern Rural Water, GWM Water and Lower Murray Water).

Planning Processes



Source: http://www.nwc.gov.au/www/html/1954-metropolitan-water-planning.asp?intSiteID=1

The primary overarching plan for Victorian urban water supplies is conveyed in the Victorian Government's White Paper: Our Water, Our Future. This is an integrated action plan that is designed to ensure the ongoing security of the state's water supply while concurrently protecting the environment.

The development of this policy document is in line with the Central Region Sustainable Water Strategy which is legislated under the *Water Act 1989*. It relates to the ongoing security of water and balancing the competing demands for this resource over the 50 year period between 2006 and 2055. In the context of this the Department of Sustainability and Environment prepares water strategies in consultation with other government departments, water authorities, catchment management authorities and key stakeholders. These strategies are to be reviewed at least every 10 years.

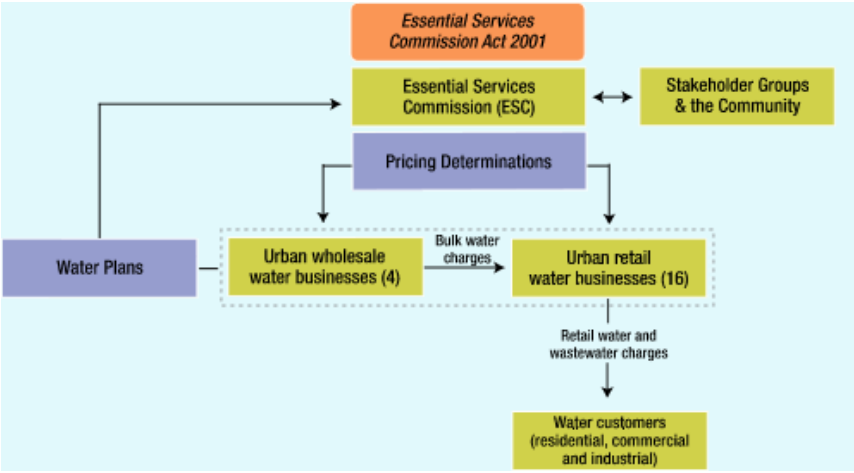
Within the metropolitan region there are three central water authorities – City West Water, South East Water and Yarra Valley Water. These entities are responsible for the development of implementation plans around issues of bulk entitlement conditions, corporate action plans, drought response plans, permanent water savings plans and water recycling plans. These are developed in accordance with the Water Supply-Demand Strategy for Melbourne (2006-2055). This strategy seeks to formally identify the measures to achieve a balance between the demand for water and the available supply including water conservation targets and plans for water recycling. The difference between the Water Supply-Demand Strategy for Melbourne (2006-2055) and the Central Region Sustainable Water Strategy lies in that the former focuses on securing water supplies in Melbourne whereas the latter seeks to balance the needs of metropolitan and rural customers and the

environment. The Water Supply-Demand Strategy for Melbourne (2005-2055) is guided by the Central Region Sustainable Water Strategy.

The Water Supply-Demand Strategy for Melbourne (2006 – 2055) has four key objectives. These include focusing on water conservation to alleviate future shortfalls, seeking new and alternative supply sources, improving the health of river and waterway ecosystems while concurrently implementing measures that reduce greenhouse gas emissions by decreasing energy consumption and seeking to minimise the emission generated from alternative water supply sources.

In order to achieve these objectives it is proposed that the metropolitan water utilities continue to invest in water conservation programs, that Melbourne Water work closely with the Victorian Government and the relevant government departments to ensure adequate environmental flows are maintained, promotion of water efficient devices such as showerheads, washing machines and evaporative air conditioners, development of minimum performance water standards for commercial and industrial customers, reduce wastage via water pipes and increase use of local water sources such as rainwater, seawater, stormwater and recycled water.

Economic Regulation



Source: http://www.nwc.gov.au/www/html/1950-urban-water-pricing---introduction.asp?intSiteID=1

Since 1 January 2004 the Essential Services Commission (ESC) has been the independent economic regulator of the Victorian water sector. The regulation incorporates water businesses providing bulk and retail water and waste water services to all of Victoria's urban and rural irrigation customers. Its role encompasses regulation of prices as well as monitoring of service standards and market conduct.

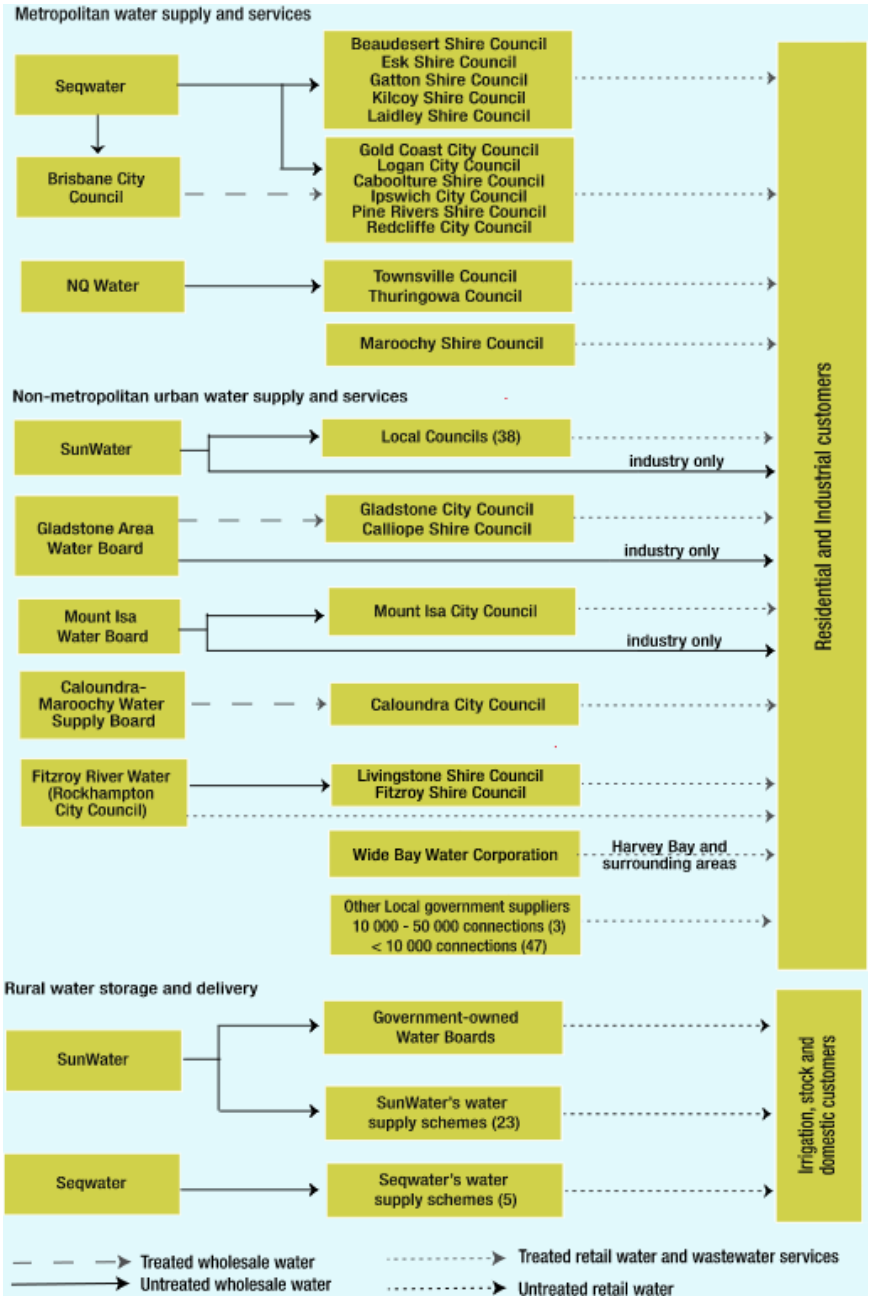
The various water businesses submit five-year water plans to the ESC which outline proposed capital and operating expenditure for

the period, as well as service standards to be achieved. The ESC then assesses the efficiency and appropriateness of these water plans before making a pricing determination.

The ESC recently undertook a price review for the metropolitan Melbourne water businesses. The final decision on prices and service standards has now been set until 2013.

Queensland

Urban Water Supplies



Source: http://www.nwc.gov.au/www/html/2359-metropolitannon-metropolitanrural-water-supply-and-services.asp

In Queensland, urban water and wastewater services are provided by a combination of local- and State-Government owned agencies.

Service delivery arrangements in the south east corner of the State, including metropolitan Brisbane, are mid-way through a major restructure. Bulk water supply, treatment and transmission services

have been aggregated into three, State-owned authorities. This involved the aggregation of previously State-owned dams and other assets, as well as the acquisition from Councils of various bulk supply facilities.

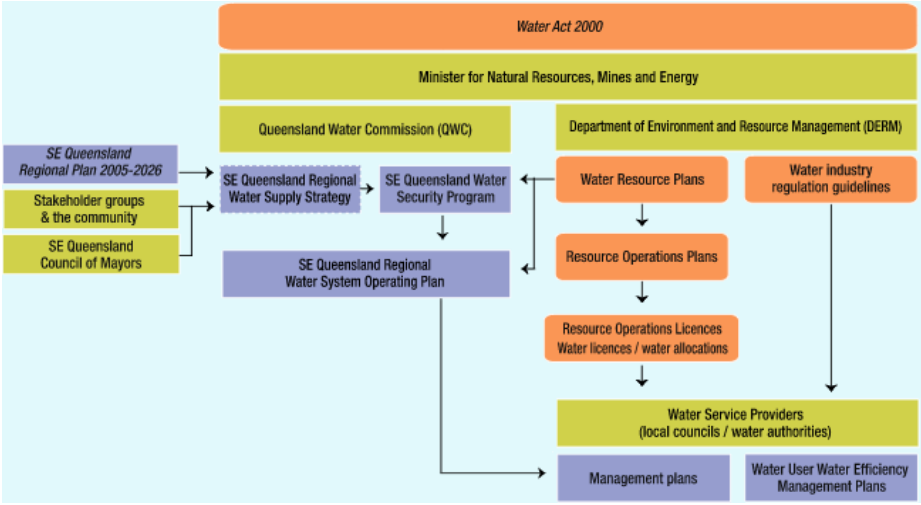
Water and wastewater distribution and retail activities currently are provided by Councils individually, though by 1 July 2010 these functions will be have consolidated into three, jointly Council-owned entities. The three Council water businesses will procure bulk, treated water from the State-controlled South East Queensland Water Grid Manager, and provide customer-facing services to more than 2.5 million people in the State's south east.

Outside of south east Queensland, urban water services are predominantly provided by local governments. In some cases bulk water is purchased from State-owned entities (such as the Gladstone Area Water Board, or Sunwater, the State's rural water services provider), while in other areas Councils also control 'upstream' supply sources.

Traditionally, surface water sources have dominated the supply mix, especially for coastal centres. Recently, the State Government has developed a number of 'drought response' supply initiatives, including a desalination plant at Tugun, on the Gold Coast, and a large recycling project which is capable of delivering highly-treated 'purified recycled water' into Wivenhoe Dam, and which would allow for large-scale indirect potable reuse of wastewater.

Presently, this recycling scheme provides treated wastewater only to two thermal power stations, with the State determining that it would not supplement urban water supplies with PRW until the combined levels of water in storages in south east Queensland falls below 40%.

Planning processes



Source: http://www.nwc.gov.au/www/html/1543-urban-water-pricing.asp?intSiteID=1

South East Queensland

The Queensland Water Commission in responsible for urban water supply planning with South East Queensland. The Commission's role is to ensure sustainable water supplies by developing long term water supply strategies, establishing a regional water grid, implementing water restrictions, managing water demand, providing advice to government and reforming the water industry.

The Commission is currently finalising the *South East Queensland Water Strategy* (the Strategy) is the adaptive plan to meet South East Queensland's (SEQ) water supply requirements to 2050 and beyond. The Strategy is designed to achieve the objectives of the *Water Supply Guarantee*, supplying sufficient water to meet the needs of urban, industrial and rural growth and the environment.

Using the proposed new approach outlined in the draft South East Queensland Water Strategy released in March 2008, the inadequacies of past approaches are being addressed by:

- using stochastic modelling to provide better information about climate variability and the potential for droughts worse than those that have been recorded;
- developing climate models to assess potential reductions in surface water availability due to climate change;
- undertaking a detailed review of water consumption patterns and implementing cost-effective measures to reduce demand;
- defining a yield for the water grid as a whole, such that it can be supplied at the specified levels of service;
- using the most cost-effective suite of potential supplies, where they have acceptable environmental and social impacts;

- operating water supply and delivery infrastructure in a coordinated manner;
- adopting a total water cycle management approach and operating within water resource plan limits; and
- ensuring that planning for future droughts is a core element of the planning process.

Supply security will be delivered through demand management, timely investment in infrastructure and the efficient operation of the SEQ Water Grid. The South East Queensland System Operating Plan is intended to facilitate the desired levels of service objectives for the region, by providing the rules for the operation of the SEQ Water Grid.

The SEQ Water Grid Manager (SEQWGM) is responsible for the efficient operation of the overall Water Grid as a system. The SEQWGM issues monthly Grid instructions to water service providers and facilitates risk management. Through these mechanisms, the SEQWGM has the capacity to direct the operation of the Water Grid so as to avoid or defer the need for additional capital expenditure.

The Commission and the SEQWGM are the only authorities with a direct interest in the Water Grid as a whole. The authorities that have an interest in elements of the Water Grid are:

- Department of Infrastructure and Planning - responsible for delivery of specified Queensland Government water projects;
- Seqwater - owns and operates water supply and water treatment infrastructure in SEQ (trading as Seqwater);
- LinkWater - owns and operates major pipelines in SEQ;
- WaterSecure - owns and operates the Western Corridor Recycled Water Project and the SEQ (Gold Coast) Desalination Plant; and
- Local Councils - own sewage collection and treatment infrastructure and non-bulk water assets, and will be responsible for retail water supply (via three Corporations Law companies).

The Commission is currently reviewing the process for planning and delivery of water supply infrastructure in South East Queensland. It is seeking to develop a framework for infrastructure planning and delivery which reflects the intent of the institutional reforms and integrate with the framework of economic, asset management and market regulation.

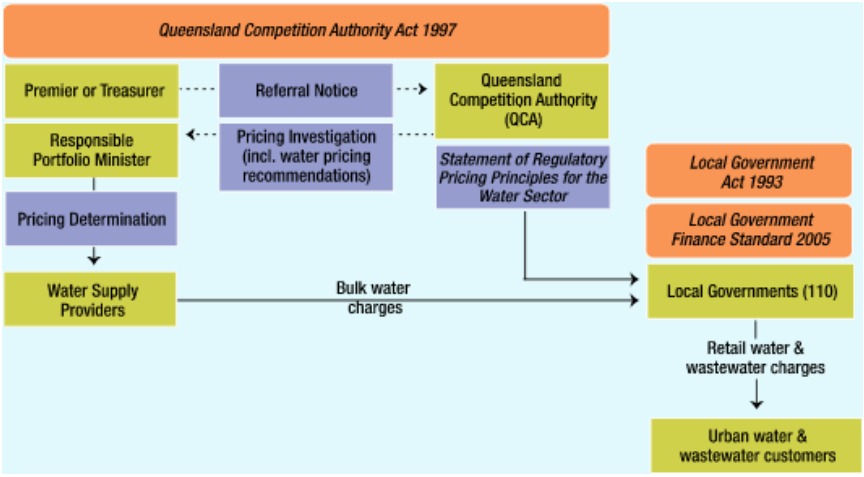
Regional Queensland

The Department of Environment and Resource Management (DERM) is responsible for planning for future water needs in regional areas. This occurs via Water Resource Planning and Regional Water Supply Planning Processes.

Water resource plans, one for each catchment, provide a blueprint for future sustainability by establishing a framework to share water between human consumptive needs and environmental values. Regional water supply strategies are the Queensland Government's approach to ensuring short and long term water supply security on a regional basis. These strategies, developed in partnership with local governments, water service providers, industries and community groups, balance water demand and supply requirements and provide regional water supply solutions for the next 50 years.

DERM and the Department of Infrastructure and Planning are responsible for the planning and delivery of significant arising projects arising out of these planning processes. Water Service providers are also responsible for the development of new infrastructure, including that relating to the augmentation of existing systems.

Economic regulation



Source: http://www.nwc.gov.au/www/html/1543-urban-water-pricing.asp?intSiteID=1

Prices regulation for the urban water sector presently comprises a mix of formal regulation by the State's independent regulator, the Queensland Competition Authority (QCA) and 'interim' regulatory arrangements for the metropolitan bulk authorities undertaken by the Queensland Water Commission (QWC).

Under the *Queensland Competition Authority Act 1997* the QCA has the power to investigate, monitor and make recommendations concerning water and wastewater prices.

The QCA was directed by the Premier and the Treasurer to recommend an interim price monitoring framework to apply from 1 July 2010 to apply to South East Queensland water and wastewater distribution and retail activities. The QCA was responsible for price monitoring for the prior period to 1 July 2010. The future role of the QCA in the economic regulation of the SEQ Water Sector (including for bulk activities) has not been determined, although there is a

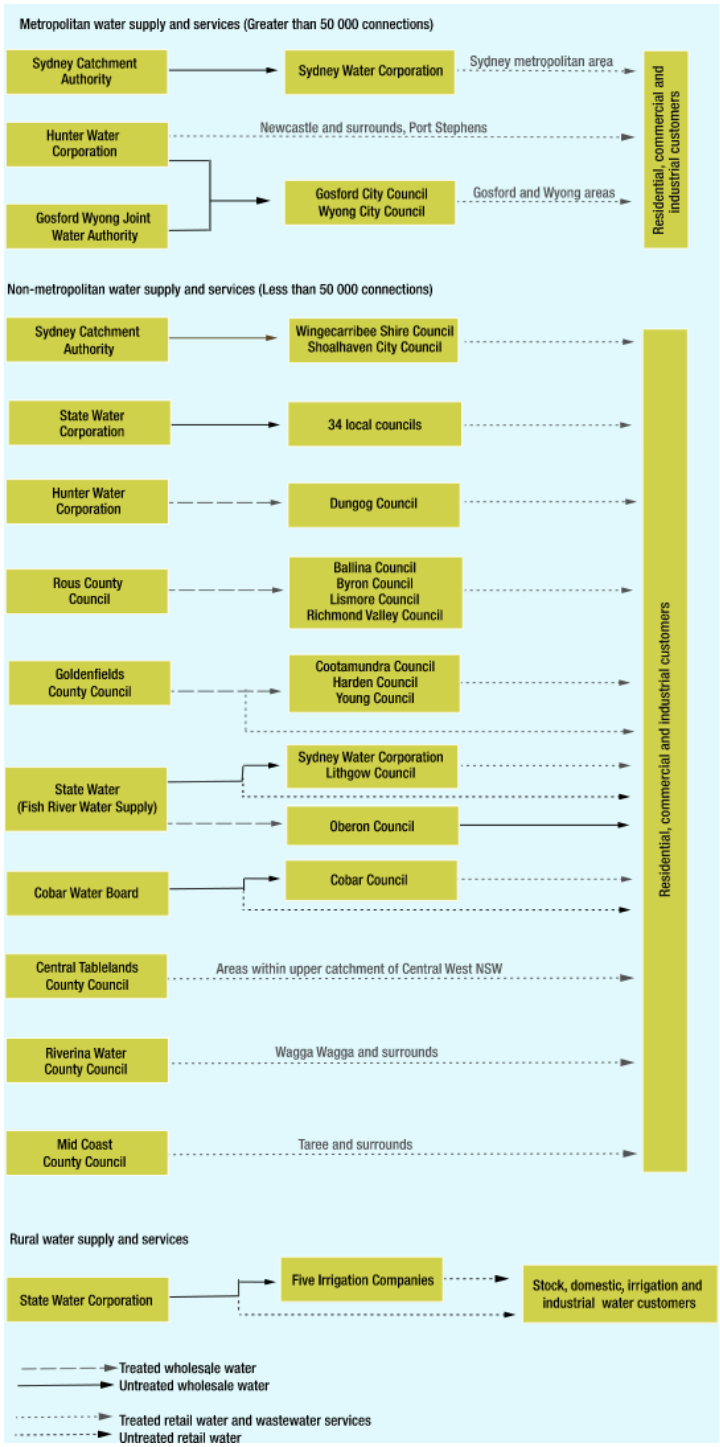
general view that greater responsibility should eventually sit with the QCA.

Outside of south east, Queensland and with the exception of the Gladstone Area Water Board, the QCA has the potential jurisdiction, but has not yet undertaken any prices investigations of urban water pricing arrangements by Council water businesses.

Using the Authority's published prices investigations for GAWB as a guide, the regulatory approach adopted by the QCA is similar to that adopted in other States and Territories; the focus is on determining a pricing structure which allows the business to recover sufficient revenue to cost costs, including a commercial return on capital, with the tariff structure influenced by demand management and considerations of risk-apportionment between the water services provider and customers.

New South Wales

Water Supply



Source: http://www.nwc.gov.au/www/html/1292-water-supply-and-services.asp

Metropolitan water supply and services

Metropolitan bulk water, urban water services and storm and wastewater services are provided by the Sydney Catchment Authority, Sydney Water Corporation, Hunter Water Corporation, Gosford City Council, and Wyong Shire Council.

The Sydney Catchment Authority supplies water in bulk to the Sydney Water Corporation, which supplies water and sewerage services to residential and industrial customers in the greater Sydney metropolitan area, which includes the Illawarra and Blue Mountains.

Hunter Water provides wholesale and retail water and wastewater services to more than 200,000 residential, commercial and industrial customers from five local government areas - Newcastle, Lake Macquarie, Maitland, Cessnock and Port Stephens. In addition, wholesale water is supplied by Hunter Water to Gosford and Wyong Councils.

The Gosford-Wyong Joint Water Authority supplies water in bulk to the Gosford City Council and the Wyong Shire Council, which provide water to residential, commercial and industrial customers. The transfer system between Hunter and Gosford-Wyong will shortly also enable transfers of water from Wyong to Hunter when warranted.

Non-metropolitan water supply and services

The Sydney Catchment Authority supplies water in bulk to a number of smaller customers outside the Sydney metropolitan area, including Wingecarribee Shire Council and Shoalhaven City Council. It also directly supplies a small number of customers who draw water directly from major water supply pipelines and conduits.

State Water, the State-owned rural water services business, provides untreated wholesale water supply to over 34 local water businesses (mostly local government councils), while Hunter Water provides a fully treated wholesale water supply to Dungog Council.

Otherwise, the provision of water supply and sewerage services to country towns in New South Wales is the responsibility of local government under the *Local Government Act 1993*. Local government, through 106 non-metropolitan local water utilities, provides water supply and sewerage services to 1.8 million people – 30 per cent of the state's population.

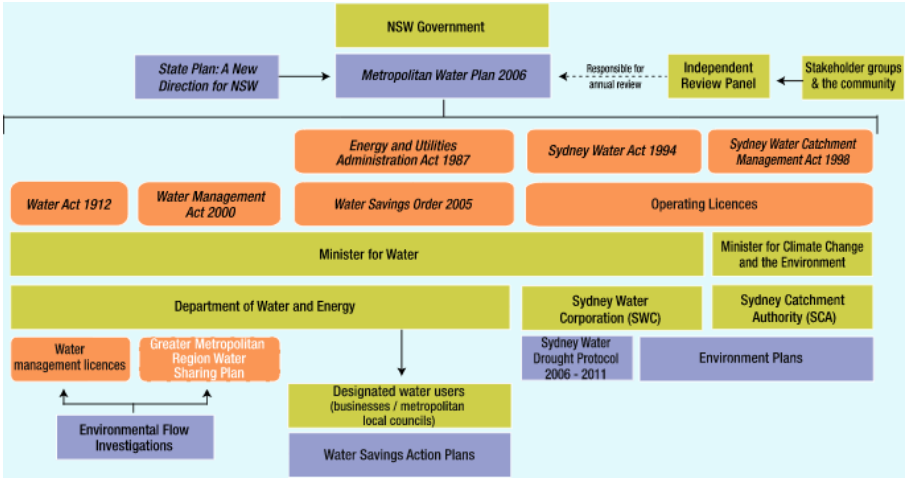
The main sources of supply for the remaining non-metropolitan urban water businesses providing reticulated water supply include:

- wholesale storage dams
- groundwater

- fully treated wholesale water from a wholesale water supplier
- regulated untreated wholesale water from State Water Corporation wholesale storages; and
- regulated untreated wholesale water supply.

A recent local water utility *Inquiry into Secure and Sustainable Urban Water Supply and Sewerage Services for Non-Metropolitan NSW* sought to identify the most effective governance arrangements for the long term provision of water supply and sewerage services in country NSW. The NSW Government has not yet responded to the recommendations of this inquiry.

Urban water supply planning



Source: http://www.nwc.gov.au/www/html/1291-metropolitan-water-planning.asp?intSiteID=1

The NSW Office of Water oversees and coordinates the Metropolitan Water Plan. The plan seeks to secure the supply of water to the greater Sydney region, preparing it for drought, a changing climate and a growing population.

The 2006 Metropolitan Water Plan currently is in the process of being renewed, with a revised plan anticipated to be released in 2010. The updated planning process is being oversighted by an independent panel, comprising specialists in environmental management, economics, social research and water industry experts.

The 2010 plan encompasses a significant restructure to the overall planning concepts adopted in 2006. The NSW Government's decision to proceed with construction of a desalination plant has changed the supply-side mix and will require adjustments to the previous hydrological yield approach to planning.

The plan is being developed by a secretariat with the NSW Office of Water, reporting to a "CEO's Committee" comprising the Chief

Executives of each of the relevant urban water businesses and key Government Departments.

The NSW Government is also developing a complementary *Greater Metropolitan Region Water Sharing Plan*, which will be similar to the water sharing plans under the *Water Management Act 2000* adopted for other catchments. This water sharing plan will underwrite the water sharing aspects of the 2010 Metropolitan Water Plan.

The NSW Office of Water strongly encourages all local water utilities to prepare a water conservation and demand management strategy as part of their strategic planning process. This involves understanding the nature of the demand and implementing appropriate measures to reduce demand and minimise wastage including active intervention (eg. rebates for water efficient appliances), water pricing reform, community education and leakage reduction programs.

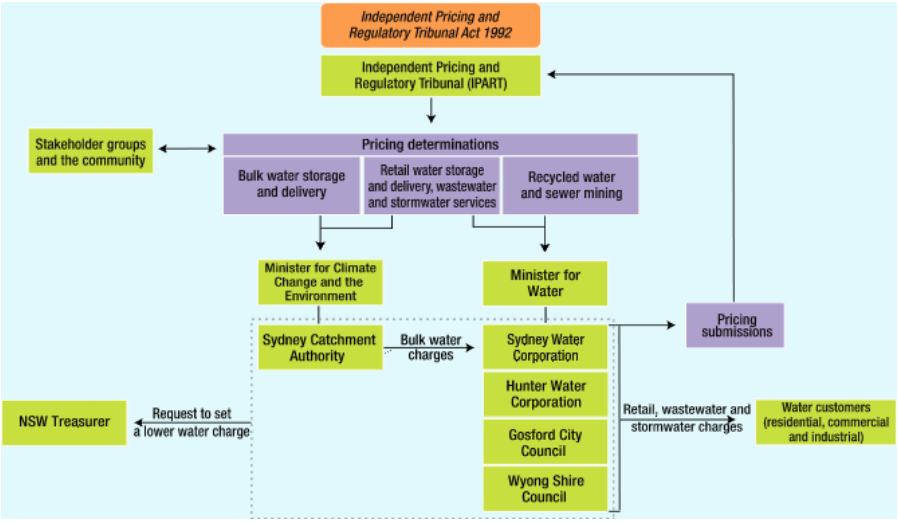
In addition to the preparation of a demand management strategy, Sydney Water as part of its 2007-08 annual report, has published the Sydney Water *2007-08 Water Conservation and Recycling Implementation Report* which contains a review of demand management and recycling initiatives.

The NSW Office of Water is responsible for managing the NSW Government's Country Towns Water Supply and Sewerage Program and works with a range of stakeholders towards achieving the Office's requirements under the State Plan Priority E1 "A secure and sustainable water supply for all users".

In addition to overseeing and monitoring the performance of local water utilities, the Office builds local water utility capacity through the provision of strategic and operational guidelines, manuals, software, expert advice, technical support and assistance, inspections and training, together with financial assistance towards the capital cost of backlog water supply and sewerage infrastructure.

The *Integrated Water Cycle Management Program* is the Office's principal non-metropolitan urban water planning tool. It is used to achieve consideration of all urban water uses within a catchment and policy framework to deliver affordable and sustainable environmental, economic and social outcomes.

Economic regulation



Source: http://www.nwc.gov.au/www/html/1244-metropolitan-water-pricing.asp?intSiteID=1

IPART (the Independent Pricing and Regulatory Tribunal) is the independent economic regulator for NSW. IPART oversees regulation in the electricity, gas, water and transport industries and undertakes other tasks referred to it by the NSW Government.

Specifically in relation to water, the regulator's key responsibility is to make price determinations for the urban water sector and recommend licensing guidelines to the Minister.

Under the *IPART Act 1992* the Tribunal determines the maximum prices that can be charged for Metropolitan Water Supply, Wastewater and Stormwater services supplied by declared public water authorities:

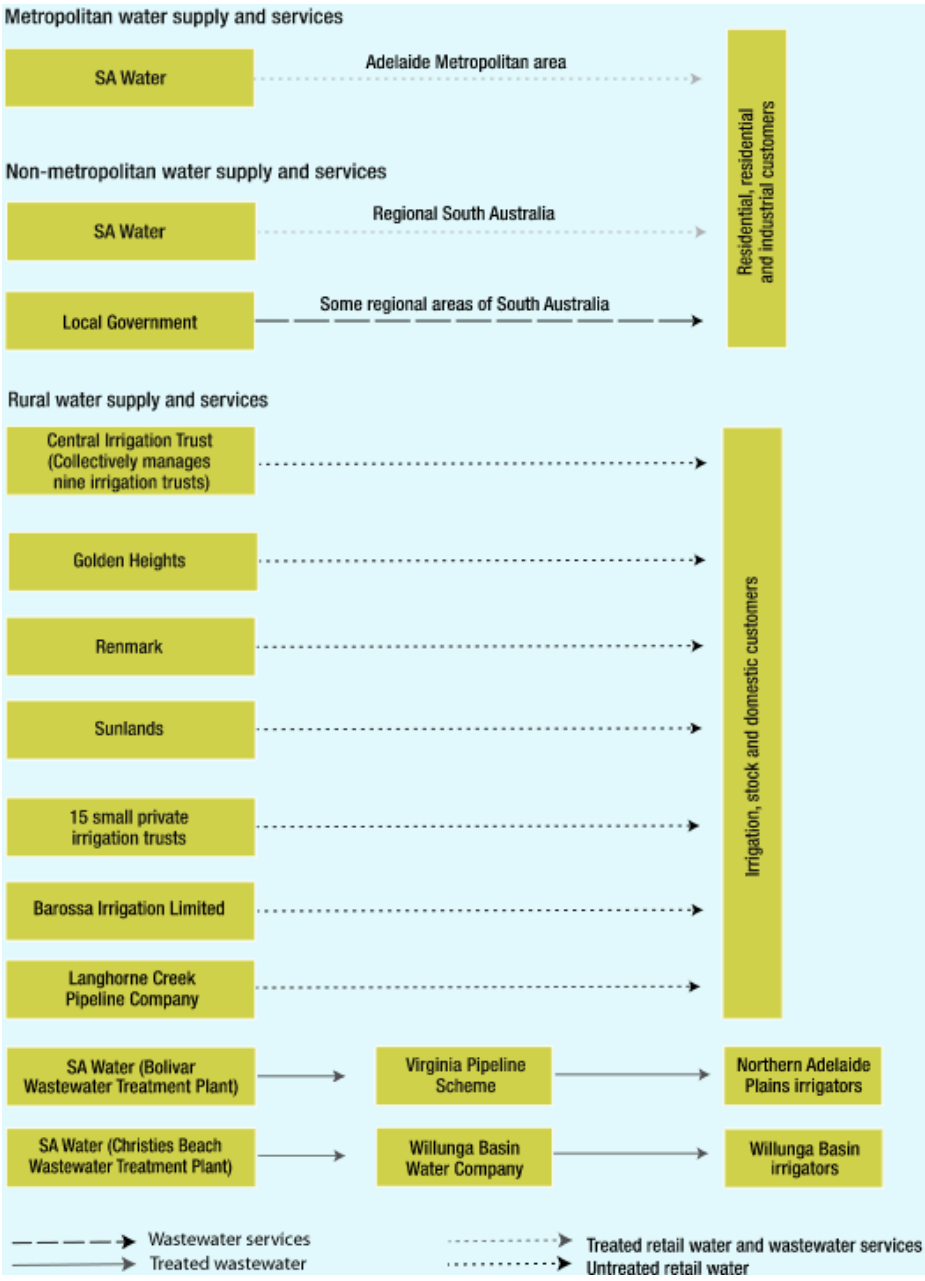
- maximum periodic prices for these services are currently set for Hunter Water until 30 June 2012, Gosford Council and Wyong Council until 30 June 2013 and for Sydney Water until 30 June 2012.

- maximum prices are currently set for bulk water supplied by the Sydney Catchment Authority until 30th June 2013.

IPART determines the maximum price that State Water and the Water Administration Ministerial Corporation (administered by the Department of Water and Energy) may levy for services related to bulk water services including water resource management. These services are provided to farmers, irrigators, industrial users and town water suppliers, Sydney Catchment Authority and Hunter Water.

South Australia

Urban Water Supply

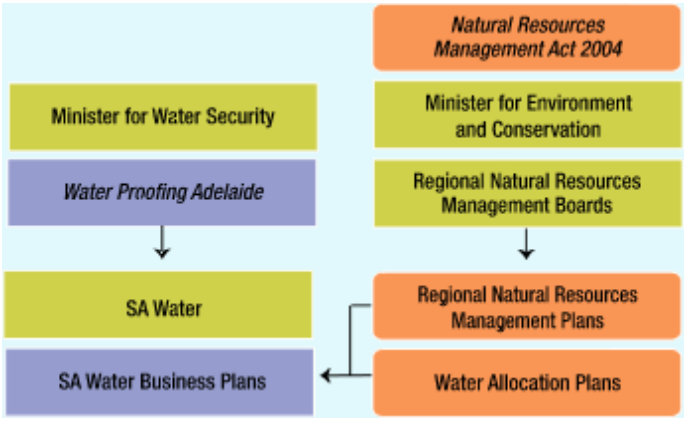


Source: http://www.nwc.gov.au/www/html/1772-water-supply-and-services.asp

The responsibility for the supply of water to both urban and rural bulk businesses and urban retail water businesses lies with SA water, while local government and Natural Resource Management Boards are responsible for the provision of the associated services such as

stormwater and drainage.[7] The Central Irrigation Trust manages the nine irrigation trusts that source water from the River Murray and supply retail customers.

Water Supply Planning



Source: http://www.nwc.gov.au/www/html/1747-metropolitan-water-planning.asp?intSiteID=1

The responsibility for planning and managing metropolitan water lies with SA Water. In doing so, they are required to "plan and develop water and wastewater assets and secure water supply for South Australia". The current strategic plan in place – Water Proofing Adelaide – outlines how water will be managed and conserved through to 2025. This plan focuses on creating a balance between further development in the region and ecological sustainability.

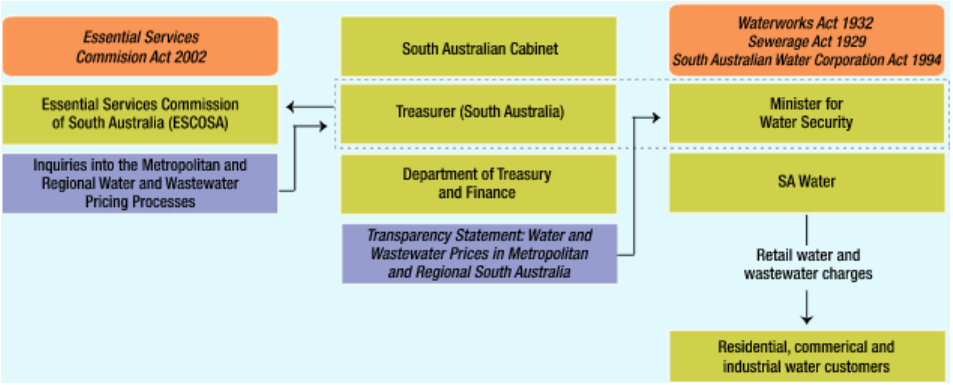
In general, the planning process in place focuses on the role of demand management, water savings and the use of stormwater and recycled water in urban areas to ensure that water resources are managed, conserved and developed in the metropolitan Adelaide region and surrounding areas.[8]

Under the National Resources Management Act 2004, there are eight natural resource regions across the state each of which has a Natural Resource Management Board which is responsible for the administration, development and implementation of natural resource management and water allocation plans within that area. These plans seek to achieve a balance between environmental, social and economic needs for water.

[7] http://www.nwc.gov.au/www/html/2306-water-supply-and-services.asp

[8] http://www.nwc.gov.au/www/html/1515-metropolitan-water-planning-and-management.asp

Water Pricing and Economic Regulation



Source: http://www.nwc.gov.au/www/html/1685-urban-water-pricing.asp?intSiteID=1

The Minister for Water Security is responsible for SA Water and ensuring that Cabinet is informed on issues of water and wastewater pricing. The Minister for Environment and Conservation oversees the management of resources throughout the state. The Treasurer is in charge of monitoring SA Water's financial performance and their budget. The Essential Services Commission of South Australia (ESCOSA) is an independent statutory authority which reviews the price-setting process.

SA Water, which is owned by the South Australian Government, then delivers water and wastewater services to residential, commercial and industrial customers throughout South Australia. The prices charged for this delivery are in accordance with instructions from the Cabinet of the South Australian Government.

The responsibility for economic regulation of the water sector lies with the Essential Services Commission of South Australia (ESCOSA). The objective of this body is to protect the "long term interests of South Australian Consumers with respect to the price, quality and reliability of essential services"[9]. Therefore, in relation to the water industry, ESCOSA's key responsibility is to review the Government price setting. ESCOSA has been responsible for undertaking inquiries into the South Australian Government's processes for setting water and water waste charges since 2004[10]. These inquiries are based on the pricing principles conveyed by the Council of Australian Governments (COAG) in 1994, and the National Water Initiative in 2004. Currently water and wastewater services are unregulated in South Australia. However, the Government plans to implement legislation in 2010-11 that would see the Commission appointed as the independent regulator of monopoly water and wastewater suppliers in the state. At present,

[9] http://www.escosa.sa.gov.au/about-us.aspx

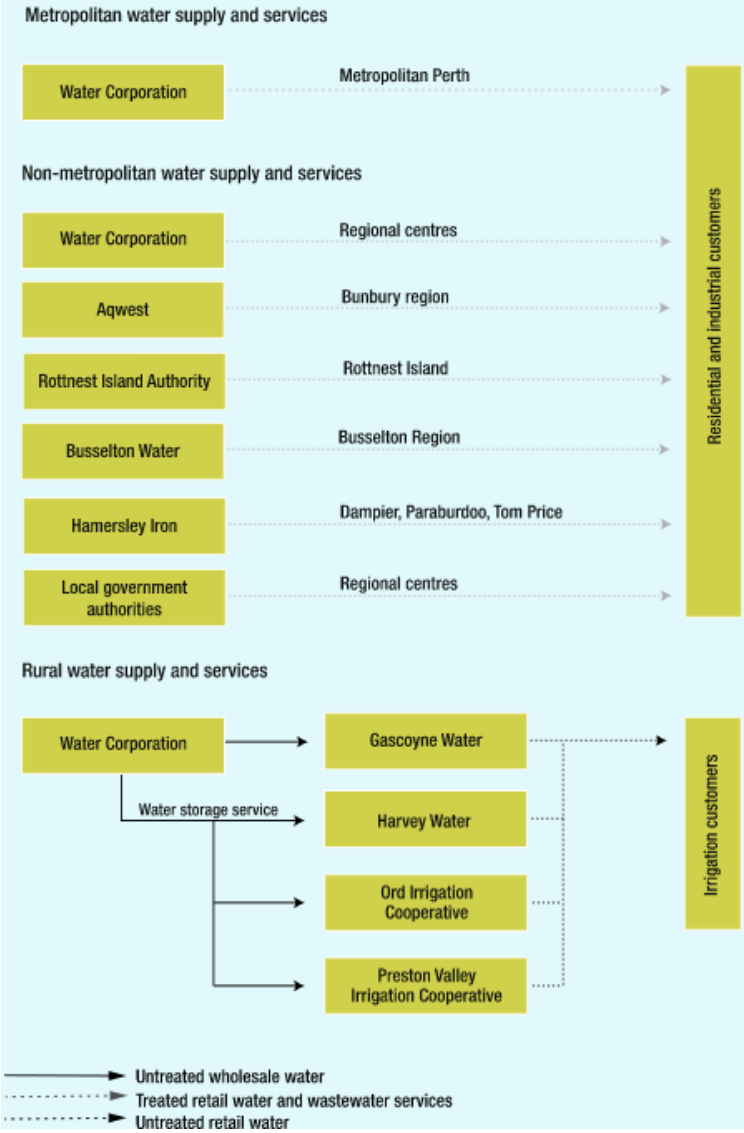
[10] http://www.escosa.sa.gov.au/water-overview.aspx

the price of urban water is determined by the South Australian Cabinet[11].

[11] http://www.nwc.gov.au/www/html/1523-water-pricing-and-economic-regulation.asp

Western Australia

Urban water supply



Source: http://www.nwc.gov.au/www/html/2200-water-supply-and-services.asp

The Water Corporation is a vertically integrated water business. It supplies water and wastewater services to residential and industrial customers in the Perth metropolitan area, parts of south-west Western Australia and the Goldfields and Agricultural Supply Scheme through the Integrated Water Supply Scheme.

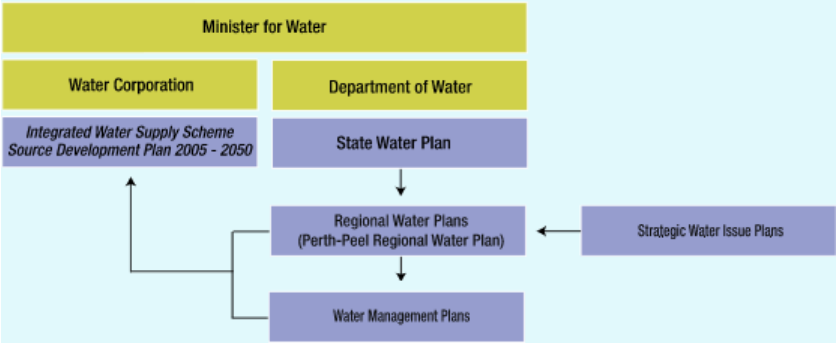
Aqwest, Busselton Water and Rottnest Island Authority are government statutory authorities that supply retail water services to residential and industrial customers in Bunbury, Busselton and Rottnest Island respectively.

Hammersley Iron is a private company that holds a water services operating licence from the Economic Regulation Authority (ERA) to

provide potable water supply and sewerage services in the towns in which it operates from: Dampier, Paraburdoo and Tom Price

There are 20 local governments in regional areas that hold water services operating licences from the ERA to provide wastewater services within their local government areas.

Water supply planning



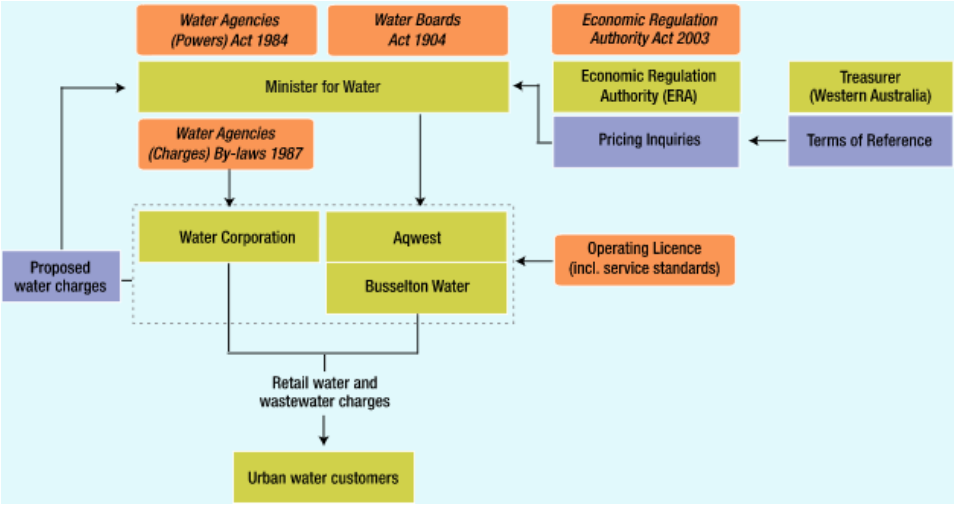
Source: http://www.nwc.gov.au/www/html/2188-metropolitan-water-planning.asp

Urban water supply planning and demand management strategies are principally undertaken by the Water Corporation. The Water Corporation performs a wide range of functions including the conduct of short- and long-term planning, demand forecasting, identifying alternative strategies, seeking government endorsement, calling for tenders from the private sector, evaluating bids and commissioning projects.

The Department of Water is the state government department responsible for managing the regulatory planning and environmental approvals process for proposed projects. They have also adopted a lead role in actioning the State Water Plan which is a strategic plan to ensure that the state's water demands are met up to 2030. In general the Department for Water development water management plans that focus on allocating water sustainably to ensure that the environment is protected and that a sufficient supply of potable water is available.

In October 2009, the Water Corporation adopted a 50 year plan to deliver sustainable water and wastewater to Perth and the surrounding regions. This plan seeks to address the issues of environmental sustainability, the impact of a drier climate and high levels of population growth. That is, an increase in the demand for water combined with a decrease in the available supply. The plan proposes three key strategies to address this future shortage including a reduction in per capita water use, substantial increases in the use of recycled wastewater and the development of new sources such as through desalination and groundwater replenishment programs.

Economic regulation



Source: http://www.nwc.gov.au/www/html/2140-urban-water-pricing.asp?intSiteID=1

The relevant regulator in Western Australia is the Economic Regulation Authority (ERA). The ERA is the independent economic regulator for Western Australia, established under the *Economic Regulation Authority Act 2003*. It has 2 principal functions including:

- the administration of legislation in the water, gas, electricity and rail sectors and these monitoring of providers; and
- undertaking economic inquiries as required by the State Government.

In accordance with the *Water Agencies (Powers) Act 1984*, the *Water Agencies (Charges) By-laws 1987* and the *Water Boards Act 1904* (urban bulk and retail)[12] the ERA does not set water prices. These are determined by the Minister for Water Resources.

The ERA is not the economic regulator for the water industry, however when requested it does provide recommendations to the Government on water and wastewater tariffs. This includes water and wastewater pricing for the three major water storage and delivery providers in Western Australia. Therefore, in terms of the water sector, its key responsibilities include:

- price recommendations; and
- oversight for urban & rural water pricing practices.

[12] Note that the Irrigation Co-operatives set the prices for rural retail.

Tasmania

Urban water supply

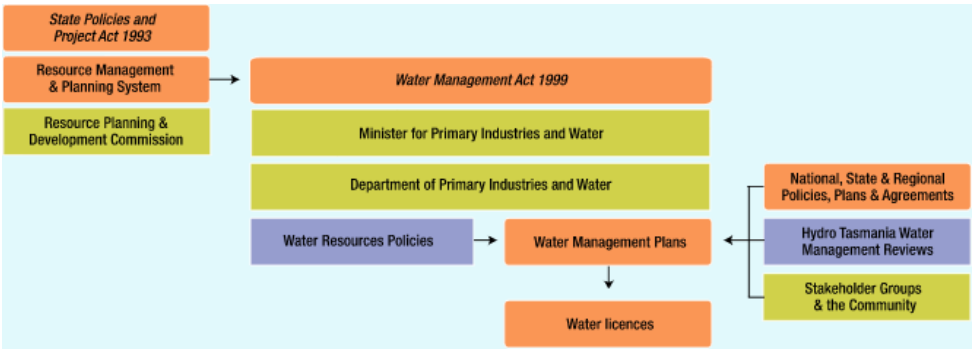
Source: http://www.nwc.gov.au/www/html/1880-water-supply-and-services.asp

The Southern Regional Corporation is responsible for the provision of water and wastewater services to both industrial and residential customers in metropolitan areas. These services are provided to customers in non-metropolitan regions by the Northern Regional Corporation and the North Western Regional Corporation.

Through the current reforms of the Tasmanian water industry, three new water corporations were formed (Southern – Southern Water, Northern – Benlomond Water, North Western – Cradle Mountain Water). These three water corporations have assumed the responsibility of urban water supply, removing the responsibility from individual councils.

Previously the bulk water was provided by separate businesses; however the formation of these corporations has led to the vertical integration of bulk water services with water and wastewater services.

Water supply planning

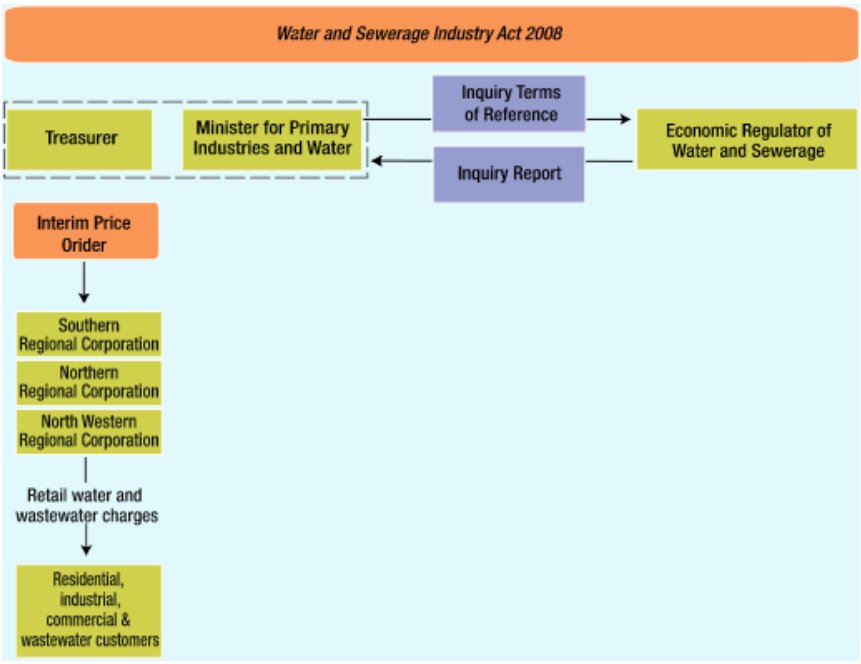


Source: http://www.nwc.gov.au/www/html/1860-rural-and-regional-water-planning---introduction.asp

The responsibility for planning for water supply in Tasmania lies with the Department of Primary Industries, Parks, Water and Environment (previously the Department of Primary Industries and Water). Within the Department, the Urban Water Policy Unit has been created to assist in developing and coordinating policies related to the regulation of the water and sewerage industry. The department is responsible for developing water resource policies which guide the development of water resource plans.

These Water Management Plans are developed in consultation with stakeholders to ensure the sustainable development and management of a water resource. They are generally implemented by the Department of Primary Industries, Parks, Water and Environment. However, the Minister for Primary Industries and Water may approve an application by a water entity to take over the implementation of the Plan.

Economic regulation



Source: http://www.nwc.gov.au/www/html/1824-urban-water-pricing.asp?intSiteID=1

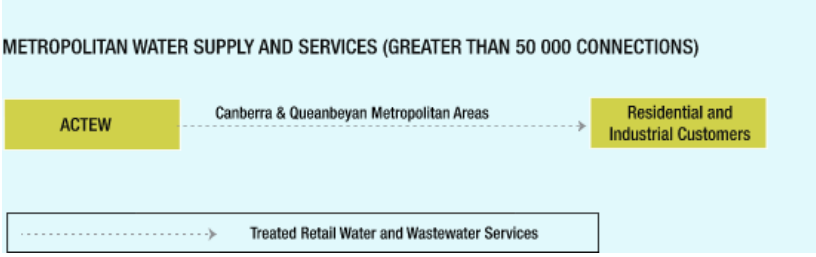
An independent economic regulator was established in Tasmania due to the current reform being undertaken - Office of the Tasmanian Economic Regulator (OTTER). This new office is responsible for the economic regulation of electricity, gas and water.

Currently, the new water corporations are operating under an Interim Pricing Order released by the Treasurer. This is based on advice from the aforementioned economic regulator. It aims to assist the corporations move towards full cost recovery by July 2012 in accordance with the first formal price determination. During the interim period, the economic regulator is required to provide the relevant Minister with an Inquiry Report which will provide them with sufficient price and costing information to inform their decision.

At present, there are a number of cross-subsidies included within the prices, the OTTER will undertake to unwind these cross-subsidies however it has acknowledged that this will take a considerable amount of time. Specifics regarding future pricing regulations are yet to be established, these are expected to be released by the Tasmanian Department of Treasury and Finance in the near future.

Australian Capital Territory

Urban water supply

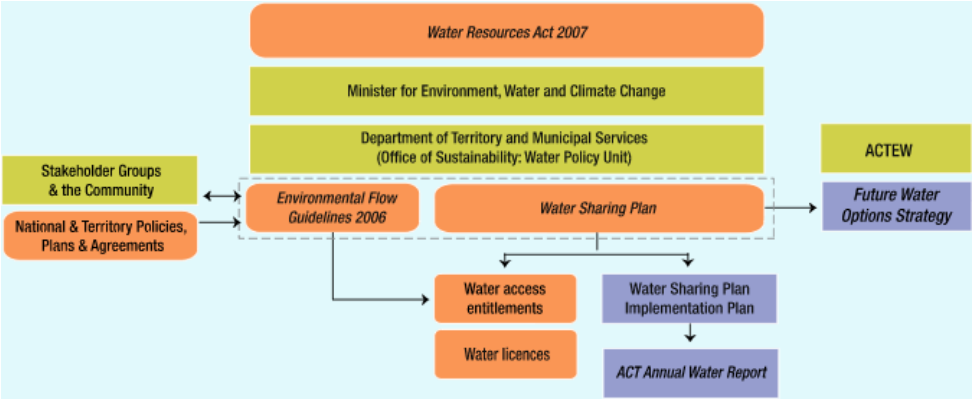


Source: http://www.nwc.gov.au/www/html/1164-metropolitan-water-supply-and-services.asp

In the metropolitan areas of Canberra and Queanbeyan ACTEW provides water to residential and industrial customers. Water and wastewater assets in the ACT are owned by ACTEW, a Territory Government-owned corporation, while ActewAGL, a joint venture between ACTEW and AGL, provides operational services under contract to ACTEW.

Urban water supply planning

The mechanisms involved in water planning are outlined below:



Source: http://www.nwc.gov.au/www/html/1155-water-planning.asp

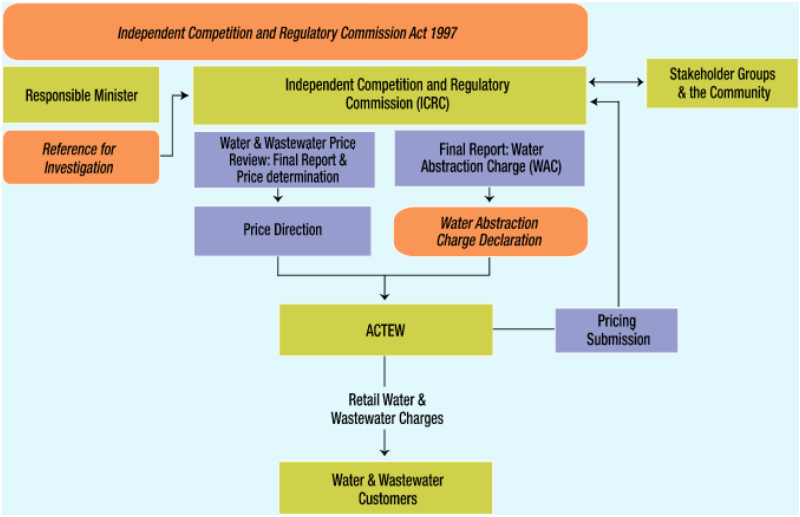
The responsibility for water supply planning rests with the Minister for the Environment, Water and Climate Change, although planning activities are undertaken by both the ACT Government and ACTEW. Within the Department of the Territory and Municipal Services there is a Water Policy Unit that forms part of the Office of Sustainability. Major water policy areas addressed by the Water Policy Unit include implementation of the ACT's strategy for sustainable water resource management, water restriction regimes, water pricing and assessment of ACTEW Corporation's future water supply options.

In July 2007, ACTEW prepared a report which made recommendations regarding future water security measures. The ACT Government subsequently convened the Water Security Taskforce which was responsible for preparing a long-term water security plan for the region. As a result of the uncertainty associated with future water inflows, the Taskforce proposed that the plan devised should include some projects that could be constructed immediately and others that could be designed and plans readied for construction should the infrastructure be required.

The *Future Water Options Strategy* sets out the most viable options for meeting future water supply needs in the ACT, and thus directs investigations and development. The Future Water Options Strategy is reviewed as needed in response to changes in policy or information arising from the annual assumptions review. The Strategy is based on planning variables that underlie predictions of Canberra's water supply security. They include climate variability and climate change, impact of bushfires, future population growth, reduction targets in per capita water use, and environmental flow requirements. The verity of these assumptions is reviewed each year.

ACTEW is now implementing a number of projects identified in the Strategy including the Enlarged Cotter Dam, the Murrumbidgee to Googong Water Transfer and the Tantangara Transfer. ACTEW has also undertaken work to design a Demonstration Water Purification Plant, but construction of the plant has been deferred subject to the successful implementation of the other three projects and no further deterioration in inflows

Water Pricing and Economic Regulation



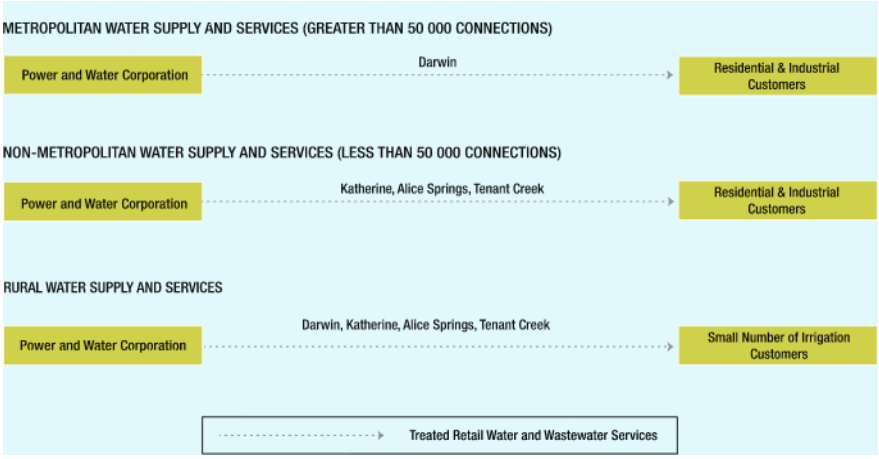
Source: http://www.nwc.gov.au/www/html/1132-urban-water-pricing.asp?intSiteID=1

The regulation and determination of water prices in the ACT is underpinned by the *Independent Competition and Regulatory Commission Act 1997* which established the Independent Competition and Regulatory Commission (ICRC) and outlined its responsibilities and functions. This Commission is the independent regulator of water charges in the ACT. It undertakes to independently set ACTEW's water charges as directed by the ACT Government. ACTEW is a government-owned holding company that provides a range of utilities services to residents and industry in the ACT.

The Minister responsible for water prices is able to issue a directive to the Independent Competition and Regulatory Commission to undertake a review of both the water and wastewater charges levied, and also the method for setting and calculating the water abstraction charge. This abstraction charge should reflect the environmental costs associated with the extraction of water and also its value as a resource. The ICRC is then required to publish a final report that includes its recommendations regarding price direction for the water and wastewater charges, as well as the water abstraction charge. These recommendations determine the price path for ACTEW's water and wastewater services over a specific period of time.

Northern Territory

Urban water supply



Source: http://www.nwc.gov.au/www/html/1477-water-supply-and-services---metropolitan-non-metropolitan-rural.asp

In the Northern Territory the Power and Water Corporation supplies water and services to metropolitan, non-metropolitan and rural areas. The corporation is a government-owned corporation in accordance with the *Government Owned Corporations Act*.

In the metropolitan area of Darwin residential and industrial customers are supplied with water and services. In the non-metropolitan areas of Katherine, Alice Springs and Tenant Creek the Power and Water Corporation supplies water and the associated services to residential and industrial customers. The Corporation also supplies irrigation customers in rural areas of Darwin, Katherine, Alice Springs and Tenant Creek.

Water planning

Source: http://www.nwc.gov.au/www/html/1452-water-policies-and-plans.asp

The Northern Territory does not have a comprehensive urban water security plan, though Power and Water Corporation has developed a forward capital program including various future source augmentation options, including potential dam sites at Marakai, Warrai and Mt Bennet.

There are various constraints regarding future dam sites, including site access (one project would inundate areas which presently are a national park), managing indigenous and cultural heritage issues, and topological considerations (some sites would deliver very shallow storages, which perform poorly due to large evaporative losses during the dry season).

The major existing sources of water for Darwin's residents are the Darwin River Dam, which currently is being upgraded by Power and Water, the Manton Dam and the borefields in McMinns and Howard East.

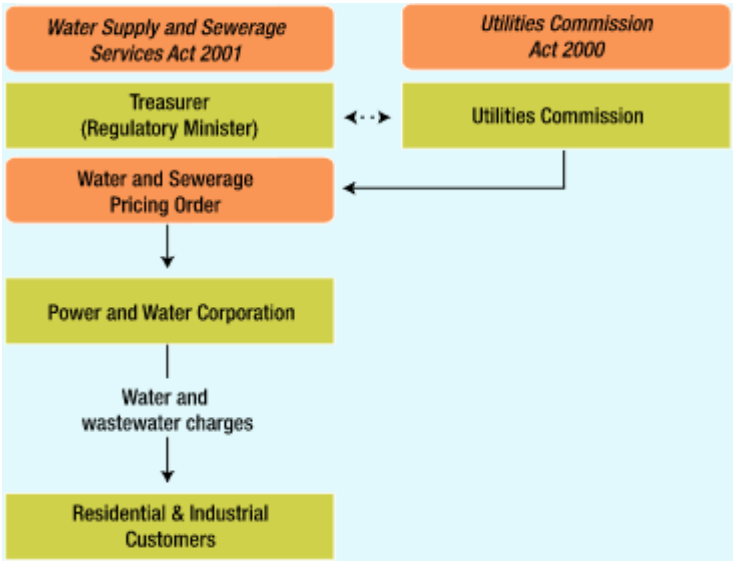
The Darwin River Dam is the primary source from which Power and Water is licensed to withdraw up to 40,000 ML per year. In general 37, 000 ML is withdrawn per year which satisfies 90% of Darwin's demand. The dam has a storage capacity of 265,000 ML and a catchment area of 205 square kilometres.

PowerWater is also licensed to withdraw up to 7,300 ML per year from Manton Dam. However, at present the dam is not used as a source of drinking water, but is instead open to the public for recreational purposes. The remaining 10% of Darwin's demand for water is satisfied by the borefields. Currently 3,000 ML of water per year are withdrawn from this source; however, PowerWater is licensed to withdraw up to 8,420 ML per year.

In Alice Springs a reclamation plant has been established to prevent untreated wastewater adversely effecting natural water ways and

also to maximise the potential use of the resource. The reclamation plant is designed to treat wastewater for re-use for irrigation purposes, or alternatively to transfer it to a soil aquifer treatment basin. Following this second treatment the water may then be used for purposes such as horticultural production. It is expected that this project will recycle 600 ML of water per year.

Economic regulation



Source: http://www.nwc.gov.au/www/html/1447-urban-water-pricing.asp?intSiteID=1

The *Utilities Commission Act 2000* establishes the Utilities Commission and defines its function. This Act and the regulations that are associated with it are designed to allow the Commission to undertake certain regulatory functions in the Territory's water supply and sewerage services industries for the provision of services within a sole provider model.

Therefore, the Utilities Commission is responsible for regulating the industry and ensuring that providers comply with the charges determined by the Regulatory Minister, the Treasurer.

The Commission is primarily responsible for the provision of licences to providers in the water and sewerage industries. However, at the Minister's discretion the Utilities Commission may be assigned responsibility for price and service standard monitoring functions. The Utilities Commission was established as a separate administrative unit of the Northern Territory Treasury. It has specific statutory powers and therefore is able to act independently of the Treasury.

Under the Water Supply and Sewerage Services Act, the Regulatory Minister, the Treasurer, is responsible for setting uniform water charges for the Power and Water Corporation. These are conveyed by the Regulatory Minister through use of a Water and Sewerage Pricing Order. In determining these rates, the Treasurer may seek

advice from the Northern Territory's independent economic regulator, the Utilities Commission.

The foundation of the regulatory structure of the water industry in the Northern Territory rests on *Utilities Commission Act 2000* that established the Utilities Commission and defined its areas of responsibility with respect to the regulation of the Northern Territory's water supply and sewerage services industries. The Utilities Commission is responsible for ensuring that the sole provider of water supply and sewerage services in the Northern Territory (Power and Water) implements and updates the charging determination, or pricing structure that is imposed by the Regulatory Minister, the Treasurer. Other activities undertaken by the Utilities Commission in the water and sewerage industry relate to licensing, however, the Regulatory Minister may assign the Commission additional responsibilities including monitoring functions. The Utilities Commission is an administrative unit of the Northern Territory Treasury. However, it has been assigned specific statutory powers that allow it to operate independently of the Treasury.

The Northern Territory Government dictates the retail water tariffs and charges to be charged by Power and Water Corporation. This is achieved via the issuance of a Water and Sewerage Pricing Order that is issued by the Regulatory Minister (Treasurer). The manner in which the Minister determines these uniform water charges prices is not subject to any restrictions. However, the Minister may seek advice from the Utilities Commission as the independent regulator.

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