



**Australian Government**  
**Productivity Commission**

# Australia's Urban Water Sector

Productivity Commission  
Inquiry Report  
*Overview and recommendations*

No. 55, 31 August 2011

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31 August 2011

The Hon Bill Shorten  
Assistant Treasurer  
Parliament House  
CANBERRA ACT 2600


Dear Assistant Treasurer

In accordance with Section 11 of the *Productivity Commission Act 1998*, we have pleasure in submitting to you the Commission's final report into Australia's Urban Water Sector.

Yours sincerely



Wendy Craik  
Presiding Commissioner



Dr Warren Mundy  
Commissioner

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# Terms of reference

## **Productivity Commission Inquiry into examining the case for microeconomic reform in Australia's urban water sector**

I, Nick Sherry, Assistant Treasurer, pursuant to Parts 2 and 3 of the *Productivity Commission Act 1998* hereby request that the Productivity Commission undertake an inquiry into examining the case for microeconomic reform in Australia's urban water sector.

### **Background**

The urban water sector is responsible for providing sustainable, secure and safe drinking water and wastewater services. These services include: water harvesting; water manufacturing (e.g. desalination); storage; treatment and distribution; and wastewater removal and treatment. At times urban water utilities are also responsible for stormwater and flood mitigation services. Additionally, the sector has a role in encouraging the responsible use of water and water conservation. Urban water services are generally provided by state and territory government owned entities or by local councils.

In recent times, the ability of our urban water systems to meet demand for water in our cities and towns has been challenged by severe droughts, climate change, increasing urban populations and ageing water infrastructure. Ensuring long term water security requires effective arrangements that encourage timely investment in diversified water supplies and improve the efficiency of water use.

Reforms aimed at improving efficiency in the urban water sector began in the 1990s following the adoption of a water framework by the Council of Australian Governments (COAG) in 1994, which elevated better management of Australia's water resources to achieve positive social, environmental and economic outcomes to a national issue. Reform was further encouraged through the Intergovernmental Agreement on a National Water Initiative in 2004. In recognition of growing urban water supply challenges, the COAG national urban water reform framework was enhanced in November 2008.

While the urban water sector has made progress towards reforms, there is scope for further changes. This inquiry will assist COAG to advance urban water reforms in Australia by identifying pathways to achieve improved resource efficiency through reforms in arrangements that govern the urban water sector.

### **Scope of the inquiry**

The Commission is to report within twelve months on:

1. Opportunities for efficiency gains in the structural, institutional, regulatory and other arrangements in the Australian urban water and wastewater sectors;
2. Options to achieve the efficiency gains identified in point 1. The options are to be subjected to a rigorous cost benefit analysis, including using quantitative assessments to the fullest extent possible, to identify:
  - a. the economic, social and environmental impacts;
  - b. the impacts on Australian governments, business and consumers; and
  - c. the propensity to facilitate supply and demand planning and decision-making in the medium and long term.
3. A proposed work program including implementation plans for the options, identifying:

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- a. practical actions that the Commonwealth, state and territory governments and local councils can undertake to implement options for reforms, including any transitional arrangements;
  - b. priority areas where greatest efficiency gains are evident and where early action is practicable; and
  - c. quantitative and qualitative indicators for efficiency gains in the urban water and wastewater sectors.

### **Considerations**

In conducting the inquiry, the Commission is to have regard to:

1. A definition of urban that encompasses cities, towns and regional centres / villages;
2. The importance of long term water security — taking into account changes in climate, population and economic activity — without compromising social, health and environmental outcomes;
3. The roles of the Commonwealth and state and territory and local governments with respect to urban water and wastewater policy, supply and management;
4. The different circumstances across Australia, including:
  - Variability between water catchments, supply alternatives and demand;
  - Relationships between urban water users and other water users, including consideration of water resource planning and allocation frameworks;
  - Committed and planned investment to augment urban water supplies;
  - Current urban water reforms, such as planning, pricing and third party access; and
  - Emerging competition, including in the provision of water supply services.
5. Emerging water management practices, such as the integrated management of water, wastewater, recycled water and stormwater;
6. Lessons from reform in the rural water and natural resource management sectors and from overseas reform;
7. Lessons learnt from reforms in other utility sectors in the Australian economy. This should take into account differences in the intrinsic values of water compared to other products and operational differences between the industries, including product storage, availability, and transport costs;
8. The COAG 1994 reform outcomes, the national competition policy arrangements, the National Water Initiative provisions applying to urban water, the third party access provisions of the *Trade Practices Act Part IIIA*, competition and access regimes and the 2006 intergovernmental Competition and Infrastructure Reform Agreement; and
9. Current and recent review activity relating to urban water issues in Australia, including those undertaken by regulatory bodies.

In undertaking the inquiry, the Commission is to advertise nationally inviting submissions, hold public hearings, and consult with relevant Australian Government, state and territory government agencies, local government, water utilities, other key interest groups and affected parties.

The Commission is to provide both a draft and a final report. Both reports are to be published.

NICK SHERRY

[Received 22 July 2010]



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**The full report is available at [www.pc.gov.au](http://www.pc.gov.au)**





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# Abbreviations

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
ACCAN	Australian Communications Consumer Action Network
ACCC	Australian Competition and Consumer Commission
ACG	Allen Consulting Group
ACOSS	Australian Council of Social Service
ADWG	Australian Drinking Water Guidelines
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AWA	Australian Water Association
BAE	Binding alliance entity
BASIX	Building Sustainability Index
CBA	Cost–benefit analysis
CHINS	Community Housing and Infrastructure Needs Survey
CIE	Centre for International Economics
CMA	Central Market Agency
COAG	Council of Australian Governments
CPI	Consumer Price Index
CSO	Community Service Obligation
CUAC	Consumer Utilities Advocacy Centre
DECCW	Department of Environment, Climate Change and Water (NSW)
DERM	Department of Environment and Resource Management (Qld)
DORC	Depreciated optimised replacement cost

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DVA	Department of Veterans' Affairs (Cwlth)
EAV	Equivalent Annual Value
EPA	Environmental Protection Authority
EPBC Act	<i>Environmental Protection and Biodiversity Act 1999</i> (Cwlth)
ERA	Economic Regulation Authority
ERRR	Economic real rate of return
ESC	Essential Services Commission
ESCOSA	Essential Services Commission of South Australia
ESD	Ecologically sustainable development
FERC	Federal Energy Regulatory Commission (US)
FPC	Federal Power Commission (US)
GL	Gigalitres (equal to one thousand megalitres)
GTE	Government trading enterprise
GWCC	Goldenfields Water County Council (GWCC)
IBT	Inclining block tariff
ICEWaRM	International Centre of Excellence in Water Resources Management
ICRC	Independent Competition and Regulatory Commission
IPART	Independent Pricing and Regulatory Tribunal
IPE	Independent procurement entity
IWCM	Integrated Water Cycle Management
kL	Kilolitres (equal to one thousand litres)
LGAQ	Local Government Association of Queensland
LGSA NSW	Local Government and Shires Associations of NSW
LMWUA	Lower Macquarie Water Utilities Alliance
LRAC	Long-run average cost
LRMC	Long-run marginal cost
LWU	Local Water Utilities
MFP	Multifactor productivity
MJA	Marsden Jacob Associates
ML	Megalitres (Equal to one thousand kilolitres)

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MVRC	Moonee Valley Racing Club
MWST	Ministerial Water and Sewerage Taskforce (Tas)
NCC	National Competition Council
NCP	National Competition Policy
NEM	National Electricity Market
NHMRC	National Health and Medical Research Council
NPAT	Net profit after tax
NRETAS	Department of Natural Resources, Environment, The Arts and Sport (NT)
NTE	Network transmission entity
NWC	National Water Commission
NWI	National Water Initiative
NWQMS	National Water Quality Management Strategy
OECD	Organisation for Economic Co-operation and Development
Ofwat	The Water Services Regulation Authority (UK)
OMA	Operating, maintenance and administration costs
OTTER	Office of the Tasmanian Economic Regulator
PC	Productivity Commission
PIAC	Public Interest Advocacy Centre
QCA	Queensland Competition Authority
QWC	Queensland Water Commission
RAPAD	Remote Area Planning and Development Board (Qld)
REROC	Riverina Eastern Regional Organisation of Councils
RIS	Regulatory impact statement
ROC	Regional Organisation of Councils
RWCC	Riverina Water Country Council
SCA	Sydney Catchment Authority
SDP	Sydney Desalination Plant Pty Ltd
SEQ	South-east Queensland
SEQWGM	South-east Queensland water grid manager
SRMC	Short-run marginal cost

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SWIM	State-wide Water Information Management (Qld)
VCEC	Victorian Competition and Efficiency Commission
VIF	Variance inflation factors
VTS	Victorian Transmission System
WACC	Weighted average cost of capital
WACOSS	Western Australian Council of Social Services
WELS	Water Efficiency Labelling Scheme
WGM	Water grid manager
WICA	<i>Water Industry Competition Act 2006</i> (NSW)
WICS	Water Industry Commission for Scotland
WIST	Water Industry Skills Taskforce
WSAA	Water Services Association of Australia

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# OVERVIEW

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## Key points

- In recent times, the urban water sector has faced drought, growing populations and ageing assets.
- Governments have largely responded with prolonged and severe water restrictions and investments in desalination capacity.
- The costs to consumers and the community have been large.
  - Water restrictions are likely to have cost in excess of a billion dollars per year (nationally) from the lost value of consumption alone.
  - Inefficient supply augmentation in Melbourne and Perth, for example, could cost consumers and communities up to \$4.2 billion over 20 years.
  - Large government grants for infrastructure may have led to perverse outcomes.
- Conflicting objectives and unclear roles and responsibilities of governments, water utilities and regulators have led to inefficient allocation of water resources, misdirected investment, undue reliance on water restrictions and costly water conservation programs.
- Therefore, the largest gains are likely to come initially from establishing clear objectives, improving the performance of institutions with respect to roles and responsibilities, governance, regulation, competitive procurement of supply, and pricing, rather than trying to create a competitive market as in the electricity sector.
- To implement the recommended universal reforms, governments should:
  - clarify that the overarching objective for policy in the sector is the efficient provision of water, wastewater and stormwater services so as to maximise net benefits to the community
  - ensure that procurement, pricing and regulatory frameworks are aligned with the overarching objective and assigned to the appropriate organisation
  - put in place best practice arrangements for policy making, regulatory agencies, and water utilities
  - put in place performance monitoring of utilities and monitor progress on reform.
- The circumstances of each jurisdiction and region differ and there is not a ‘one size fits all’ solution to industry structure. In addition to recommended universal reforms, the Commission has set out:
  - four structural options for large metropolitan urban water systems
  - three options for small stand-alone regional systems.
- There is a role for COAG, but each government can proceed independently to implement the key reforms.
- Implementation of the reform package, with commitment by governments, will provide consumers with greater reliability of supply, greater choice of services at lower cost than otherwise and reduce the likelihood of costly and inconvenient restrictions.

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# Overview

Following the agreement of COAG, the Australian Government has asked the Productivity Commission to examine the case for microeconomic reform in the urban water sector and to identify pathways to achieving improved resource allocation and efficiency.

The urban water sector is taken to include:

- planning, procuring and supplying water of appropriate quality to households and commercial users
- collecting, treating and disposing or recycling of wastewater (sewage and tradewaste)
- managing drainage and stormwater for flood mitigation, environmental protection, disposal or recycling purposes.

The terms of reference involve three main tasks. First, a requirement to identify opportunities for efficiency gains through changes to structural, institutional, regulatory, and other arrangements in the Australian urban water sector. Second, to provide options to achieve the identified efficiency gains, and quantitatively assess these options (to the extent possible). Third, propose a work program, including priority areas and implementation plans.

The origin of this inquiry can be traced to the COAG agreement of 2008 (box 1), with recent experiences in the sector creating further impetus for this inquiry.

The National Water Commission and Infrastructure Australia have recently released reports that cover some of the issues in this inquiry. The Commission has liaised with these organisations and drawn on their work where appropriate.

The urban water sector is diverse even though almost all utilities providing drinking water are controlled by State, Territory and Local Governments. The structural, institutional, governance and regulatory arrangements vary between jurisdictions and between metropolitan and regional areas. In 2008-09, there were 32 major urban, 51 non-major urban and 194 minor urban providers of water and wastewater services. Collectively, they had revenues of about \$10 billion. The structure of the sector has changed over the past two decades. In metropolitan areas, there has been

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some vertical separation of the supply chain and corporatisation of utilities. In regional areas, most utilities are vertically integrated. In some jurisdictions, small regional utilities have been aggregated (with some of these corporatised).

**Box 1 History of urban water reform**

Water reform in Australia began in the early 1980s, notably with the appointment of Dr John Paterson as President and Chief Executive of the Hunter Water Board. In 1982, the Board implemented a user-pays water tariff for residential customers. In 1992, the Hunter District Water Board became the first major urban water authority in Australia to be corporatised.

Significant events in subsequent reform developments include:

- Industry Commission (1992) inquiry into water resources and wastewater disposal
- COAG (1994) strategic framework for water reform of the Australian water industry, developed by the Working Group on Water Resource Policy
- COAG (1995) National Competition Policy and Related Reforms, which included payments to jurisdictions that effectively implemented the strategic framework for water reform in the 1994 agreement
- COAG (2004) National Water Initiative and the establishment of the National Water Commission to assist with, and to assess progress on the implementation of, the water related reforms in the 1995 agreement and to progress additional agreed reforms
- COAG (2008) enhanced national urban water reform framework to improve the security of supply for urban water.

Water is sometimes perceived to be different from other utility services (electricity, gas, telecommunications and mail) because it is ‘essential for life’ and/or it exhibits common property characteristics. Understandably, there is also community anxiety about there being insufficient water to meet basic human and industry needs because of prolonged droughts. Consequently, there has been a high degree of political involvement in water issues and pressure to adopt objectives, policies and institutional arrangements that are different from those applied in other utility sectors.

Although considerable reform has occurred over the past three decades, the urban water sector has been under stress in recent times. This has mainly arisen from a lengthy period of drought and unexpectedly low inflows to dams, rivers and aquifers, followed most recently by heavy rain and floods in eastern Australia. Pressures from growth in demand and, until recently, reduced capacity to supply from existing rainfall dependent sources led to:



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- prolonged use of severe water restrictions and consumption targets
  - use of prescribed measures and/or subsidies to reduce the consumption of potable water from bulk sources of supply (such as rainwater tanks, low-flow shower heads and water recycling schemes for non-potable uses)
  - large investments in rainfall-independent supply capacity, usually associated with highly politicised decisions and/or consideration of a limited set of options.

Some regional areas have inadequate water quality, with ‘boil water’ notices being issued and exemptions granted for compliance with standards for the discharge of treated wastewater.

## **The key problems**

The Commission has identified a number of key causes of the problems in the urban water sector.

### **Conflicting and inappropriately assigned objectives and policies**

There is a lack of clarity and transparency about the way government objectives and policies are being applied in the urban water sector to service delivery, environmental, public health and social matters. Governments are assigning multiple objectives to their agencies, utilities and regulators, with inadequate guidance on how to make tradeoffs among them (box 2). This appears to be a particular issue for retailer–distributor utilities and regulators.

Moreover, some of the objectives assigned to economic regulators and utilities would be more appropriately assigned to health and environmental regulators or government departments.

### **Lack of clarity about roles, responsibilities and accountabilities**

Policies and decisions about pricing and supply have become too politicised and have not been focused on providing services at lowest *expected* cost. Often governments are influencing or making decisions in non-transparent ways. When undertaken, rigorous assessment of costs and benefits of options are often classified as Cabinet in confidence and not publicly available. These factors are leading to inadequate transparency about which institutions of government are responsible for procuring supply, and inadequate analyses of some decisions. For utilities, this

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weakens the responsibility, accountability and incentives to deliver services in an economically efficient manner.

**Box 2 Multiple and conflicting objectives — an example**

Under its legislation, the Queensland Competition Authority has to have regard to the following matters when making a price determination:

- the need for efficient resource allocation
- the need to promote competition
- the protection of consumers from abuses of monopoly power
- decisions by the Ministers and Local Governments under part 3 about pricing practices of monopoly business activities involving the supply of water
- the legitimate business interests of the water supplier carrying on the monopoly water supply activity to which the determination relates
- in relation to the monopoly water supply activity
  - the cost of providing the activity in an efficient way, having regard to relevant interstate and international benchmarks
  - the actual cost of providing the activity
  - the quality of the activities constituting the water supply activity
  - the quality of the water being supplied
- the appropriate rate of return on water suppliers' assets
- the effect of inflation
- the impact on the environment of prices charged by the water supplier
- considerations of demand management
- social welfare and equity considerations, including community service obligations, the availability of goods and services to consumers and the social impact of pricing practices
- the need for pricing practices not to discourage socially desirable investment or innovation by water suppliers
- legislation and government policies relating to ecologically sustainable development
- legislation and government policies relating to occupational health and safety and industrial relations
- economic and regional development issues, including employment and investment growth.

Policy making and regulation are also being undertaken in a manner that is at odds with principles for best practice policy and regulation making (box 3).

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**Box 3 Principles for best practice policy and regulation, based on Regulation Taskforce (2006)**

- Governments should not act to address ‘problems’ until a case for action has been clearly established. This should include establishing the nature of the problem and why actions additional to existing measures are needed, recognising that not all ‘problems’ will justify (additional) government action.
- A range of feasible policy and regulatory options need to be identified and their benefits and costs, including compliance costs, assessed within an appropriate framework.
- Only the option that generates the greatest net benefit for the community, taking into account all the impacts, should be adopted.
- Effective guidance should be provided to regulated parties and any relevant regulators to ensure that the policy intent of the regulation is clear, as well as the expected compliance requirements.
- Mechanisms are needed to ensure that policy and regulation remain relevant and effective over time.
- There needs to be effective consultation with affected parties at all stages of the policy and regulatory cycle.

**Too great a focus on water restrictions, water use efficiency and conservation**

The extensive use of water restrictions has been costly to consumers and the distributional consequences are likely to have been regressive with respect to income, even though restrictions have been tolerated by the community (box 4).

Generally, water use is relatively unresponsive to changes in price, indicating that consumers place a high value on water consumption. Numerous studies indicate that the net welfare costs of water restrictions can be large. Nationally, water restrictions are likely to have cost in excess of a billion dollars a year from the lost net value of consumption alone.

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#### **Box 4 Consumer costs of prescribed water restrictions**

Some of the costs imposed on consumers from water restrictions include:

- loss of consumer welfare from forgone consumption
  - reduced amenity from the deterioration of lawns and gardens
  - inability of children to play under garden sprinklers and to use water toys
- costs to consumers of complying with restrictions
  - purchasing and installing new watering systems (for example, greywater systems and rainwater tanks)
  - the need to adopt inconvenient and labour-intensive methods of watering:
    - ... carrying 'greywater' in buckets from showers to outdoor plants
    - ... loss of sleep and/or leisure in order to water gardens in permitted time periods
    - ... having to water in the dark
    - ... cancelling or rearranging other activities in order to water gardens at permitted times
  - the need to drive cars to a car wash and paying to have them cleaned
  - increased damage (through cracking) to buildings, other structures and pipes.

The distributional consequences of these costs are not well understood, with some experiencing many of these costs and others only a few. However, it is likely that the distributional outcomes are regressive with respect to income.

Water restrictions impact on people beyond their homes. They experience loss of amenity from unwatered council parks (or they pay through their rates for high-cost recycled water to keep them green). Community sporting facilities can also be adversely affected because of the state of water-deprived sports grounds.

The Centre for International Economics estimated that the total welfare cost to the ACT community for stage 1 restrictions was \$5.2 million per year and \$209 million per year for stage 4 restrictions.

Grafton and Ward found that water restrictions in Sydney in 2004-05 resulted in aggregate welfare losses to consumers of about \$275 million (2010 dollars) relative to a volumetric price that would have ensured the same level of demand and a lower fixed charge.

Based on economic modelling undertaken by the Commission for this inquiry, the reduction in welfare to the community from stage 3a restrictions in Melbourne is estimated to be between \$420 and \$1500 million over a 10 year period, depending on modelling assumptions. This welfare loss understates the costs of restrictions as it does not capture the differential effect of restrictions for individual households. For example, some households that are prepared to pay a high price for additional water might have to forego consumption due to restrictions.

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Many policies that prescribe water use efficiency and conservation are also costly because they lead to some consumers behaving in ways that do not align with their preferences. Where these measures are not justified based on rigorous cost–benefit analysis (of which there is little evidence), consumers can incur costs per unit of water saved that far outweigh the cost of supplying them with water through the reticulated system (box 5).

**Box 5      Illustration of costly water saving programs**

In 2005, Crase and Dollery examined subsidies paid in Melbourne to households for water-saving investments. They found that the cost per megalitre of water saved ranged from \$770 for AAA shower roses, to \$9069 for rainwater tanks and \$33 395 for AAA dishwashers. This compares with a supply price for water between \$750 and \$1300 per megalitre at the time of the study.

### **Constraints on efficient water resource allocation and supply augmentation**

Constraints are being imposed on the operation of utilities that are unnecessarily distorting the allocation of water resources and increasing the cost of supply. This is leading to higher consumer prices, which could persist for decades.

Although some of the recent investment in desalination plants (table 1) might have been appropriate in the circumstances to maintain security of supply, there is sufficient evidence available to conclude that many projects could have been:

- deferred for a number of years
- smaller in scale
- replaced with investment in lower cost sources of water.

Lower cost sources of water supply have been available in several jurisdictions, such as rural–urban trade and aquifers, but large investments in desalination have been preferred.

Allowing voluntary trade between the rural and urban sectors can provide benefits to irrigators, urban water consumers and the community as a whole. Voluntary trading facilitates the efficient allocation of water from lower value uses to higher value uses, based on the willingness to buy and sell, and the cost of transport.

**Table 1 Desalination plants**

	<i>Initial capacity</i>	<i>Maximum expandable capacity</i>	<i>Initial (and expandable) capacity as a percentage of annual consumption in 2009-10</i>	<i>Initial investment</i>	<i>Completion date</i>
Units	GL/year	GL/year	%	\$m	
Sydney (Kurnell)	90	180	18 (36)	1 890	2010
Melbourne (Wonthaggi)	150	200	43 (57)	3 500	2012
South-east Queensland (Tugun)	49		25	1 200	2009
Adelaide (Port Stanvac)	100		80	1 830	2012
Perth (Kwinana)	45		18	387	2006
Perth (Binninyup)	100		40	1 400	2012
<b>Total</b>	<b>534</b>	<b>674</b>	<b>35 (45)</b>	<b>10 207</b>	

There are also likely to have been costs from proscribing some other potential sources of supply, such as indirect potable reuse. There are many instances of wastewater being treated and discharged into a river system used to supply downstream communities with potable water. For example, most of the wastewater from the ACT is treated and discharged into the Molonglo River, which then flows into the Murrumbidgee and Murray Rivers. This water is used to supply many cities and towns, including Wagga Wagga and Adelaide.

However, the planned indirect potable use of recycled water has so far been ruled out by governments in response to opposition by communities. This is despite the view of relevant health experts that recycled water is safe to drink provided it is properly treated. The National Water Commission has stated there are no public health barriers. Further, it is already used overseas (for example, in Singapore and the United States). Therefore, it is important that the community and decision makers are properly informed about the costs, benefits and risks to water consumers, so that the best choices can be made. Community consultation needs to be a component of decisions on supply augmentation.

Although it is difficult to estimate the costs of inefficient investment with precision, they appear to be large (box 6).

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## Box 6 **Costs of misdirected investment**

The Commission has undertaken case-study modelling of Melbourne and Perth to identify the potential costs to consumers and the community (in net present value terms) of proceeding with desalination plants ahead of lower cost alternatives or of a larger scale ahead of time. These costs could be of the order of \$1.8 to \$2.4 billion for these two cities combined over a 10 year period and \$3.2 to \$4.2 billion over a 20 year period, depending on modelling assumptions.

Another example comes from a review in 2006 of plans to augment Sydney's water supply with a desalination plant. An expected saving of \$1.1 billion was estimated from committing to build the plant when dam storage was 30 per cent compared with a trigger of 48 per cent. Subsequently, the government committed to proceed when dam storage was 34 per cent (consistent with the official trigger level). However, the government signed the contract to proceed at a time when storages were at 57 per cent. Large savings are likely to have been available to the community if the government had taken and exercised an option to delay construction, even if this option incurred costs.

Subsidies provided by the Australian Government can also distort investment decisions. For example, in Adelaide, part of the explanation for the large investment in desalination capacity relative to demand (table 1) was a conditional grant of \$328 million provided by the Australian Government.

The Victorian Government has a policy to only use the newly constructed Sugarloaf Pipeline in the event of a 'critical human needs emergency', preferring instead to source water from the (soon to be commissioned) Wonthaggi desalination plant and new water recycling projects. Based on Commission modelling, the added cost to the community could be about \$312 million in present value terms over 20 years, and ranging between \$229 million and \$736 million, depending on modelling assumptions. Further, unnecessary costs could be incurred if the Victorian Government also proceeds with planned water recycling projects.

There is also evidence to suggest that better application of the 'real options' or adaptive approach to planning and delivering augmentation of supply (box 7) would have reduced the cost of supply augmentation, lowered prices to consumers, and avoided the need for restrictions in most cases.

For a number of regional water utilities, inadequate asset management is leading to water quality problems, such as failing to meet the standards of the Australian Drinking Water Guidelines and/or the issuing of 'boil water' alerts. Similar non-compliance issues exist with respect to wastewater discharge. These problems have arisen from deficient operational, maintenance and investment practices. Many non-metropolitan utilities service fewer than 10 000 connected properties, with some servicing fewer than 1000. A number of reports in recent years indicate that

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inadequate water quality and asset management by small utilities are largely attributable to a lack of scale, and constraints on revenue and capital raising.

### **Box 7      ‘Real options’ or adaptive planning and investment**

Making supply augmentation decisions efficiently while maintaining security of supply requires a sophisticated approach to dealing with risk and uncertainty associated with demand and supply, principally arising from the large variation in rainfall and climate change. Real options, or adaptive planning, incorporates into planning and water procurement processes:

- risk and the probabilities of different scenarios (such as rainfall and inflows)
- the value to consumers and suppliers of flexibly managing the timing and selection of supply and investments from a portfolio, as rainfall scenarios are revealed over time. The portfolio of options include:
  - supply augmentation
  - demand-side management, facilitated through an enhanced choice of service offerings available from water retailers.

The Commission’s modelling indicates that applying a real options approach could reduce the cost of supply for Melbourne and Perth collectively, by about \$1.1 billion over a 10 year period, compared with traditional approaches to planning and investment.

The real options approach can necessitate some costs being incurred early in order to keep options open in the future. For example, investments might be made to get potential projects ‘shovel ready’ or expenditures incurred on higher-priced water sources that do not involve large sunk costs (for example, pre-purchasing water from irrigators and storing it, if the risk of a sustained drought is emerging). Such investments will be efficient if the costs are more than offset by the benefits of increased flexibility to proceed with a project when required (with a shorter lead time) or to defer (because of increased rainfall).

Under traditional planning approaches, a supply augmentation, such as investment in large desalination capacity, is undertaken to cover all future supply risks (‘drought proofing’ supply). However, this approach ignores the risk that it will rain after the plant is commissioned and that it might not be used for a substantial period of time. Santa Barbara, California, built a desalination plant in 1991 during a prolonged drought; the drought ended before the plant was on-line, and the plant has been mothballed since construction.

The National Water Commission and the Water Services Association of Australia have endorsed the real options approach to planning and investment.



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## Too great a focus on addressing affordability by distorting prices

Using inclining block tariffs that involve setting a low price for what some consider to be ‘essential’ water is complicated by the link between non-discretionary use and household size. The best illustration of the difficulty and subjectivity of the task of determining an entitlement to water at a low price is the large variation in the size of initial blocks chosen by policy makers. Current first tier (lowest price) blocks include 160 kilolitres (kL) in Melbourne, 150 kL in Perth, 255 kL in Brisbane, and 125 kL in Adelaide.

Furthermore, inclining block tariffs can result in inequitable outcomes. They disadvantage large households that have higher essential needs than smaller households.

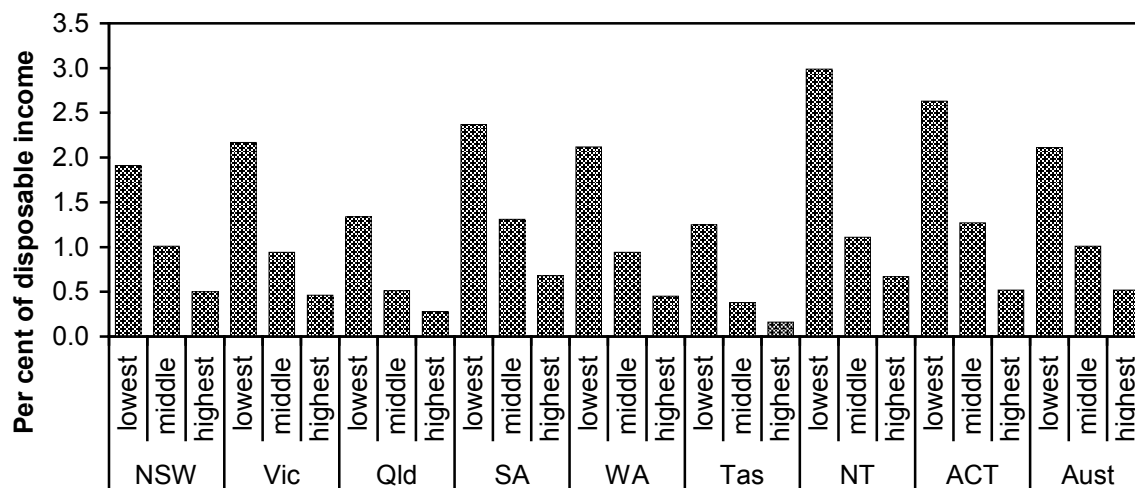
The available evidence, including the Commission’s own research, indicates that relatively few households experience payment difficulties because of the price of water and wastewater services. More households are experiencing difficulty paying for other services, particularly housing and electricity, which account for a larger proportion of their expenditure (figure 1). It is likely that the costs created by interfering with water pricing, particularly the volumetric rate, outweigh any benefits low-income households receive. Although access and affordability are important issues, distorting prices is not the best way to deal with them.

## A strong case for reform

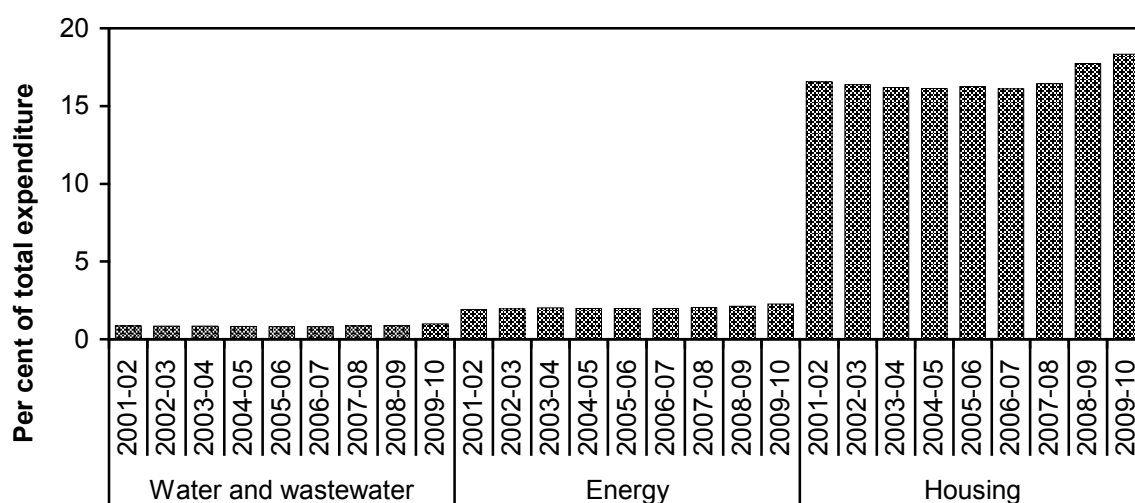
Based on the evidence, there is a strong case for microeconomic reform in the urban water sector. The fundamental problem in the sector is the lack of clarity about government objectives for guiding policy development and its implementation. Policies and decisions about pricing and supply have become too politicised and have not been focused on providing services at lowest *expected* cost. These factors are leading to inadequate transparency about which institutions of government are responsible for procuring supply, and inadequate analyses of some decisions. Deficiencies in the institutional and governance arrangements are, in turn, leading to policies and water supply decisions that are costly to consumers of water, wastewater and stormwater services.

**Figure 1 Household expenditure on water and wastewater, electricity and housing**

Panel A: Household expenditure on water and wastewater services by quintile of household disposable income, by jurisdiction, 2007-08



Panel B: Household expenditure on selected essential services, Australia



Many of the costs associated with past decisions are sunk and consumers and the community must now live with the consequences for decades to come, as evident from the recent and foreshadowed price increases in Sydney, Melbourne and Adelaide. Consequently, the gains to consumers and the community from implementing reform can only be modest in the short term, but will increase over time as demand for water increases and new supplies are needed. In any event, it is opportune to implement reform at this time while concerns about supply security have abated in most areas.

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## A reform program in two streams

The overarching goal of reform is that water, wastewater and stormwater services be provided in ways that maximise net benefits to the community. This means striving to allocate water resources efficiently across the water cycle (figure 2) based on costs of supply and value to users, subject to public health and environmental requirements.

Some reforms should be adopted across all jurisdictions as a high priority, with other (structural) reforms applied following a case-by-case analysis of the costs and benefits.

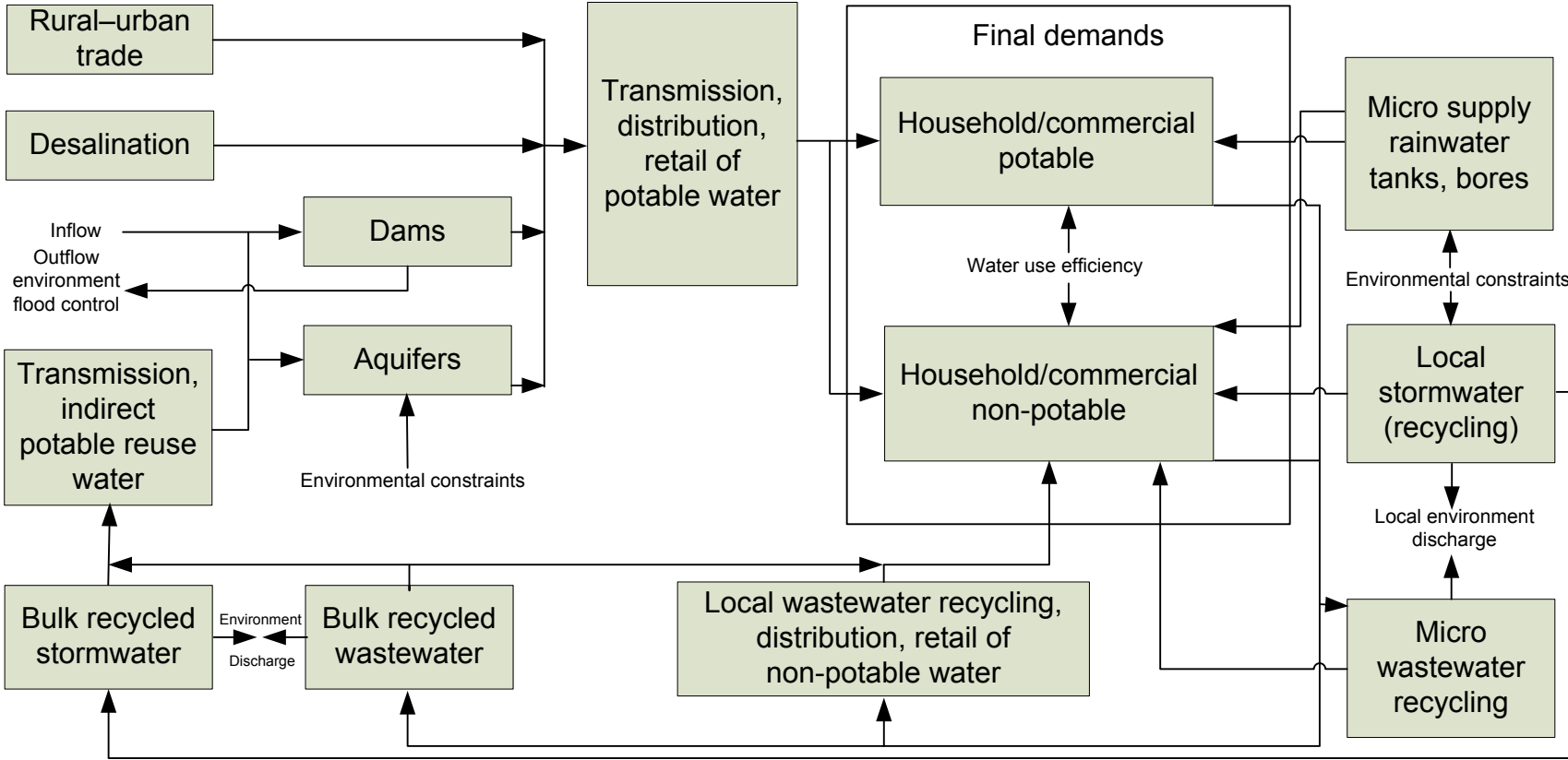
### 1 High priority reforms that are universally applicable

#### *Roles for governments*

It is the role of governments to create the conditions necessary for institutions undertaking policy making, regulatory and service delivery functions to operate efficiently. This means that governments should:

- set a clear overarching objective for the development and implementation of policy in the sector
- ensure that the policy frameworks and principles are consistent with the overarching objective in relation to:
  - public health and environmental protection
  - service delivery of potable water, non-potable water, wastewater, drainage and stormwater services
  - water property rights across the water cycle
- put in place best practice institutional, regulatory and governance arrangements in relation to:
  - economic, public health and environmental regulation
  - service delivery of potable water, non-potable water, wastewater and stormwater services.

Figure 2 Illustration of the integrated water cycle for urban water systems



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Having established such an environment, it is important that governments (elected representatives) commit to, and support, the institutional arrangements and policies, particularly when alternatives might be politically expedient.

### *Setting the objective*

Governments should set an overarching objective of delivering water, wastewater and stormwater services in an economically efficient manner (box 8) so as to maximise net benefits to the community. The objective of economic efficiency should also guide policy development and regulation relating to public health and the environment. In addition, policy formation should be guided by the more rigorous application of the principles for best practice policy and regulation making (box 3).

#### **Box 8 Economic efficiency, broadly defined**

The concept of 'economic efficiency' encapsulates many of the more specific objectives that should be pursued in the urban water sector, including those related to water security, water quality, flood mitigation and the environment. It allows short-term and long-term environmental and social considerations to be integrated into policy making, as required by the principles of ecologically sustainable development. As such, it can also be used to guide the assessment of public health and environmental policies based on rigorous cost–benefit analysis. For example, in assessing the benefits of water quality standards, especially in relation to non-health critical aspects, the opportunity cost of various standards in terms of the price of water to consumers should also be a relevant consideration in the analysis.

In terms of the value of water consumed, consumers are usually best placed to make their own water use decisions. Water use that one person might regard as being of low value, might be of high value to another person.

Although there are consumer and political sensitivities about water policy and the provision of water services, independent cost–benefit analysis and other information should be provided to communities prior to decisions being made.

### *Institutional arrangements and governance*

Notwithstanding some progress, there is a need for greater clarity about the roles and responsibilities of institutions in the urban water sector. In particular, there is a need for clearer delineation between decisions most appropriately made by elected representatives (those regarding 'public interest' and policy considerations),

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commercial decisions by water utilities regarding service delivery, those decisions most appropriately made by regulatory agencies, and those made by consumers.

Inadequate institutional arrangements for determining supply augmentation have been a significant factor in overinvestment in desalination capacity in recent years. These deficiencies have facilitated increasing politicisation of supply augmentation processes. It is, of course, important that governments seek to ensure their communities have adequate water security.

### *Procurement of supply and water resource allocation across the water cycle*

Based on the evidence before the Commission, and insights from its modelling, the largest gains to the community are likely to arise from achieving water security at a lower expected cost. This can be achieved by governments removing ‘policy bans’ on supply augmentation from certain sources, such as rural–urban trade and indirect potable reuse. Putting these options back on the table for consideration might not be easy. Negative community perceptions have become entrenched in the absence of high quality, publicly available, evidence about the costs, benefits, and risks of the choices available for supply augmentation.

However, all options should be evaluated based on their respective economic merit, subject to public health and environmental requirements. To gather public support for reconsideration of these policies, reliable information on the costs, benefits and risks of various supply augmentations should be publicly available so that the community is well informed about them and the tradeoffs well understood. Better community consultation is essential to this. Community attitudes might already be changing as consumers are now becoming aware of the increase in prices from recent inefficient augmentation decisions.

In addition, governments should direct their water utilities (as part of a charter discussed below) to adopt real options/adaptive planning approaches to procurement (box 7), to manage risk about rainfall and inflows and minimise the cost of supply in this inherently risky business.

### *Water restrictions*

Water restrictions are costly to consumers and should be reserved for ‘emergency’ situations. They should be an exception rather than the rule. The need to impose restrictions should be seen as a failure of the system. Restrictions might be the only practical option for some communities in dry regions where there is an on-going scarcity of potable water and augmentation of reticulated potable water is very

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costly. Otherwise, water restrictions should be phased out and consumers allowed to choose from a menu of service (tariff) options.

### *Water use efficiency and conservation*

Some prescribed approaches to integrated water cycle management are inefficient. It is often assumed that it is in the interest of communities to increase recycling, reuse, water use efficiency and conservation without examining the full costs and benefits. Instead, the approach should be to create incentives and opportunities for recycling, reuse and conservation technologies where they are economically worthwhile and preferred by customers, by removing impediments to contestability and freeing up prices.

### *Pricing*

The application of flexible (scarcity-based) pricing at the retail level, based on the opportunity cost of supply, has potential to allocate water more efficiently in the short run to reduce the cost of supply in the long run. However, the benefits from prescribing a single two-part tariff for all consumers is likely to result in lower net benefits to consumers compared with providing a range of service tariff offerings to cater for differences in consumer preferences. All such service offerings would take into account the opportunity cost of supplying each service. Multiple service offerings would:

- give consumers choice, instead of having an ‘essential’ level of demand prescribed for them
- provide an opportunity for retailers to more efficiently manage demand as supply changes over time.

Therefore, the Commission sees merit in freeing up the pricing of water by retailers by encouraging them to have multiple service offerings (tariffs) subject to:

- providing a default ‘vanilla’ two-part tariff, with a single volumetric price and fixed service charge set for three to five years, and with guaranteed supply
- policy guidelines determined by governments
- normal application of competition and consumer protection laws
- there being appropriate consumer education programs
- support being provided to smaller utilities to develop tariff offerings appropriate to their customers.

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The default tariff would cater for consumers who prefer secure supply and stable prices.

### *Affordability*

It is a given that all Australians have access to water services. Some low-income households may struggle to make payments to water utilities even though water services account for a small part of their expenditure (figure 1). Therefore, utilities should continue to have ‘hardship policies’ that apply to customers genuinely having difficulty paying their bills, for example, by allowing some customers to pay over time.

However, hardship policies do not directly address affordability. Further, the rising levels of financial hardship reported by community organisations are the result of price increases more generally (food, housing, petrol, other utility services) rather than increases in prices in the urban water sector. Policies should be designed to achieve access and affordability objectives at lowest cost to the community.

Assistance measures, such as social security for low income families and income tax assistance for families, are generally available to individuals and families. These measures are preferred for addressing affordability because they treat individuals in similar circumstances equitably and they support individuals and families in need.

When water specific assistance is provided, it should be through a rebate (concession) on the fixed service charge, which is also clearly identified as a community service obligation and funded by government.

To facilitate the effective and efficient provision of assistance to achieve affordability objectives, COAG should commission a review of concessions on all utility services across all levels of government.

### *Public health, environmental protection and economic regulation*

Regulation has an important role in protecting public health and the environment. However, there are costs associated with regulation, particularly when multiple regulators with differing objectives are involved. Transparency in following good regulatory practice can minimise these costs. In addition, good regulation creates incentives for utilities to find innovative ways to meet consumer demands while complying with public health and environmental constraints.

To reiterate, the application of the six principles of good policy and regulatory practice spelt out by the Regulation Taskforce in 2006 (box 3) provides a sound



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basis for formulating regulatory policies impacting on the urban water sector. As noted above, it is the role of government to implement best practice institutional arrangements and policy setting to achieve the desired outcomes.

### *Service delivery by utilities*

There would be a significant payoff in assigning both the procurement of new supplies and the responsibility for service delivery to utilities that undertake retail–distribution, under a portfolio manager framework (box 9).

#### **Box 9 Portfolio manager, opportunity cost and tariffs**

Under the portfolio manager framework, a monopoly retailer–distributor is established with an obligation to serve customers and procure water to meet customer demands. The portfolio manager controls (but does not necessarily own or physically operate) the dispatch and transport of various sources of water supply in their portfolio (including changes to storage) from the bulk sources to consumers. To expand competition for the supply of bulk water services, the portfolio manager runs a competitive procurement process for the expansion of supply capacity.

In the absence of a market for water, the portfolio manager can estimate the opportunity cost of supplying a unit of water and implement flexible pricing that emulates an efficient market outcome. The opportunity cost is a dynamic forward looking concept, reflecting changes in the supply–demand balance. Mathematical programming models developed and applied in the energy sector can be adapted to the water industry, and are an appropriate tool for estimating the opportunity cost of supplying water over time as rainfall scenarios evolve.

The opportunity cost of supplying a unit of water can then be used to formulate a range of tariffs. This would allow consumers to express their preferences on security of supply and price stability, and provide an opportunity for the portfolio manager to manage demand more efficiently as water availability changes over time.

Responsibility for procurement and security of supply should be assigned to retail–distribution utilities because:

- they are best placed to understand consumer preferences and can develop service offerings based on the opportunity cost of supply
- they can facilitate contestability and competition for new water supplies and services from potential service providers
- commercial responsibility for efficient operation and procurement of supply strengthens commercial incentives, including the effective management of investment risk

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- it preserves many of the efficiencies inherent in a vertically integrated utility, even though vertical and horizontal separation of bulk supply and outsourcing of functions is possible
  - it can mitigate against the high cost of formal price control regulation and the potential for inefficiencies arising from government ownership of a monopoly, using competition for procurement of supply and other services.

These utilities might be owned by State and Territory Governments or one or more Local Governments. They would be responsible for providing their services in an economically efficient manner and meeting security of supply standards set by the government. It would not be the role of the utility to make judgments about health or environmental aspects. Rather, utilities should operate within the policy and regulatory settings determined by government, so that they meet the requirements in the most efficient way.

Governments should ensure that governance arrangements hold utilities responsible and accountable for performing their functions. Best practice governance arrangements are also relevant to Local Government service providers. Aspects of the governance arrangements should include:

- a charter with the shareholder government (box 10)
- public reporting of utility performance against the charter
- independent periodic review of the performance of the utility against the charter
- rewards and sanctions related to utility performance.

To strengthen independence, responsibility and accountability, governance arrangements (except for utilities embedded in Local Government) should include:

- full legal corporatisation of the utility with incorporation under the *Corporations Act 2001* (Cwlth)
- an independent board (appointed on merit).

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**Box 10 Key elements of a charter between a government and its water utility**

- Obligation to serve (system reliability, security of supply and obligation to procure).
- Processes and procedures for choosing supply augmentation (transparent, tenders for supply, public consultation, and public reporting of the decision (including an audit of the decision by an independent body).
- Public health and environmental obligations.
- Principles for pricing and service offerings (including asset valuation and return on assets).
- Processes and procedures for setting prices that are transparent, involve public consultation, and public reporting of decisions (including a periodic review by an independent body).
- Borrowings and dividend policies.
- Customer service standards and hardship policies.
- Risk allocation (consumers, the government shareholder and private suppliers).
- Clearly specified and fully funded Community Service Obligations.
- Performance reporting against the charter.
- Performance reviews and sanctions for underperformance.

*Prices oversight*

The best practice governance arrangements for utilities would also guard against the misuse of market power by the government-owned monopoly retailer–distributor utility (box 11).

In addition, formal price setting controls are costly and can inhibit innovation and the discovery process about the services preferred by customers and more efficient ways of delivering them.

Therefore, the Commission does not see a role for formal price setting controls by economic regulators. Instead, utilities would be subject to price monitoring. After five years, a review would be undertaken to assess whether price monitoring should be abandoned and replaced by self reporting.

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**Box 11      Scope for market power and excessive production costs**

The recommended governance arrangements for retailer–distributor utilities include:

- government ownership
- incorporation under the Corporations Act
- the adoption of the portfolio manager framework, which includes an important role for competitive procurement and outsourcing
- a charter between the government and the utility that includes a number of principles, and open and transparent processes and procedures, which are similar to those applied under economic regulation
- public reporting of performance against the charter
- rewards and sanctions related to utility performance.

Although designed to improve the general performance of urban water utilities, taken as a package, these arrangements would also minimise the risk that market power will be misused or that production costs will be excessive.

In addition, the Commission sees some attractions in using a consumer representative group as a way of encouraging market participants (the utility and its household and business customers) to discuss and discover the preferred services (and their pricing), and ways of efficiently delivering them. There are some precedents (box 12).

There are some important matters to be resolved, including the precise role of the representative group and selection of individual representatives of consumers (households and businesses).

A consumer representative group could be funded out of water utility charges to consumers, and buy in expert advice to assist it in its deliberations on complex pricing and procurement matters.

### *Consumer protection*

Currently, customers of small utilities and tenants may not have the same level of consumer protection as customers of large utilities and owner occupiers. There is scope for more consistent application of best practice arrangements. All water utility customers should have access to an independent dispute resolution process, preferably provided by a specialist utilities ombudsman.

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## Box 12 Consumer representative groups

With increasing complexity, cost and time being the trend in the application of price setting regulation, some regulators in the United Kingdom are seeking ways to encourage consumers to have a greater role and responsibility in the process of discovering what customers want and what is efficient production and investment.

Examples of using consumer representatives as participants in utility pricing in the United States and Canada includes those overseen by the Federal Energy Regulatory Commission in the United States and the National Energy Board in Canada (both dealing with gas pipelines), and those facilitated by the Office of Public Counsel in Florida.

The Office of Public Counsel is a consumer advocate created to provide representation for consumers in utility related matters. It participates in price setting proceedings before the Florida Public Service Commission and counties involving various utilities (including water and wastewater).

The Consumer Advocacy Panel assists Australian businesses and households to represent their interests in policy and regulatory decisions relating to the National Energy Market by providing grants to eligible groups.

### *Regulatory institutions*

In addition to governments clearly defining the roles of regulators and improving the guidance on the principles and frameworks regulators are to apply, it is also desirable to ensure that best practice institutional design, processes and procedures are adopted to make regulators responsible and accountable for their actions, such as:

- statutory independence of regulatory institutions
- merit appointment of independent regulators
- ensuring transparent decision making using public consultation processes and public reporting
- appeals process (courts or tribunals).

## **2 Structural reform — case-by-case assessment**

The economics of providing water services vary substantially across geographic regions (box 13). Water is heavy and, unlike other utility services, transport costs can escalate if pumping uphill and over long distances. Such factors have a significant bearing on the likely costs and benefits of structural options (such as the vertical and horizontal separation of the supply chain, including bulk supply

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sources, wastewater treatment facilities, bulk water transmission and retail–distribution). For these reasons, the net benefits of structural reform should be considered on a case-by-case basis.

**Box 13 Major factors impacting on the economics of supply and demand**

The economic drivers of the water system include:

- source, location, abundance, and cost of developing, extracting and transporting water resources
- the variability of rainfall, storage inflows, storage capacity, and uncertainty about trends and extremes arising from climate change
- the demands on stormwater management systems
- the size of, and distance between, the urban centres for demand
- the service requirements and expectations of individual communities.

The structural reform options are set out in table 2. In metropolitan areas, option 1 is a vertically-integrated utility with the universally applicable reform package applied to it. Options 2 to 4 are aimed at strengthening the pressures for efficient water resource allocation and productivity by introducing progressively more contestability into elements of the integrated water cycle (figure 2).

In regional areas, there is less scope for contestability and so structural reforms are, in general, about tapping efficiency gains through addressing economies of scale issues.

*Large metropolitan utilities*

Vertical and horizontal separation of the bulk water supply function (option 2) strengthens competition and contestability for the supply of bulk water services (supply, treatment, transfer and storage) compared with option 1. Bulk water of different classes and from various sources would compete on merit and the lowest-cost combination of water supply would be used to satisfy new and existing demand. However, competing providers for new supplies and facilities would have greater confidence in the knowledge that their competitors are not also their client. Under the portfolio manager framework, the vertical and horizontal structural separation does not result in a significant loss of the economies inherent in a vertically-integrated utility because the retailer–distributor (portfolio manager) has operational control of dispatch, storage and transport decisions.

**Table 2 Structural reform options to consider**

<i>Reform</i>	<i>Description</i>
<b>Metropolitan areas</b>	
Vertically-integrated water utility (option 1)	Provide water and wastewater services at lowest expected cost, considering all available internal and external (bilateral contracting) options
Contestability in bulk water supply (option 2)	Vertical separation of the bulk water supply function Horizontal separation of bulk water service providers
Contestability in bulk water supply and wastewater treatment (option 3)	In addition to option 2 reforms: <ul style="list-style-type: none"> <li>• vertical separation of the wastewater treatment function</li> <li>• horizontal separation of wastewater treatment service providers</li> </ul>
Contestability in bulk water supply and wastewater treatment, and yardstick competition (and trade) in retail–distribution (option 4)	In addition to option 3 reforms: <ul style="list-style-type: none"> <li>• horizontal separation of retail–distribution function into regional geographic monopolies that could trade contracted services</li> <li>• shared transmission network service provider/grid manager</li> <li>• transmission services also procured using bilateral contracts</li> </ul>
<b>Regional urban areas in NSW and Qld (outside of south-east Qld)</b>	
Aggregate utilities to exploit economies of scale	Aggregated utilities could be organised as: <ul style="list-style-type: none"> <li>• county councils</li> <li>• regional water corporations</li> </ul>
Retain existing structure but provide some services centrally	Establish a regional alliance of utilities
<b>Regional urban areas in SA, WA and the NT</b>	
Disaggregation of jurisdiction-wide utilities	Options include: <ul style="list-style-type: none"> <li>• multiple regional water corporations</li> <li>• retain jurisdiction-wide utility but price according to geographic boundaries</li> </ul>

Option 3 extends competition and contestability to the wastewater treatment and discharge function, and provides strong incentives for innovation by wastewater treatment service providers, including the production of recycled wastewater products.

Disaggregation of a single retail–distribution utility into smaller (but still of efficient scale) geographic utilities (option 4) would support yardstick competition between utilities, and further strengthen innovation, competition and contestability between bulk water and wastewater treatment service providers, and facilitate a market for managerial expertise. However, system coordination and transaction costs start to increase with this model.

There is insufficient evidence at this time to conclude that creation of competitive urban water markets (as in the national electricity market) would have further net

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benefits. Any market-based system must be able to meet security of supply standards expected by governments and consumers through investment in new sources of water. There are no real world examples of such competitive urban water markets.

Experience gained under the recommended reforms might provide insights into whether market developments could be beneficial.

### *Regional utilities*

The Commission is proposing several options for addressing economies of scale issues as a way of improving the performance of non-metropolitan utilities in New South Wales and Queensland (table 2). A number of utilities already successfully operate under these options. It is the Commission's view that none of these options should be prescribed. Rather, State and Territory Governments should support local communities to identify the option that best suits them.

The Commission is also suggesting that consideration be given to whether regional communities in South Australia, Western Australia and the Northern Territory would be better served by having one or more regional utilities, separate from the main metropolitan water supply task, in place of the current jurisdiction-wide utility model.

## **Implementing the reform package**

The roles of governments in implementing reform, along with indicative timetables, are set out in table 3.

### **What role for COAG?**

Agreement of all jurisdictions is not necessary for individual State and Territory Governments to pursue most of the reform program proposed by the Commission.

However, effective arrangements for integrating and coordinating policy and its implementation are fundamental to achieving successful reform of the urban water sector. The COAG process can help to facilitate this, as well as ensure a nationally consistent approach to reform, particularly when supported by a standardised framework for monitoring progress.



**Table 3 Roadmap for reform**

Action	Recommendation	End of calendar year					
		2012	2013	2014	2015	2016	2017
<b>COAG</b>							
Formulate new intergovernmental agreement	14.2	■					
Commission a review of concession arrangements	8.1						
Progress implementation of measures to support consumer advocacy as per 2008 Review of Australia's Consumer Policy Framework	8.3	■					
Conduct independent review of reform program	14.7						■
<b>State and Territory Governments</b>							
Universally applicable reforms — set overarching objective and restrict provision of subsidies	3.1, 5.3, 13.4, 14.3	■	■				
Universally applicable reforms — others	4.1, 5.1, 5.2, 5.4, 6.1, 6.2, 6.3, 6.4, 7.1, 7.2, 7.3, 8.2, 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 11.1, 14.3, 14.4	■	■				
Regularly review outcomes in Indigenous communities	13.5			■	■	■	■
Assess case for structural reform	12.1, 13.1, 13.2, 13.3			■			
Implement structural reform as appropriate	14.1			■	■		
<b>Australian Government</b>							
Universally applicable reforms — set overarching objective and restrict provision of subsidies	3.1, 5.3, 14.3	■					
Commission a review of National Access Regime	11.2	■					
<b>NWC/WSAA</b>							
NWC and/or WSAA to provide support to utilities to build capacity and expertise	14.5	■	■				
NWC to monitor reform progress	14.6			■	■		

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COAG should put in place a new intergovernmental agreement on the reform program. The agreement would explicitly incorporate the universally applicable reforms and broad commitment to reviewing and implementing structural reform according to a specified timeline. It should specify the desired outcomes and priorities and, where appropriate, provide for interim targets and for adjustment to targets as new information emerges or where circumstances change.

In relation to the structural reform options, jurisdictions will need some flexibility to determine the most appropriate way forward. Determining the preferred option will require specific assessments, negotiations between State and Local Governments, and consultation with the industry and consumers.

COAG should also monitor progress in implementation of the agreement against the agreed timetable. The National Water Commission could perform this role. In addition, there is a role for the National Water Commission and/or Water Services Association of Australia to support utilities in building capacity and expertise in developing:

- methods to implement the real options approach to operations and investment
- methods to estimate the marginal opportunity cost of supply
- tariff design principles based on the marginal opportunity cost of supply.

### **State, Territory and Local Governments**

Governments should not delay reform until the new COAG agreement is put in place. Implementation of the reform package by each jurisdiction will generate benefits for their own communities (box 14).

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**Box 14 Jurisdictional benefits from implementing reform**

Consumers in each jurisdiction will have:

- wider choice of services at a lower cost than otherwise
- greater reliability of a safe water supply
- reduced likelihood of costly and inconvenient restrictions
- greater opportunity for consultation regarding procurement of supply and pricing
- greater compliance with drinking water guidelines and standards for discharge of wastewater in some regional areas.

Communities in each jurisdiction will benefit more generally from the improvement in the economic performance of their urban water sector as a whole.

Earlier reform would deliver significant additional benefits to the community. It is also currently an opportune time to implement reform while there are no immediate concerns about security of supply in most jurisdictions (the situation in Western Australia is less clear).

### **Reviewing the reform package**

The Commission's reform package would improve the performance of Australia's urban water sector for the benefit of water consumers and the community as a whole. The Commission acknowledges, however, that all outcomes cannot be known with certainty, and circumstances can change over time. Therefore, there should be an independent public review of the impact of the new arrangements in five years, after the sector has had sufficient time to adjust to them.



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# Recommendations and findings

## Chapter 3 — Objectives for the urban water sector

RECOMMENDATION 3.1

*The Australian, State and Territory Governments should articulate a common objective for the urban water sector in relevant policy documents along the following lines:*

*The primary objective of the urban water sector is to provide water, wastewater and stormwater services in an economically efficient manner so as to maximise net benefits to the community. This objective should be met by pursuing the following more specific objectives:*

- *achieving water security and reliability at lowest expected cost*
- *contributing to universal and affordable access to water and wastewater services*
- *contributing to public health, flood mitigation and environmental protection.*

*Economic efficiency should be defined broadly to include environmental, health and other costs and benefits that might not be priced in markets.*

## Chapter 4 — The role of governments

RECOMMENDATION 4.1

*It is the role of governments to create the conditions necessary for institutions to operate efficiently. Governments should:*

- *set objectives for the development of urban water policy and relevant objectives for each institution*
- *ensure that policy frameworks and principles in relation to public health, the environment and service delivery are consistent with the objectives*
- *define property rights for environmental and consumptive use water, including stormwater and wastewater*
- *appropriately assign roles and functions to institutions*

- 
- *put in place best practice institutional and governance arrangements for:*
    - *public health, environmental and economic regulation relating to the sector*
    - *service delivery of water, wastewater and stormwater services*
  - *provide ongoing commitment to the application of the arrangements.*

## **Chapter 5 — Supply of water, wastewater and stormwater services**

### RECOMMENDATION 5.1

*Any restrictions on water trading by regional urban water utilities should be independently reviewed and, if they cannot be shown to provide net public benefits, they should be removed.*

### RECOMMENDATION 5.2

*State and Territory Governments should adopt policy settings that require the costs, benefits and risks of all supply augmentation and demand management options to be considered using a real options (or adaptive management) approach.*

*Information on all augmentation options and their respective merits should be made publicly available and views of the community sought, especially regarding sensitive options like indirect potable reuse.*

*Bans on particular augmentation options (whether or not explicitly stated) should be removed, including those on rural–urban trade and indirect potable reuse.*

### RECOMMENDATION 5.3

*In general, the Australian, State and Territory Governments should cease providing subsidies for water, wastewater and stormwater infrastructure. The possible exceptions are where:*

- *infrastructure investment is required due to changes in environmental standards that impose a significant cost on a defined group and/or infringe a well defined ‘property right’*
- *a formal and transparent process has identified that a regional community should not be required to recover costs fully through water charges.*

### RECOMMENDATION 5.4

*Governments should ensure that the six principles of good regulatory practice, spelt out by the Regulation Taskforce, are applied when developing policy and regulation governing the urban water sector.*

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FINDING 5.1

*Integrated water cycle management initiatives are often driven by the assumption that it is always in the community's interest to increase water reuse and recycling, and to decrease reliance on centralised water supply systems. A preferred approach is to facilitate efficient recycling and reuse projects by removing barriers to integration (such as the absence of appropriate property rights for wastewater and stormwater and deficiencies in the analyses, and community awareness, of costs and benefits).*

## **Chapter 6 — Pricing of water, wastewater and stormwater**

RECOMMENDATION 6.1

*Upfront developer charges should be used where the incremental costs of development are well established and benefits accrue mainly to those in the development. Where, as in the case of urban infill, the benefits also accrue to incumbents, costs should be spread across all users through rates, taxes or the fixed part of a two-part tariff for water and wastewater services. Developers should be given the option of building the required infrastructure themselves where appropriate, subject to predetermined standards.*

RECOMMENDATION 6.2

*All new single and multi-unit dwellings should have separate water meters installed. The case for retro-fitting existing single and multi-unit dwellings with separate water metering technology should be assessed by utilities.*

RECOMMENDATION 6.3

*Utilities should charge tenants directly for both the fixed and volumetric charges where water is separately metered. Where this does not already occur, State and Territory Governments should consider whether transitional arrangements are required to ensure that savings to landlords are passed through to tenants.*

FINDING 6.1

*Currently, the volumetric component of two-part tariffs is distorted by the prescription of inclining block tariffs, which create inefficiencies and inequities. Substantial efficiency gains are available from no longer prescribing inclining block tariff structures.*

FINDING 6.2

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*Charging a uniform price for water over a large geographic region ('postage stamp' pricing), irrespective of the variation in costs of servicing individual locations within the region, leads to inefficiencies and inequities.*

*There is scope for efficiency gains in moving to location-specific pricing, particularly where cost differences within the 'postage stamp' region are large and easy to quantify.*

RECOMMENDATION 6.4

***Where metering is in place, charges should include a volumetric component using a two-part tariff.***

***Greater choice in tariff offerings should be available to water consumers. This would:***

- ***allow consumers to express their preferences on security of supply and price stability***
- ***provide an opportunity for water utilities to improve demand management as water availability changes over time.***

***These tariff offerings should be based on the marginal opportunity cost of supply, which includes:***

- ***the direct short-run marginal cost of supplying water***
- ***the value of any externalities***
- ***the scarcity value of water as supply and demand conditions change.***

FINDING 6.3

*The National Water Initiative pricing principles provide scope to implement pricing policies that are inconsistent with economic efficiency.*

## **Chapter 7 — Non-price demand management**

FINDING 7.1

*Water restrictions generate net welfare losses for households, businesses and the community. They deny consumers the opportunity to choose how to use water in the ways that are most valuable to them. The evidence suggests that:*

- *the costs of restrictions are substantial*
- *many consumers would prefer to incur a larger bill rather than be subject to restrictions on their use of water.*



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RECOMMENDATION 7.1

*The prescribed use of water restrictions should be the exception, limited to emergencies and of short duration. Utilities, not governments, should make decisions on when to prescribe restrictions, subject to supply obligations set out in utility governance charters (recommendation 10.7).*

RECOMMENDATION 7.2

*Governments should not prescribe water use efficiency and conservation activities unless there is a market failure present and it is clearly established that the social benefits of intervention exceed the social costs.*

RECOMMENDATION 7.3

*Government education and information campaigns should be refocused to provide consumers with objective information on the costs and benefits of managing demand using prices, restrictions, water use efficiency and conservation measures.*

## **Chapter 8 — Achieving affordability and consumer protection objectives**

FINDING 8.1

*In Australia, per capita water consumption is well above generally agreed subsistence requirements and there is no need for an ‘essential’ volume of water to be determined by government, except in the case of an emergency arising from a failure of supply.*

FINDING 8.2

*Expenditure on water and wastewater services represents a small proportion of income, even for low-income groups. Price increases in water and wastewater services are likely to have had less impact on consumers than price increases of other essential goods and services such as energy, food and housing (for which expenditure represents a greater share of incomes).*

FINDING 8.3

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*Current State, Territory and Local Government concession arrangements for water and wastewater services are inefficient and inequitable. Efficiency gains can be made by replacing or amending water and wastewater concessions with direct payments to targeted households or rebates on the fixed component of water and wastewater service bills.*

FINDING 8.4

*For low-income households, the affordability of water and wastewater services and other essential goods and services is most efficiently achieved through non-concession elements of Australia's tax and transfer payments system.*

RECOMMENDATION 8.1

***COAG should commission a review of concessions on utility services across all levels of government. The review should:***

- ***identify the most effective and efficient way of ensuring that the services of utilities are affordable for low-income consumers***
- ***assess the appropriateness of existing arrangements for providing concessions, including eligibility criteria***
- ***assess the merit of, and scope for, abolishing concessions and providing relevant assistance to low-income households using other elements of the tax and transfer payments system.***

FINDING 8.5

*It is in the interests of consumers for utilities to have well designed hardship policies that apply to customers having difficulty paying their bills. Such hardship policies could include payment extensions or payment plans. Other measures provided by governments to alleviate hardship for low-income and disadvantaged consumers in exceptional circumstances also have merit, including utility grant schemes (State and Territory Governments) and Centrepay (provided by Centrelink).*

RECOMMENDATION 8.2

***Governments should develop best practice consumer protection principles for retail–distribution utilities in consultation with consumer advocacy bodies and other interested parties. At a minimum, the guiding principles should include:***

- ***retail–distribution utilities having clearly defined service standards and provisions to assist consumers facing hardship***
- ***rights for tenants that are commensurate with those of owner occupiers***

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- *access to an independent dispute resolution process, preferably by a specialist utilities industry ombudsman.*

RECOMMENDATION 8.3

*COAG should progress implementation of measures to support consumer advocacy and research consistent with recommendation 11.3 of the Commission's 2008 Review of Australia's Consumer Policy Framework.*

## **Chapter 10 — Improving institutional arrangements**

RECOMMENDATION 10.1

*To strengthen independence, responsibility, accountability and transparency:*

- *directors of utilities should be appointed on merit, following a transparent selection process*
- *ministerial directions should be publicly disclosed at the time they are made and disclosed in the annual report*
- *utilities (except where embedded in Local Government) should be incorporated under the Corporations Act 2001 (Cwlth)*
- *directors and officers of utilities (except where the utility is embedded in Local Government) should be subject to the obligations under the Corporations Act.*

RECOMMENDATION 10.2

*Governments should review objectives currently given to water utilities and regulators, and remove those that would be more appropriately allocated to other agencies.*

*Where conflicting objectives are seen as unavoidable for utilities or regulators, guidance on how to prioritise objectives should be given through a governance charter for utilities or through the inclusion of an overarching objects clause in regulatory acts.*

RECOMMENDATION 10.3

*Retail–distribution utilities should be assigned responsibility for meeting security of supply standards and procuring water and wastewater services because:*

- *they are best placed to understand consumer preferences and can develop service offerings based on the opportunity cost of supply*
- *they can facilitate contestability and competition for water and wastewater services from potential service providers*

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- *they would have commercial responsibility for efficient operation and procurement of supply, which strengthens commercial incentives and risk management of operations and investment*
  - *it can preserve many of the efficiencies inherent in a vertically-integrated utility, even though vertical and horizontal separation of bulk supply is possible*
  - *it can mitigate against the high cost of formal price control regulation and the potential for inefficiencies arising from government ownership through the use of competition for procurement of supply and other services.*

RECOMMENDATION 10.4

*Charters should require all water utilities to achieve full cost recovery (including a return on assets) within three years of a charter being implemented. Where achieving full cost recovery solely through customer charges is considered unachievable or undesirable given the costs of meeting the utility's social, health or environmental obligations, State or Territory Governments should provide explicit Community Service Obligation payments to utilities. Charters should require that utilities reduce reliance on Community Service Obligation payments over time where practicable.*

RECOMMENDATION 10.5

*Compliance with the Australian Drinking Water Guidelines (ADWG) (or equivalent regulations) should be a legislated requirement for all Australian urban water utilities. Specifically, utilities should be required to:*

- *develop, implement and adhere to an approved drinking water quality risk management plan*
- *comply with relevant standards for drinking water*
- *disclose (and report on) water quality information.*

*State and Territory Governments should ensure that each of these legislative obligations is consistent with the requirements of the ADWG.*

*Sanctions should apply if water utilities do not comply with these requirements, and directors or other accountable persons such as councillors should be personally liable for non-compliance.*

*Public provision of information on the microbiological and chemical quality of drinking water is critical. Where utility performance against these measures (as defined in the ADWG) is not already publicly reported on (for example, by the National Water Commission), utilities should report on these measures.*

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*Performance reporting requirements against the proposed governance charter would represent a suitable mechanism for such reporting.*

RECOMMENDATION 10.6

*Governments should ensure that environmental and health regulators are more transparent and accountable in their decision making by:*

- *ensuring environmental and health regulators publish draft decisions for public comment (except in emergency situations)*
- *ensuring environmental and health regulators publish reasons for their decisions in a similar manner to economic regulators*
- *establishing merit review procedures administered by existing jurisdictional courts or tribunals.*

RECOMMENDATION 10.7

*State and Territory Governments should draw up charters for urban water utilities incorporating best practice governance arrangements and governments' requirements for the performance of utilities.*

*The charter would set out details about:*

- *obligations to serve (security of supply and obligation to procure)*
- *obligations regarding public health and the environment*
- *transparent processes and procedures for supply augmentation and economic assessments (public consultation, tenders for supply, public reporting of the decision, and monitoring of the process by an independent body)*
- *principles for pricing and service offerings*
- *transparent processes and procedures for setting prices that involve public consultation, public reporting of decisions and periodic review by an independent body*
- *borrowing and dividend policies*
- *customer service standard/hardship policies*
- *risk allocation (between consumers, the government shareholder and private suppliers)*
- *clearly specified and fully funded Community Service Obligations*
- *annual performance reporting requirements and provision for independent reviews*
- *sanctions for underperformance against the charter.*

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*There should be public consultation regarding the contents of the charter. Independent economic regulators in each jurisdiction would also be well placed to provide advice to the government.*

*Independent economic regulators, or some other appropriate government agency, in each jurisdiction, could oversee reporting against the charter. Reporting against the charter should incorporate a variety of performance indicators across various aspects of water utilities' performance.*

## **Chapter 11 — Rethinking price regulation**

### RECOMMENDATION 11.1

*State and Territory Governments should move away from regulatory price setting to a price monitoring regime (where some form of prices oversight is considered necessary). Independent regulatory price setting should only be applied where it can be demonstrated that price monitoring and appropriate governance arrangements are unlikely to prevent misuse of market power.*

*Within five years of moving to a price monitoring regime, all State and Territory Governments should initiate independent reviews (not by regulatory agencies) to determine:*

- *whether water utilities are misusing their market power and, if they are, what action should be taken to deal with this*
- *whether ongoing price monitoring is likely to produce net benefits to the community and, therefore, whether it is still required. If such benefits can not be demonstrated, all price regulation should be abolished and replaced by a self-reporting regime to be overseen by an appropriate government agency in the relevant jurisdiction.*

*Rather than proceeding to implement a price setting regime, Queensland should continue with its interim price monitoring arrangements until it undertakes a review within five years of whether price regulation produces net benefits to the community.*

*The National Water Initiative pricing principles should be amended to make it clear that independent regulatory price setting, should not be applied unless it can be demonstrated that a more light-handed approach is unlikely to prevent the substantial misuse of market power.*

### RECOMMENDATION 11.2

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*The Australian Government should proceed with the scheduled independent review of the National Access Regime. This review should commence no later than 31 December 2012. The terms of reference should include an examination of the interaction between the national and state-based regimes, including those for the urban water sector.*

## **Chapter 12 — Structural options for large cities**

### RECOMMENDATION 12.1

*There is a range of structural reform options for urban water supply in Australia's large cities, including:*

- *Option 1 — a vertically-integrated utility with improved governance and processes*
- *Option 2 — vertical separation of the bulk water supply function from other elements of the supply chain, and horizontal separation of the bulk water supply function*
- *Option 3 — vertical and horizontal separation of the wastewater treatment function (in addition to option 2)*
- *Option 4 — horizontal separation of the retail–distribution function (in addition to option 3).*

*State and Territory Governments should undertake a detailed assessment of the full costs and benefits of undertaking structural reform by the end of 2013.*

## **Chapter 13 — Reform in regional areas**

### FINDING 13.1

*A significant number of regional water utilities in New South Wales, Victoria, Queensland and Tasmania are not fully recovering costs (including capital costs). Based on publicly available financial indicators, the incidence of underrecovery of costs is more pronounced than a number of government agencies suggest, due to the way that full cost recovery is defined and assessed by those agencies.*

### RECOMMENDATION 13.1

*The New South Wales Government should provide a formal response to the recommendations of the Armstrong and Gellatly inquiry as a matter of priority.*

### RECOMMENDATION 13.2

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*The Governments of New South Wales and Queensland should consider the merits of aggregation of regional water utilities, case-by-case, based on:*

- *identification of the affected utilities*
- *preferred grouping of utilities, in consultation with Local Governments, affected communities and other interested parties*
- *the relative merits of alternative organisational structures, including the county council and public corporation models.*

*Where the expected benefits of horizontal aggregation do not outweigh the costs, governments should consider the case for establishing regional alliances.*

RECOMMENDATION 13.3

*The Governments of South Australia, Western Australia and the Northern Territory should consider the costs and benefits of replacing the single, jurisdiction-wide public corporation model with a regional water corporation approach (horizontal disaggregation).*

*In assessing the costs and benefits, factors other than scale should be considered, including opportunities for yardstick competition, the proximity of utilities to the customers they serve, opportunities for more location-specific pricing arrangements and the effectiveness of water resource management and water system planning.*

RECOMMENDATION 13.4

*If State and Territory Governments choose to subsidise the provision of water supply and wastewater services in regional areas (consistent with recommendations 5.3 and 10.4), the relative merits of alternative supply options for these customers (including moving to a system of self-supply) should be considered.*

*The case for providing financial incentives to facilitate reform, and assistance for local councils adversely affected by reform, should be determined by State and Territory Governments. If assistance is provided, it should be transitory and limited to impacts resulting directly from reform implementation.*

RECOMMENDATION 13.5

*State and Territory Governments should undertake regular public reviews of water and wastewater outcomes in Indigenous communities. Water and wastewater services should be assessed against the same metrics that are used to measure service quality in non-Indigenous communities.*



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## Chapter 14 — Implementing reform and monitoring progress

### RECOMMENDATION 14.1

*The universally applicable reforms to policy, governance and institutions identified by the Commission should be the highest priority for all governments as they present the greatest scope for efficiency gains. These universally applicable reforms centre on:*

- *setting an overarching objective for government policy in the sector for the provision of water, wastewater and stormwater services in an economically efficient manner to maximise the net benefits to the community*
- *developing appropriate policies and principles that align with this objective*
- *assigning roles and responsibilities appropriately*
- *putting in place best practice institutional, regulatory and governance arrangements.*

*Governments should also assess the case for structural reform, and implement structural reform where appropriate. Assessments should be open and transparent and involve public consultation.*

### RECOMMENDATION 14.2

*COAG should develop an intergovernmental agreement by the end of 2012 that commits each jurisdiction to implementing the universally applicable reforms identified by the Commission, and to implementing structural reform, with agreed deadlines for progress.*

### RECOMMENDATION 14.3

*Some universally applicable reforms should be implemented by the end of 2012, including setting an objective for the sector and ceasing (except in limited circumstances) subsidy payments.*

*The other universally applicable reforms should be in place by the end of 2013.*

*A review of the case for structural reform should also be completed by the end of 2013 and, where a case in favour of structural reform is identified, the reform process should begin immediately thereafter and be completed by the end of 2015.*

### RECOMMENDATION 14.4

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***Agreement across all jurisdictions is not necessary for State and Territory Governments to pursue the recommendations made by the Commission, as most relate to implementation of best practice regionally. State and Territory Governments should immediately commence enacting universally applicable reforms unilaterally and reviewing the case for structural reform.***

RECOMMENDATION 14.5

***The National Water Commission and/or Water Services Association of Australia should provide ongoing support to utilities to build capacity and expertise in adopting a real options approach, determining a framework for calculating the marginal opportunity cost of water, and devising a range of retail tariff offerings.***

RECOMMENDATION 14.6

***Progress against COAG agreed water reforms should be subject to monitoring. The National Water Commission could perform this role.***

RECOMMENDATION 14.7

***An independent public review of the implementation of the reform package should take place after five years.***