SUBMISSION
BY
DEPARTMENT OF ENVIRONMENT AND RESOURCE MANAGEMENT
TO
PRODUCTIVITY COMMISSION ISSUES PAPER: SEPTEMBER 2010
AUSTRALIA'S URBAN WATER SECTOR

15 NOVEMBER 2010

EXECUTIVE SUMMARY

The Department of Environment and Resource Management (DERM) welcomes the opportunity to provide a submission to the Australian Productivity Commission on Australia's Urban Water Sector.

Queensland faces a number of challenges in respect to its urban water sector. These include population growth, particularly in South East Queensland (SEQ) but also in a number of regional areas, climate change and economic growth, particularly in areas such as mining.

The provision of urban water and sewerage services are essential services that are vital for human and environmental health and the economic growth of the State. Regulation of the sector has a range of objectives, including that all Queensland urban communities have access to safe and reliable water and sewerage services; the protection of the environment; efficient business operation; competition and prevention of monopoly pricing; efficient water use and water security.

The Queensland Government applies a two pronged approach to urban water management. It regulates the urban water industry for the protection of public health and reliability of water supplies, including asset reliability. It also provides a comprehensive resource management/supply planning framework to encompass security of supply and efficient use of existing water.

Over the past decade the Queensland government has been reviewing and improving the regulations that govern the water and sewerage sector. This evolving process aims to achieve safe, secure and sustainable water management objectives, which is reflective of population growth and climate change.

In recent times, institutional reform was introduced in SEQ to achieve safe and reliable water supplies. This outcome has been achieved in SEQ primarily through the creation of the SEQ water grid with the potential for further benefits of improved environmental management and financial sustainability to eventuate in the long term. Institutional reforms in SEQ included the establishment of the Queensland Water Commission in 2006 and major restructure of the urban water sector which provides water to three million people and approximately 66% of the Queensland population.

Outside of the south east corner, Queensland is regionally based with a broad range of communities, varying size of populations and capacity of water service providers. As a result, there is recognition in Queensland that a "one size fits all" approach to urban water cannot be applied. This approach would not deliver outcomes that are reflective of local communities' needs and preferences.

The Queensland Government has instigated broader reforms via local governments amalgamations in 2008, reducing the total number of local governments from 157 to 73, with the establishment of several large regional councils. Currently, the Queensland Government, in partnership with key industry peak bodies, has also been exploring options for improving the regulations governing the water and sewerage sector predominantly outside of SEQ. A more outcome-based approach is under consideration, with the focus on increasing the effectiveness and efficiency of the urban water sector.

Shortages in traditional water supplies have resulted in other sources of water being considered potentially more viable. There are a number of alternative water sources available in Queensland including treated sewage, desalinated water, greywater, stormwater and rainwater, with production and/or supply of some of these sources being regulated by the Queensland Government to protect public health and the

environment. Prohibition of specific alternative water sources is limited (e.g. reuse of blackwater in a sewered area is restricted to trials to protect public health).

The Queensland Government has undertaken various activities, including legislation, research and planning, to position Queensland water service providers as integrated water managers. This has resulted in a number of best practice urban developments integrating water sensitive design and/or alternative water supply options.

- The Queensland Government's urban water pricing policy is consistent with the National Water Initiative pricing principles including full cost recovery where practicable, consumption based charges, user pays and price transparency.

Outside the SEQ region, local governments are responsible for setting water charges, consistent with the provisions of the *Local Government Act 2009*. The determination of rates and charges for urban water is a matter for each local government.

1 INTRODUCTION

The Department of Environment and Resource Management (DERM) welcomes the opportunity to provide a submission to the Australian Productivity Commission on Australia's Urban Water Sector.

The submission outlines the roles and responsibilities, the planning, regulatory, governance and institutional frameworks and the range of activities undertaken across the State in urban water management.

In the past four years major institutional reform has been introduced in SEQ and where appropriate the submission will expand on the activities/changes which differentiate SEQ from other parts of the state. Submissions from the Queensland Water Commission and the South East Queensland Water Grid Manager have been included to provide additional information on these reforms (Attachments 9.3 and 9.4).

2 URBAN WATER SECTOR IN QUEENSLAND

2.1 Objectives of urban water sector

In Queensland outside of the south east corner urban water services are predominately delivered by vertically integrated local government utilities. The provision of urban water and sewerage services are regarded as essential services that are vital for human and environmental health and the economic growth of the State. Regulation of the sector has a range of objectives, including that all Queensland urban communities have access to safe and reliable water and sewerage services; the protection of the environment; efficient business operation, competition and prevention of monopoly pricing, efficient water use and water security.

2.2 Industry profile

Queensland is the most regionalised state in Australia. There are a total of 160 urban[1] and non-urban service providers in Queensland, of which 83 and 77 are classed as urban and non-urban service providers, respectively.

The largest populations are supplied by service providers which are generally located in the south east corner and the major centres along the coast. The smaller providers commonly service small and remote locations such as indigenous council areas and rural towns. Of the 83 urban water and sewerage service providers (urban service providers) in Queensland, 71 are located outside of SEQ - 11 large[2], 26 medium[3] and 34 small[4] service providers. Of these, 62 are local governments.

Sixty-one of the urban service providers outside of SEQ provide both a water and sewerage service. Very few urban water service providers supply solely a water or sewerage service supply. A water service includes bulk water, distribution and retail water, drinking water and stock and domestic. The urban service providers in SEQ

[1] Provides water and sewerage services in cities, towns and regional areas where connected to a sewerage network or water reticulated system.
[2] A large drinking water service provider is a service provider primarily providing bulk water services or a service provider with more than 25000 connections to a registered service.
[3] A medium drinking water service provider is a service provider with more than 1000 but not more than 25000 connections to a registered service.
[4] A small drinking water service provider is a service provider with 1000 or less connections to a registered service.

predominantly supply either a water service (primarily drinking water) or a water and sewerage service.

2.3 Roles

In Queensland, urban water and sewerage service providers (urban service providers) and the Queensland Government are each responsible for different components of urban water supply.

2.3.1 Service providers

Urban service providers, generally local governments, are responsible for the local planning, operation and maintenance of Queensland's urban water supply and sewerage services. In managing their services, urban service providers are responsible for:

- supplying water supply (bulk, distribution and retail);
- managing sewerage collection and disposal;
- planning for current and future growth (including supply and demand options; augmentation of water supplies, alternative water supplies etc);
- maintaining water and sewerage assets both now and the future (including upgrades, renewals and operation and maintenance of assets from source to consumer);
- establishing processes, protocols and standards with their customers (including households, industry, commercial etc);
- ensuring adequate workforce skills and capacity exist across the service to deliver the necessary outcomes; and
- setting water and sewerage prices reflective of their service.

Regulatory requirements are placed on urban water service to achieve effective management of water and sewerage services and include measures to achieve good quality drinking water, reliable water supplies, adequate water and sewerage infrastructure reliability, planning for water supply and demand are in place.

Currently, customer service standards and up to eight management plans[5] are required to be prepared to address the above mentioned issues. The individual customer service standards focus on the actions to ensure the continuity of the service supplied to customers and protect the interests of particular classes of customers, including processes for interacting with customers about billing, metering, accounts, consumer consultation, complaints and dispute resolution. The management plans focus on asset management, system leakages, drinking water quality, outdoor water use conservation, total water cycle management, and managing supply when affected by drought events from a whole of service perspective (i.e. catchment to tap).

2.3.2 State Government

The Queensland Government plays two main roles in the urban water sector:

(a) setting policy directions and regulating the urban water industry.
In 2000, a suite of requirements for service providers relating to the management of infrastructure and customer service standards were introduced. Over time, new requirements were added to ensure safe and reliable water supplies through preparation, reviews and audits of management plans to achieve -
- safe drinking water (drinking water quality management plans)
- reliable and continuous supply of water (drought management plans)

[5] See 2.4.2 ' Regulator – regulation of provides including plans (attachment) and step in powers

- adequate management of water and sewerage infrastructure (strategic asset management plans, system leakage management plans)
- planning of current and future water supply and demand (outdoor water conservation management plans, total water cycle management plans, recycled water management plans)
- environmental water quality and ecosystem protection (total water cycle management plans)

Service providers are also required to prepare customer service standards and to report to DERM on specific matters and to produce annual reports.

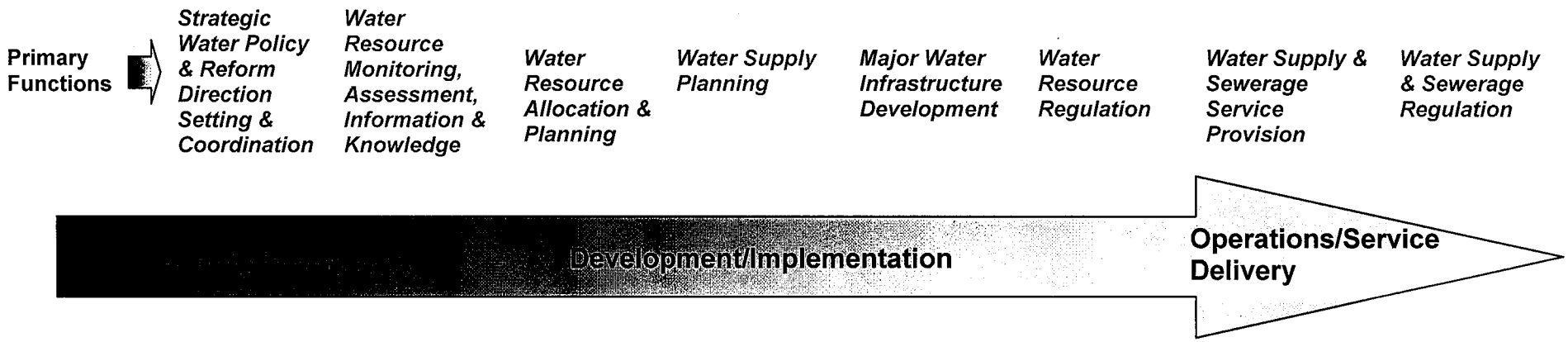
The Queensland Government also has reserve powers to step in and operate water, sewerage and recycled water infrastructure in certain circumstances, generally as a matter of last resort (for example, if there is significant non-compliance or a service provider makes a decision not to supply the service and there is no other entity willing to step in and provide the service).

(b) preparing water resource plans which determine the sustainable allocation of water from the natural water sources (surface water and groundwater) to water users and partnering with service providers in preparing long-term, strategic, regional water supply strategies. For additional information on Water Resource Plans refer to 3.3 and for Regional Water Supply Strategies refer to 3.4.

Water planning instruments such as Regional Water Supply Strategies, Water Resources Plans and Resource Operations Plans provide a comprehensive framework for water planning to encompass security of supply and efficient use of existing water through demand management.

Other roles of Queensland Government agencies, government owned corporations and statutory authorities relevant to water and sewerage provision are presented in Figure 1. The role of some agencies in SEQ will be further explained in Section 2.4.

Figure 1. Functions relevant to Water and Sewerage services in Queensland and Agency Roles



Primary Functions	***Strategic Water Policy & Reform Direction Setting & Coordination***	***Water Resource Monitoring, Assessment, Information & Knowledge***	***Water Resource Allocation & Planning***	***Water Supply Planning***	***Major Water Infrastructure Development***	***Water Resource Regulation***	***Water Supply & Sewerage Service Provision***	***Water Supply & Sewerage Regulation***
Lead Agency Other agencies	**DERM** P&C QWC (SEQ)	**DERM** QWC (SEQ) Queensland Health	**DERM**	**DERM** **QWC (SEQ)** DIP	**DIP** Treasury QWC (SEQ) DERM	**DERM**	**SunWater** **SEQ Water Entities** **Local Governments** DERM Category 1 & 2 Water Authorities	**DERM** **QWC (SEQ)** **Queensland Health (standards)** **QCA** **DIP (subsidies)**
Secondary Functions and Activities	'Lead' water business; policy coordination of State and National water reform agendas; interface with other agencies; legislative reform; advice on water reform implementation and water legislation; water industry coordination and support; strategic policy and projects	Monitoring and management of water related data and information; information systems; water metering; analysis and modelling; investigation and assessment; water accounting and reporting; provision of information; water and related systems R&D	Water allocation planning including setting of environmental flow objectives and allocations to human uses (WRP/ROP); Wild Rivers Declarations; establishing tradable water access entitlements; establishing unallocated water	Long-term water supply planning based on water balance analysis and Levels of Service objectives; implementation arrangements for supply and demand side measures; Regional Water Security Programs including System Operating Plan (SOP) and market rules where required	Planning for development of significant projects (feasibility studies); approvals (resource management, impact on environment, finance, health, safety); facilitating, undertaking or procuring project delivery; oversight of Program of Works – DIP; SEQ emergency regulation – QWC	Administration of water entitlements; water market regulation; regulation of 'take', use and discharge of water; regulation of groundwater and riverine environment; water pricing; incentives and education; operational policies and regulatory guidelines	Ownership and management of infrastructure; delivery of services at required level and conditions of service; prepare and report on management plans as required; Facilitate and support improved management activities	Monitoring and compliance of service providers including dam safety, asset management, drinking water quality, recycled water; oversight of water entities; SOP and market rules; restrictions; water pricing; subsidies; education; operational policies and regulatory guidelines

Note: Diagram highlights Queensland State Agency roles only and focuses on water resources and supply.
Abbreviations: Department of Environment and Resource Management (DERM), Department of Premier and Cabinet (P&C), Queensland Water Commission (QWC), Department of Infrastructure and Planning (DIP), Queensland Competition Authority (QCA)

2.3.3 Federal Government

Since the early 1990s the Federal Government has been a significant party in reform of the urban water sector and other water issues, driving the COAG agreements for achieving an efficient and sustainable water industry and competition agreements of 1994 and 1995 and the National Water Initiative (NWI) in 2004. Most recently, under the NWI, all jurisdictions have agreed to nationally consistent pricing principles for recovery of capital, urban water tariffs, water planning charges and recycled water and stormwater use. The Federal Government also provides national direction and guidance for jurisdictions through nationally developed and agreed guidelines for the industry, for example, the Australian Drinking Water Guidelines.

The Federal Government has also provided funding for significant projects including water and sewerage infrastructure across the country, e.g. through the Water Smart Australia Program the Australian Government has provided funding for the Western Corridor Recycled Water Project and Mackay Wastewater Recycling Project in Queensland (where it contributed $43.3M matched by State and Mackay Regional Council contributions) and provided assistance to local governments (including Indigenous councils) generally through the Regional and Local Community Infrastructure Program.

2.4 Recent institutional reforms

2.4.1 Amalgamation of local governments

In March 2008, the Queensland Government reduced the number of councils in Queensland from 157 to 73. These amalgamations were aimed at:

- addressing the challenges of planning for the transformation of communities will experience in the coming decades due to expanding economic activity in regions right across the State; and
- managing in a way that delivers quality environmental outcomes, well serviced and socially supported communities and sustainable use of the natural resources upon which life depends.

At the same time the Torres Strait Island Regional Council and the Northern Peninsula Area Regional Council was formed, however amalgamation of Aboriginal and Aboriginal mainstream councils (Mornington and Arakun) was not undertaken at the time, due to the unique features of Aboriginal councils that require further investigation.

2.4.2 Queensland Water Commission

The Queensland Water Commission (QWC) is statutory body responsible for achieving safe, secure and sustainable water supplies in SEQ and designated regions. The QWC commenced its operations on 19 June 2006. The Commission was established in response to the worst drought in 100 years, with the level of the SEQ region's significant water storages at historic low levels. Whilst this drought extended across many parts of the state, it created additional challenges in the SEQ region in particular, given the high population growth and strong economic development of the region. From 2010–11 the QWC also will be responsible for monitoring, modelling and reporting of the cumulative impacts of coal seam gas extraction on groundwater.

More recently however, SEQ has had a significant amount of rain and its dams are now full. With water supply in SEQ secure for the short to medium term, the QWC is now focussed on maintaining a secure water supply in the face of climate change and continued population growth over the medium to longer term. The South East

Queensland Water Strategy (Strategy) released on 15 July 2010, therefore focuses on maximising opportunities to use water and operating existing infrastructure.

The QWC's main functions are to:

- advise the Minister on matters relating to water supply and demand management for water;
- advise the Minister on the delivery of desired Levels of Service objectives for water supplied to the SEQ region and designated regions;
- facilitate and implement regional water security programs; and
- ensure compliance with the programs and with QWC water restrictions.

With the recent restructuring of the SEQ water industry, the QWC now places requirements upon the three council owned distributor-retail entities and three state owned bulk entities plus a fourth entity, the Water Grid Manager. The Commission requires each of the three distributor-retailers to prepare a Water NetServ Plan. The purposes of the Water Netserv Plan are to provide planning for:

- strategic business operations
- delivering infrastructure within at least a 20 year time horizon
- delivering a safe reliable and secure water and wastewater service
- integrating land use planning by the State and local governments
- managing the water and wastewater services in a way that seeks to achieve ecological sustainability.

Part A of the NetServ Plan is a comprehensive business plan that requires a public process for consultation. In SEQ, the demand management and restrictions regimes are set through other mechanisms.

It is worth noting that requirements relating to drinking water quality, recycled water management plans and total water cycle management plans will continue to apply to providers in SEQ (even with the requirement for NetServ Plans for the distributor-retailers).

The QWC has provided some specific comments on some of the issues raised in Chapters 5, 6 and 8 of the Issues Paper. See attachment 9.3 for further detail.

2.4.3 SEQ Water Grid Manager

The SEQ Water Grid Manager (SEQWGM) is a Government-owned statutory body responsible for managing the strategic operation of the SEQ Water Grid. The SEQ Water Grid was established on 2 May 2008 and started operation on 1 July 2008, when the SEQ water market changed with the establishment of the SEQ Water Grid.

The SEQ Water Grid Manager's role is to manage the SEQ Water Grid to maintain water security and quality for SEQ efficiently and cost effectively. In managing water security for the region, the grid manager role is to balance the needs of the community and the environment (see Attachment 9.4).

To achieve this, the SEQWGM buys the following water services from the other State-owned water statutory bodies:

- storage and treatment of bulk water from Seqwater;
- production of desalinated and purified recycled water from Watersecure; and
- transport of bulk water from Linkwater.

The SEQ WGM sells the treated bulk water and recycled water to customers - local councils, power stations and other businesses.

The SEQWGM does not own infrastructure assets but holds the urban water entitlements for SEQ. The SEQWGM makes strategic and operational decisions that are based on coordinating the production and transport of water to where it's needed

most and at the lowest possible cost; rather than based on an ownership interest in infrastructure assets

2.4.4 Differences between SEQ and regional areas

There are significant differences between the urban water industry inside SEQ and outside SEQ. Inside SEQ, there are six large service providers[6]:

- the three local government owned distributor-retailers:
  - Allconnex servicing Gold Coast, Logan and Redlands;
  - Queensland Urban Utilities servicing Brisbane, Ipswich, Scenic Rim, Somerset and Lockyer Valley; and
  - Unitywater servicing Sunshine Coast and Moreton Bay
- the three bulk service providers:
  - Seqwater – which catches, stores and treats water by managing catchments, storages and water treatment plants and supplies water to customers of the SEQ Water Grid;
  - WaterSecure – which supplies desalinated water to the Water Grid and supplies purified recycled water to power stations; and
  - LinkWater – which manages, operates and maintains SEQ's potable bulk water pipelines and moves water from dams and other sources through bulk pipeline networks.

These large service providers have significant experience and capacity to manage their services.

In contrast outside SEQ, of the 71 urban service providers, 60 are small and medium providers including 16 indigenous providers. These providers outside SEQ are faced with challenges in terms of the size of the rate base, capacity, economies of scale, remoteness of location and competition from other industries for skilled workers (e.g. from the mining and coal seam gas industry). Given the uniqueness of these providers, there is recognition that a "one size fits all" approach cannot be applied across Queensland.

2.5 Future Actions

2.5.1 Reform of legislation regulating urban water services

Urban service providers operate and manage their water and sewerage service in an evolving and challenging environment. The need to respond to climate change, environmental protection, population growth or decline, increasing expectations on water quality and reliability, continue to influence how services are managed across the Queensland. The highly disaggregated and geographically dispersed nature of regional and urban communities in Queensland, (many with very small population bases in their respective service area) sees outcomes reflective of the local community needs and preferences being adopted.

In 2009-10, the Queensland Government, in partnership with key industry peak bodies, began exploring options for enhancing the regulatory framework governing the water and sewerage sector.

A Memorandum of Agreement has been signed between the Queensland Government and two key industry partners (LGAQ and qldwater) to support this review and the consultation process with service providers.

[6] There are an additional, six providers in SEQ which are small providers generally not connected to the SEQ Water Grid and do not fall under the Queensland Water Commission.

3 SUPPLY OF WATER AND WASTEWATER SERVICES

3.1 Regional water supply planning approach

Queensland is achieving regional water security via various programs including water resource planning, issuing of secure water entitlements, preparation of regional water supply strategies, and facilitation of major infrastructure projects, particularly with respect to bulk supply sources.

3.2 Regional Plans

Regional planning plays a key role in helping Queensland meet the challenges associated with managing rapid growth, population change, economic development, and protecting the environment and infrastructure provision across multiple local government areas and includes regional water management. Currently statutory regional plans (under the *Sustainable Planning Act 2009*) are in place for South East, Far North, Central West, South West, North West and Maranoa-Balonne regions. There are another four plans (Central Queensland, Gulf, Whitsunday etc and Wide Bay Burnett) which are not statutory.

The SEQ Regional Plan is the pre-eminent plan for the SEQ region and takes precedence over all other planning instruments. The Regional Plan prevails where there is any inconsistency with any other plan, policy or code, including any other planning instrument made under State legislation. Currently the SEQ Regional Plan provides a sustainable growth management strategy for SEQ to the year 2026. Any plans, policies and codes that relate to the SEQ region being prepared or amended by Queensland Government agencies must reflect and align with the Regional Plan.

3.3 Water Resource Plans

Water resource plans, developed on a catchment basis, provide a blueprint for future sustainability by establishing a framework to share water between human consumptive needs and the environment (*Water Act 2000*).

The implemented water resource plan can:

- ensure that water is shared in a transparent way to protect consumptive and non-consumptive water uses;
- secure water entitlements for the life of the water resource plan;
- ensure that any new entitlements that are issued will not harm overall planning goals, including the security of existing entitlements and environmental flow objectives;
- provide, where practicable, for existing entitlements to convert to tradeable water allocations, held as titled assets that can be traded to new locations or uses including between urban and non-urban uses
- separate entitlements from the land to which they were formerly attached; and
- provide for the health of rivers and ecological values dependent on groundwater.

As subordinate legislation, the finalised water resource plan becomes a legal template specifying the outcomes and strategies that will be used to address the full range of social, economic and environmental goals for each plan area. A resource operations plan is then developed to implement the water resource plan by setting out the day-to-day arrangements that will be used to put the strategies into effect.

Queensland is well progressed in the implementation of its water planning framework. Currently, over 92% of the state has a finalised water resource plan and over 91% of the state has an accompanying resource operations plan. Twenty-two of the 23 catchments will have a water resource plan and resource operations plan in place by December 2011.

The majority of the area that is not covered by a water resources plan is on the Cape York Peninsula. The Cape is not managed under the water resource planning framework because it has a number of river systems which are in near natural condition. The Queensland Government is committed to managing these areas under the Wild Rivers Program.

3.4 Regional Water Supply Strategies

Outside SEQ the Queensland approach to long-term regional water security to date has been development of non-binding, non-statutory regional water supply strategies which provide a framework for meeting future water needs for the next 50 years.

The strategies identify most likely cost effective solutions to achieve appropriate water supply security for communities. They are the result of ongoing collaborative efforts across the community, industry and government, and aim to achieve best use of water, efficient water use and cost effective water supply and drought preparedness solutions whilst also optimising environmental, social and economic outcomes in line with nationally agreed water policy objectives.

The strategies complement and support the implementation of relevant water resource plans, which define environmental flow requirements and provide for the establishment of secure water entitlements, and any plans providing a framework for regional growth management.

The development of strategies involves assessment of available water supplies and future water demand trends for urban, industrial (including power and mining) and rural sectors, identification of future supply options and consideration of possible climate change impacts.

The adoption by water service providers of level of service objectives appropriate to the communities they serve is fundamental to these strategies. This is considered to be a priority to ensure that future water supply augmentations and operations are optimal, especially for growing communities. Water supply augmentation triggers and strategies and plans for response to drought are necessary for all communities.

If a decision is taken to augment supply through construction of infrastructure, it is generally the responsibility of the proponent to recover the cost of the construction. However, previously through subsidies and more recently through one-off injections, the Queensland Government has contributed to the initial capital costs, often in partnership with the Australian Government and/or the service provider.

Regional water supply strategies have now been completed for three regions (Central Queensland, Far North Queensland and SEQ). Four other strategies (North Queensland, Mackay Whitsunday, Wide Bay Burnett and North West Queensland) are expected to be released in 2011.

3.5 SEQ Regional Water Security Program

In addition to a regional water supply strategy, the SEQ region has a statutory regional water security program. The QWC is responsible for ensuring that the program is implemented. The security program provides a greater level of water security through setting out in a statutory plan the water security objectives for the region, identifies new or modified works for meeting the security objectives and sets out cost sharing and pricing arrangements. Under the security program, the Queensland Government adopted the following desired levels of service objectives for the supply of water from water supply works for the program area:

- During normal operations, sufficient water will be available to meet an average total urban demand of 375 litres per person per day (including residential, non-

residential and system losses), of which 200 litres per person per day is attributed to residential demand.

- Sufficient investment will occur in the water supply system with the objective of ensuring that :
  - medium level restrictions will not occur more than once every 25 years on average
  - medium level restrictions need only achieve a targeted reduction in consumption of 15% below the total consumption volume in normal operations.

The QWC is required to make a system operating plan to help achieve the desired level of service objectives and provide appropriate rules for the operation of the SEQ Water Grid. See also Attachment 9.4.

3.6 Alternative water sources

Queensland has few barriers on the use of alternative water supply options in urban communities. This follows legislative changes in the past three years to expand alternative water supply options. The remaining policy bans are on localised *in-situ* reuse of blackwater (or toilet water).

Supply augmentation through decentralised supply can have significant risks to public health if their management is in the hands of residents (who generally have no water management expertise) or small, poorly resourced community groups or commercial entities. Although the Queensland Government supports the development of decentralised systems it is researching the risks posed by them and considering what regulation and monitoring is required to ensure these risks are managed.

Demand for non-potable water will most likely come from the non-residential sector with some businesses not requiring potable quality water. The use of such water might be more likely in greenfield development areas where significant businesses might be able to negotiate direct access to non-potable supplies. Demand for non-potable water could also come from customers that are located within close proximity of water treatment plants. The advantage is that they take treated effluent and then treat again on site which may be more cost effective.

Demand for non-potable water for the residential sector may increase over time for a variety of reasons (most likely in greenfield developments) to:

- meet the 70 kilolitres per year saving for new detached houses and 42 kilolitres per year for townhouses and units under the Queensland Development Code; and
- develop localised supply options to use grey water and treated effluent to reduce potable requirements and reduce local capital augmentations.

3.6.1 Rainwater

Many Queensland households use rainwater as:

- a source of household water in non-reticulated areas;
- an alternative source for external use; or
- plumbed in to the house for supply to laundries and/or toilets.

Over 38% of Queensland households now have a rainwater tank, after an additional 15% of households purchased tanks using rebates under the Home WaterWise Rebate Scheme and local government rebate programs. Rainwater tank ownership is, however, highly variable; it ranges from extremely high (with more than 70% of households with tanks) in the West Moreton and Darling Downs regions, to just 9% in the northern region of the state.

In 2008, Queensland clarified that ownership of water in water tanks is not vested in the State, meaning that collected in stand alone rainwater was not restricted under the water restriction regimes. However, water supplied from rainwater tanks is subject to water restrictions if the tank is connected to the reticulated water supply and topped up from the reticulated supply, which is often the case when tanks are used for internal purposes. The Queensland Government is investigating whether more amendments are required to provide flexibility for new developments which seek to collect rainwater from individual homes to store and treat the water for supply back to the homes at a cost to the home owner.

3.6.2 Greywater

In 2007 and 2008, Queensland expanded the allowable uses for untreated and treated greywater (wastewater from a bath, basin, laundry or shower), set appropriate treatment standards for these uses and removed all restrictions on the types of buildings eligible to install greywater use facilities. In addition, there are no longer restrictions on the volume of greywater that may be reused.

3.6.3 Blackwater

The localised re-use of blackwater (or toilet water) is not currently permitted in sewered areas in Queensland. However, a restricted trial of treated blackwater on-site in a sewered area is planned at three sites in SEQ. In addition, sewer mining is currently occurring at two park sites in Brisbane; both projects are managed by Brisbane City Council. At New Farm Park and Rock Riverside Park, sewer water is diverted, treated either though a packet plant or a two-stage biological filter and then used to irrigate gardens. Excess or unused treated water is returned to the sewer system.

3.6.4 Stormwater

Stormwater harvesting is an acceptable solution under the Queensland Development Code for providing an alternative water supply for Queensland households or businesses. The current code does not have any additional information on this solution, for example, quality guidelines.

Several large stormwater harvesting schemes are being developed in SEQ to demonstrate its potential as a decentralised fit-for-purpose supply solution. The South Bank Stormwater Harvesting and Recycling Centre will harvest water from a highly urbanised 30 hectare urban catchment. The project is expected to supply 77 megalitres for irrigation, water features and toilet flushing in the South Bank precinct. Fitzgibbon Chase is a new mixed use residential precinct north of Brisbane which will include a scheme to divert urban stormwater run-off from an adjacent catchment into a lake. Treated water will then be distributed via a dual-reticulation system

3.6.5 Recycled water

In 2008 Queensland introduced a recycled water management plan requirement for specific sources of recycled water that are intended to be reused (under the *Water Supply (Safety and Reliability) Act 2008*).

In SEQ, three advanced water treatment plants have been constructed as part of the Western Corridor Recycled Water Scheme. The plants have the potential to supply up to 232 megalitres per day of purified recycled water.

The Queensland Government has decided that purified recycled water will only be used to augment SEQ drinking water supplies when the combined level of the three major SEQ water storages falls to 40% of capacity.

3.6.6 Desalinated water

Desalination plants are used by a number of small resorts, businesses and communities along the Queensland coast. For example the community of Agnes Water in Seventeen Seventy is constructing a new ocean supplied desalination plant with a capacity of 525 million litres per annum. Inland towns also use this technology; Western Downs Regional Council constructed a reverse osmosis plant to desalinate sub-artesian waters, reducing its demand on surface water supplies.

3.6.7 Coal Seam Gas water

At present the Queensland Parliament is considering legislation to expand the recycled water regulatory framework to include coal seam gas water that impacts on the drinking water supplies of a drinking water service provider. Recycled water providers that supply coal seam gas recycled water will be required to have an approved recycled water management plan except if they have no material impact on the drinking water supplies of a drinking water service provider. This legislation will be supported by the public health water quality standards for coal seam gas recycled water developed by Queensland Health.

3.7 Integrated water management

The Queensland Government has undertaken various activities to position Queensland water service providers to develop a more holistic integrated water management framework.

Examples of good practice in integrated water management in SEQ include:

- the Western Corridor Recycled Water Scheme which treats sewage effluent to purified recycled water standard for industrial use and is required to be available to supplement Wivenhoe Dam in the event of drought when combined dam levels drop below 40%;
- the Pimpama/Coomera dual reticulation scheme where urban demand is met from reticulated town water, rainwater and Class A+ treated sewage for external use and toilet flushing;
- Fitzgibbon and Coolum Ridges developments which propose to utilise stormwater, roof water and sewage effluent;
- South Bank in Brisbane which has implemented a storm water harvesting scheme to supply water for garden watering and toilet flushing; and
- Mitchell EcoEnterprise Park is Australia's first industrial estate that is 100-per cent self-sustaining and carbon neutral. Rainwater is collected and treated for onsite use, and run-off from the road is captured in tanks and used for irrigation. This development won the 2010 Premiers ClimateSmart Built Environment Award.

Other schemes in Queensland include:

- Mackay agricultural irrigation using treated sewage effluent;
- Hervey Bay sewage effluent for sugar cane and silviculture; and
- Gladstone sewage effluent used in industrial processes in alumina processing.

3.7.1 Water sensitive management

The Queensland government funded the development of the "Towards a Water-Sensitive Future" handbook, to be published in November 2010. This document provides a stepped process for developing innovative solutions to urban water challenges based on three fundamental, integrated components:

- diverse sources of supply;
- healthy waterways and ecosystems; and
- informed and supportive communities.

The handbook includes a range of case studies that clearly demonstrate what can be achieved on different scales, in various locations and regions. Expanded versions and analysis of the case studies are available in a companion publication "Sustainable Water Management for Cities Research Report".

One example of good practice integrated water management in Queensland is the Brisbane City Council's "WaterSmart City Strategy". This strategy includes a broad suite of integrated water management activities including:

- managing demand;
- reducing system losses;
- alternative water sources;
- flood management;
- water sensitive urban design; and
- catchment management.

This strategy was first published in 2006 and re-released in 2010 to reflect the changes in water management in SEQ. The WaterSmart Strategy shares the same bold aspirations for Brisbane that are articulated in *Our Shared Vision: Living in Brisbane 2026*. Under this strategy Brisbane developed; a successful behavioural change program to reduce domestic water consumption, reduced system losses by more than eight million litres per day, expanded the use of decentralised water solutions including over 50% of detached households having a rainwater tank, improved flood management and expanded waterway health monitoring and catchment improvement.

Public water supplies provide many public goods apart from water used for consumption or other domestic purposes. These other public goods include recreational opportunities, visual aesthetics of urban landscapes. It is often difficult to include the benefits of such public goods in pricing models.

3.7.2 State Planning Policy (Healthy Waters)

Another new activity implemented in 2010 to better protect waters from urban pollution is the State Planning Policy for Healthy Waters. This policy seeks to improve water quality by managing stormwater both during the construction phase, and for completed developments, both residential and commercial. The policy also includes receiving water environmental values from development impacts generated by constructing or expanding non-tidal artificial waterways e.g. urban lakes and wetlands. This policy and the frequent flow objectives of the *SEQ Regional Stormwater Guideline No 7* encourage stormwater harvesting and reuse in new urban areas as a method of achieving the storm flow objectives.

3.7.3 South East Queensland Healthy Waterways Partnership

The South East Queensland Healthy Waterways Partnership is a collaboration between government, industry, researchers and the community. The award winning partnership oversees a strategy with 500 actions to maintain and improve the health of the waterways of SEQ.

A key activity by this group has been the annual report card. The annual Ecosystem Health Report Card launch provides 'A to F' health ratings for the waterways of SEQ and the receiving waters of Moreton Bay. It is the culmination of twelve months of scientific monitoring at freshwater, estuarine and marine sites throughout the region. This report card has shown improvements in both stream health and the receiving waters of Moreton Bay stemming from the significant investment made to reduce point source pollution, with State and local governments spending over $700 million upgrading wastewater treatment facilities.

3.7.4 Total Water Cycle Management Plans

Under the *Environmental Protection (Water) Policy 2009* (Water EPP), local governments with populations of greater than 25,000 people will be required to develop Total Water Cycle Management Plans which include a stormwater management plan, a sewage management plan and a trade waste management plan. These plans aim to consider all the elements of the water cycle to deliver the communities needs and aspirations for water in a way that optimises social and environmental benefits and minimises costs.

The Total Water Cycle Management Planning Guideline for SEQ has been developed and a guideline for the 18 communities outside SEQ will be developed in 2011. Additionally, the Water EPP enables the development of Healthy Water Management Plans which seek to manage urban (and rural) activities that adversely impact on water quality and health of receiving waters.

In line with the *South East Queensland Regional Plan 2009-2031*, the QWC has developed a draft Sub-regional total water cycle management planning framework. The framework has been provided to the key stakeholders for review prior to finalisation in late 2010. The QWC and the Moreton Bay Regional Council have commenced planning to develop a sub-regional total water cycle management plan for the Caboolture West area by August 2011. Additionally, the QWC is engaging with the Ipswich City Council and the Sunshine Coast Regional Council to undertake a sub-regional total water cycle management plan for the priority areas of Ripley Valley and the Sunshine Coast (Palmview and Caloundra South).

In any significant urban area there are issues with the disposal of sewage effluent from a sewage treatment plant, and especially in environmentally sensitive areas. Integrated water management permits the use of the treated effluent, following further treatment if required, to be used in dual reticulation, industrial uses and agricultural or for other watering purposes such as golf courses. All classes of water can be considered.

4 CONSUMPTION AND DEMAND MANAGEMENT

4.1 Water pricing

4.1.1 Queensland's urban water pricing policy

The Queensland Government's urban water pricing policy has been developed in particular, with respect to the National Competition Policy (NCP) reforms. These reforms influenced the scope of amendments to the *Local Government Act 1993* made in 1997.

Since 1997, local governments operating significant water and sewerage businesses (businesses exceeding a specified revenue threshold) have been required to carry out public benefit assessments of applying particular competition reforms, including applying full-cost pricing, commercialising or corporatising a business unit. In addition, all significant water and sewerage businesses must periodically assess the cost effectiveness of implementing a two-part tariff for water. Regardless of decisions about applying competition reforms and two-part tariffs, significant water and sewerage business must (at the least) adopt full cost recovery pricing for water and sewerage services, apply consumption based charges for water and disclose cross-subsidies and community service obligations. In 2006, 16 of the 18 local government water and sewerage businesses had been commercialised and one business had been corporatised as a local government owner corporation (Wide Bay Water). A commercialised business must adopt full cost pricing including charging a commercial rate of return.

Queensland Government urban water pricing policy is consistent with the NWI and recently endorsed NWI pricing principles that support best practice pricing, including full cost recovery where practicable, consumption based charges, user pays and price transparency. However, outside the SEQ region, it is local governments that are responsible for setting water charges. Consistent with this policy, the *Local Government Act 2009* sets out a framework for the setting of charges for water, but does not determine the price for urban water which is a matter for each local government to determine on an annual basis in setting its rates and charges. Consequently, the charges applying across Queensland local government areas will vary and reflect the differences in cost of water storage, treatment and delivery as well as any specific policies put in place to mitigate water charge increases, such as concessions, price paths and different rates of return.

The *2005 National Competition Policy Assessment of Water Reform Progress* concluded that of the five metropolitan water service providers in Queensland all are recovering costs at or near the upper bound. Urban pricing reforms have led to more than 80 per cent of all urban water connections paying for water on a full cost recovery basis"[7] The Commission stated further "that based on the above information, the Commission considers that Queensland has met its COAG commitment with regard to full cost recovery for metropolitan water and wastewater businesses".

South East Queensland

The QWC has developed a 10 year price path which projects bulk water prices based on assumed interest rates and consumption patterns. It reflects not only existing bulk water assets but also significantly improved water security for SEQ delivered by the $7 billion water grid, including desalination, purified recycled water, new storages and the regional pipeline network.

[7] 2005 National Competition Policy Assessment of Water Reform Progress, Chapter 4 – Qld, page 32

In the future it is proposed the three SEQ council-owned distributor retailers will be subject to full price regulation by the Queensland Competition Authority. The distributor-retailers will need to justify any increases and the timing of such increases, ensuring investment to meet growth is adequate but also that customers are able to reasonably bear any increases. The distributor-retailers have a legislative obligation to consider and consult on a portfolio of supply and demand options, taking into account the total impact of any infrastructure decision.

4.1.2 Financial sustainability

All local governments in Queensland are required to prepare a long-term asset management plan for all asset classes that cover at least 10 years but preferably a 20 year timeframe. A 'core' asset management plan for major asset classes (e.g. roads, water and sewerage) is currently required by December 2010; and an advanced asset management plan is due by July 2012[8]. These plans must be adopted by councils and an annual return provided to the Department of Infrastructure and Planning (DIP). Rigorous asset management plans will then support the development of long-term financial plans.

A local government's long-term asset management plan must[9]:

- provide for strategies to ensure the sustainable management of the assets mentioned in the local government's asset register and infrastructure of the local government;
- state the estimated capital expenditure for renewing, upgrading and extending the assets for the period covered by the plan; and
- be integrated with the long-term financial forecast.

These measures form part of a more robust financial sustainability framework for Queensland's local governments with specific measures to move local governments to a sustainable operating basis. A local government is considered financially sustainable if it "is able to maintain its financial capital and infrastructure capital over the long term." Local governments are required to meet criteria essential to local government financial sustainability such as prudent management of financial risks; the formulation of policies that ensure equity, stability and predictability; using a cost recovery approach; consideration of future needs; and, transparent financial and infrastructure reporting.

Local governments are also required to report on six sustainability measures, including asset consumption, asset sustainability and interest coverage ratios. Local governments will be required to report annually on their performance against the sustainability ratios and provide an annual asset return.

Until recently the Queensland Government provided assistance to local governments through a number of programs designed to improve the efficiency and effectiveness of their water infrastructure and to develop other water supply options, where appropriate.

With a notional annual budget of $65 million from 2006 to 2009 in excess of $633 million was funded through the Water and Sewerage Program (WASP). The WASP program provided up to 40% of capital costs for water supply and sewerage infrastructure, and up to 50% of capital costs for water recycling infrastructure. In addition, over $71 million was allocated from 2006 to 2009 for water and sewerage infrastructure under the Small Communities Assistance Program (SCAP) and has been fully committed to local government projects. Funding under WASP was made

[8] These dates are not legislated; timing of plans is being driven by a Commonwealth target for all infrastructure asset classes managed by local government.
[9] Section 136, Local Government (Finance, Plans and Reporting) Regulation 2010

under the condition local governments prepared Total Management Plans which outlined the management and planning for their water and sewerage infrastructure, services and finances.

In particular, SCAP was established to assist councils to provide water and sewerage services in communities of less than 5,000 people, where the cost of such services would otherwise be significantly higher than costs generally in the State. The program recognised additional costs faced by smaller communities, primarily those resulting from diseconomies of scale due to their small size. Assistance was considered where the annualised cost per average household exceeded $570 per annum (2006 dollars) for water or sewerage (i.e. $1040 for both). Assistance provided contributed towards the capital cost of infrastructure.

The 2009 State budget announced that the SCAP, WASP and the Urban Drought Water Program ($12.6 million program that provided funding for communities with critically depleted water supplies) subsidy programs would be wrapped up with no more funding rounds available. SCAP was a five year program that was fully allocated in 2007/08. WASP ceased as of 1 July 2009. This was the Queensland Government's response to the downturn in the global economic climate and the fact that the State had already committed well over the $700 million outlined at the commencement of the current funding suite.

There will still be limited funding assistance from the State to local governments for capital works projects. From 1 July 2011, a new funding program called the Local Government Grants and Subsidies Program will commence providing smaller councils with 40% of approved project costs. The program will provide $45 million each year in support of capital works such as sewerage treatment plant upgrades, water pipelines and erosion management, all of which contribute to significant long term community and environmental benefits.

4.1.3 Impact of environmental regulation on water recycling

Queensland's environmental regulation has influenced the industry's approach to water conservation and reuse. Strict licensing requirements placed on discharges from sewage treatment plants have lead to a greater uptake of water recycling opportunities across the State. Climatic conditions, high value uses and cost of water have all driven greater investment in water recycling technology.

Water recycling will continue to play a key role in water conservation in the state.

4.2 Non-price demand management

Queensland water service providers and state agencies have implemented a large number of non-price demand management activities, driven in large part by the impacts of the Millennium drought across much of the state. These activities have extended beyond water restrictions to cover the five "E's" of demand management: engineering, encouragement, education, economic and enforcement. Although historically demand management has been seen as a stopgap message for drought, the diversity of programs and activities implemented in Queensland have been developed to result in long term community attitude and activity change in relation to water use efficiency.

Permanent water conservation measures (PWCM) are low level water restrictions designed for long term, post-drought use. The measures aim to ensure efficient use of water, embed water use behaviours, and guide the operational use (for example, water devices and equipment) of water. On 1 December 2009 PWCM commenced across SEQ. For the first time the entire SEQ region now operates under a consistent set of out-of drought, water conservation measures.

In the first 10 months after PWCM were introduced, SEQ residents used an average of 154 litres per person per day. This is well below the voluntary savings target of 200 litres per person per day.

Structural measures have been shown to be an effective non-price demand management measure. These include:

- changes to the plumbing and building codes with requirements to install water efficient fittings;
- metering devices as well as tanks, grey water and storm water systems in new dwellings;
- guidelines for "fit for purpose" irrigation systems; and
- participation in national schemes such as the Water Efficiency Labels and Standards Scheme and Watermark.

Further structural measures introduced during the Millenium drought required all businesses using more than 10 megalitres per annum to prepare water efficiency management plans. These measures affect around 1,015 businesses in SEQ.

There are several advantages of non-price demand management. In particular non-price approaches:

- have the ability to be tailored to meet community expectations and balance issues such as water security, quality and cost;
- provide consumers with the flexibility to choose how they reduce their water consumption given their specific circumstances and options available to them, for example the use of water efficient devices and/or assistance with understanding consumption decisions can be a useful way of achieving reductions in consumption; and
- have the ability to rapidly affect demand. With SEQ dams at 17.57% in March 2007, high-level water restrictions reduced demand from around 300 litres per person per day to approximately 129 litres per person per day during the 2007-08 financial year. As identified above, achieving this level of demand reduction was due to a number of integrated demand management strategies.

4.2.1 Powers for water restrictions

During the recent drought, water restrictions were put in place in communities across Queensland to successfully reduce demand. In SEQ where dams reached 17% storage, a comprehensive restriction regime was put in place relating to residential and non-residential water use, with most external water uses banned. Under the Level 6 restrictions a voluntary residential target of 140 litres per person per day was developed. This target was reached and consumption stayed at about 120 litres per person per day for over a year. Over 18 months since the removal of high-level water restrictions post-drought water consumption remains at 50% of the pre-drought consumption levels, at approximately 155 litres per person per day and remains significantly below the voluntary Target 200.

Other regional communities (e.g. Toowoomba and Western Downs Regional Council) have also set similar water use targets under drought conditions and the community has responded in a similar manner. Surveys of Queensland residents show that over three quarters agree that water conservation measures should remain in place forever and over 70% of people believe it is easy or very easy for their household to stay within the set water use level for their community.

4.2.2 Billing

The Australian Government led the development of the 2006 *National Guidelines for Residential Customers' Water Accounts*. These guidelines provide a significant

opportunity to make Australian residential customers' water accounts more informative particularly through the provision of comparative consumption data.

In 2007 Queensland required water service providers to provide water bills in accordance with a set of guidelines which specify a minimum standardised content and format. Water service providers were also required to provide regular billing cycles as there was little consistency with billing ranging from annual to quarterly across the State. A recent Queensland Government survey showed that over 40% of householders find the information provided by service providers helpful in monitoring water use.

In SEQ, the recently established Distributor-retailers are currently reviewing metering and billing functions. Benefits such as more accurate information on water consumption (i.e. a reduction in estimates), increased transparency and comparability across periods are expected as a result of these reforms.

4.2.3 Passing costs onto tenants in certain circumstances

Previously in Queensland, tenants of rented properties could only be charged for "excess water", with the base level of water agreed to before the tenancy commenced. In many cases this meant that there was little reason for tenants to be water efficient because they were not responsible for paying the water bill.

Lessors are now able to seek full reimbursement of water consumption charges (but not fixed access charges) from tenants in individually metered properties (where a tenancy agreement states the tenant must pay for water consumption). However, this reimbursement can only occur where water efficient devices have been fitted – which has promoted the retrofitting of 4-star toilets, showerheads and internal cold taps in existing rental properties.

4.2.4 Information to tenants

In many cases, the tenants of premises do not see the water bills and are unlikely to be aware of their water use. An additional educative tool has been introduced by the requirement for water service providers to supply water use information such as volume consumed to water users, regardless of whether they are the property owner or tenant. This measure aims to ensure that all water users are informed of their use and can manage their water consumption; it also links to the national guidelines.

4.2.5 Queensland Development Code

In Queensland, improved water efficiency in new housing was mandated by setting minimum standards for some internal appliances and requiring the installation of an alternative water supply (e.g. rainwater tanks). This was achieved through changes to building regulations implemented in 2007 under the Queensland Development Code.

In 2008 increased water savings through the use of rainwater tanks or an equivalent alternative option (such as greywater treatment systems or stormwater harvesting) was extended to all categories of new commercial and industrial buildings. A sustainability declaration, including declaration of the water efficiency of the property, was mandated on the sale of properties in 2009.

Improving the efficiency of existing residential properties can be more difficult as many water devices do not need regular replacement. However, in 2007, Queensland mandated the installation of efficient showerheads and dual flush toilets, to the same requirement as new builds, to all major renovations requiring a building development approval via a revision to Queensland Development Code.

An assessment of homes built after 2007 in SEQ suggests that the average domestic water use is 40% less than pre-2007 buildings. Given that all households in the

region have received the same media and education relating to water efficiency most of these savings can be accounted for by the installation of more efficient products combined with the use of internally plumbed rainwater tanks.

Knowing how much water an apartment or business uses can be an important educational tool. Receiving a bill for the actual water used, rather than a consumptive bill averaged over a number of properties, provides a key communication signal. To implement this demand management measure from January 2008 new premises drawing a water supply from a water service provider, must have sub-meters for separate lots in community title schemes and sole occupancy units in specified building classes. Service providers must disclose water consumption information on the bills for these properties.

4.2.6 Rebate schemes

The Queensland Government's Home Waterwise Rebate Scheme and Home Garden Waterwise Rebate Scheme were two rebate incentive programs designed to help householders across the state make their homes and gardens water efficient. These programs resulted in substantial co-investment between government and the community in the purchase of over $2 billion in water efficient appliances.

Some interesting facts about those schemes are:

- Total amount rebated by the Government was $321 million over the 30-month life of the programs;
- The scheme provided rebates for a range of devices including: rainwater tanks, 4-star water-rated washing machines, dual flush toilet suites, showerheads, swimming pool covers and/or rollers and greywater systems. The scheme was available for owner occupiers and for rental properties;
- Scheme staff processed more than 568,690 applications resulting in the purchase and installation of over 635,000 water efficient products;
- Rainwater tanks and washing machines made up 78% of the scheme rebates, with over 257,000 and 234,000 rebates provided for these two items, respectively;
- Rainwater tanks purchased could collect a minimum of 0.7 million litres of rainwater per annum (based on the minimum tank size of 3,000 litre per tank). The rebate program resulted in an additional 15% of Queensland households with a rainwater tank bringing this figure up to 43% of households;
- A rebate of $200 was provided for washing machines with a 4-star or better WELS rating. With the average 4-star water-rated washing machine costing $550-800, this rebate accounted for over 25-36% of the cost of the appliance. Over 15% of all Queensland households purchased a new water efficient washing machine; and
- Estimated water savings from the rebated products is over 14,000 million litres per annum.

The purchase and installation of these appliances results in long term reductions in water use. The high uptake of the scheme demonstrates a community acceptance of the need to improve domestic water efficiency and recognition that individual households can make a difference. A measurable outcome of these schemes is that post-drought water consumption in SEQ remains at 50% of the pre-drought consumption levels. Over 58% of high water using households have reduced their water consumption to below 1000 litres per day and this was greatly assisted by the purchase of rebated products.

4.2.7 Waterwise Program including schools

A Waterwise education and information program had already existed in Queensland but it was reinvigorated in 2007 with the launch of *Waterwise Schools Program* -

Water: Learn it for life! curriculum resource. The 'Water: Learn it for life!' curriculum resource provides early and middle years teachers with an engaging series of lesson plans and activities addressing the following key elements of water education:

- the water cycle;
- water ;
- water sources and storage;
- water efficiency; and
- water recycling and alternative water sources.

The materials are organised into five year-level groupings—Preparatory, Year 1, Years 2 and 3, Years 4 and 5 and Years 6 and 7, and can be readily adapted for use in a school's existing curriculum framework.

A local government Waterwise toolkit was also updated resulting in over a dozen fact sheets and information sources for service providers. Councils have the option to co-brand resources and over a dozen have taken up this opportunity.

Recent surveys suggest over 90% of Queenslanders will continue to save water after the drought, numbers this high would have to reflect a level of success from the various educational activities promoted by both levels of government. Over 70% of Queensland households have heard of the term Waterwise.

4.2.8 Water efficiency labelling standards Scheme

The Water Efficiency Labelling and Standards (WELS) Scheme was established by the Commonwealth *Water Efficiency Labelling and Standards Act 2005*. The scheme is a co-operative legislative arrangement, with equivalent State and Territory legislation. The scheme's objects are to conserve water supplies by reducing consumption, through providing information to consumers about the water efficiency of products and by promoting the adoption of water efficient technologies.

A review has been carried out of WELS and implementation of the review's findings is currently being carried out through the development of a Strategic Plan and Funding Plan which will be considered by the Environment and Protection Heritage Council.

Queensland has provided $202,279, for the 2010-2011 year for the operation of the WELS Scheme.

4.2.9 Research on water restrictions

Recent research (July 2010) carried out into community attitudes across Queensland towards saving water and the imposition of water restrictions indicated that 52% of survey respondents considered that staying within water consumption targets was "easy". In addition 42% indicated that water conservation measures should remain in place forever. Only 9% believed that saving water has had a negative impact on their lifestyle.

5 COMPETITION AND CONTESTABILITY

5.1 Tradable water entitlements

Queensland's policy is to grant water access entitlements (i.e. water allocations) to the end user to the greatest extent possible. These entitlements may be for 'purposes' such as rural, agriculture, industry or urban/town supply. The relevant resource operations plan establishes trading rules. These rules may allow for changing these purpose attributes while also restricting some types of changes, such as prohibiting urban to rural trades such that essential human water requirements (for health and fire fighting purposes) are not at risk.

Commenting specifically on references to the Gladstone Area Water Board (GAWB) contained in the Issues Paper, the water users supplied by the GAWB do not have end user entitlements. They must have some form of contractual arrangements in place i.e. between themselves and GAWB. It is the GAWB that hold two water access entitlements from the Awoonga Dam. The end users cannot trade entitlements they do not hold but they can affect changes through contractual arrangements.

5.2 Decentralised systems

There is an increasing trend towards decentralised water and sewerage treatment systems in new developments in Queensland. These developments are utilising decentralised systems for a variety of reasons including attracting purchasers using "green" credentials, avoiding headworks charges which may otherwise apply for connection to local government infrastructure or the inability of existing local government infrastructure to cope with additional loads from the proposed developments.

These decentralised systems have the potential to raise issues for those it services, the community, local governments and the State. One core issue is the potential transfer of risk to the community, local governments and the State if the decentralised systems fail or the owner/operator decides not to operate the system any longer. This is particularly an issue in situations where there is no connection to other infrastructure (e.g. local government infrastructure) as an alternative supply or service. Consideration may need to be given to the developing ways in which these potential risks can be managed or minimised.

5.3 Monopoly pricing oversight

Queensland's approach to economic regulation in the water sector with regard to pricing includes monopoly pricing oversight by the Queensland Competition Authority (QCA) under the *Queensland Competition Authority Act 1997* (QCA Act). Under the QCA Act, the QCA's roles in relation to the water industry are to:

- at the direction of the Premier and Treasurer (the Ministers), investigate and report on the pricing practices of certain declared monopoly or near monopoly business activities of State and local governments;
- receive, investigate and report to Ministers on competitive neutrality complaints;
- mediate and/or arbitrate access disputes and water supply disputes; and
- at the direction of the Ministers, investigate and report on matters relevant to the implementation of competition policy.

The SEQ distributor-retailers are declared as monopoly business activities under Part 3 of the QCA Act and have been referred to the QCA for price monitoring for the period 1 July 2010 to 30 June 2013. Amongst other things, the QCA is required to:

- provide information to customers about the costs and other factors underlying annual increase in water and wastewater prices, including for example bulk water;
- consider a weighted average cost of capital;
- undertake a prudency and efficiency review of all new capital expenditure;
- take into account any revenue guide path submitted by an entity for the purpose of avoiding price shocks; and
- annually report to Government by 31 March 2011 for 2010-11 and 31 December in subsequent years.

In the future the QCA will commence formal price determinations for the SEQ distributor-retailers under proposed amendments to the QCA Act, currently being considered by the Queensland Parliament.

The water and sewerage services of the large urban councils outside SEQ are also declared as monopoly business activities under Part 3 of the QCA Act and include:

- Bundaberg Regional Council,
- Cairns Regional Council,
- Mackay Regional Council,
- Rockhampton Regional Council,
- Toowoomba Regional Council and
- Townsville City Council.

The QCA, under a reference from the Ministers also carried out assessments of local government implementation of competition reforms to significant business activities and authorised payments from the (Queensland) Financial Incentive Package (FIP). This role concluded in 2006 when the final payments were made from the FIP.

5.4 Third party access

Queensland's third party access regime contained in Part 5 of the QCA Act provides a generic access regime for significant infrastructure modelled on Part IIIA of the *Trade Practices Act 1974* (Cwlth). Water and sewerage infrastructure, including treatment and distribution infrastructure is specifically identified in the QCA Act as facilities that could be declared under the third party access regime, if the services provided by the particular facility meets the declaration criteria.

While no service provided by a water or sewerage facility has been declared under the State's access regime to date, this does not preclude a potential access seeker requesting the QCA to consider and recommend declaration at any point in the future.

The Government has not requested that the QCA assess whether water and wastewater services provided by a water facility are eligible for declaration on the basis of without the potential for new entrants in the market at this point in time, the costs of regulation would most likely outweigh any benefits. Instead, and consistent with the Competition and Infrastructure Reform Agreement 2006, as outlined above, water and wastewater distribution and retail services are currently regulated under a 'light handed' price monitoring regime which provides the necessary protection for customers against monopoly water pricing.

At this point in time, the preference would be to encourage commercial negotiations with new access seekers. In the longer term, as additional water supplies are required in the SEQ region, a more 'heavy handed' third party access regime may be appropriate to foster and encourage competition and more innovative approaches to the delivery of bulk water and wastewater services.

5.5 Service area

Local governments are able to declare all or parts of its local government area to be a service area for a retail water service or sewerage service and declare that it is the service provider for the area unless the other entity agrees in writing, a local government must also not declare an area to be its service area if it has already been declared for another service. Local governments do not always declare their entire local government area as their service area as there are obligations which apply to local government in terms of access to services in the service area (Chapter 2 Part 5 of the *Water Supply (Safety and Reliability) Act 2008*) (Water Supply Act).

5.6 Transparency in reporting on standards/benchmark performance

The NWI requires 'independent, public, annual reporting of performance bench marking for all metropolitan, non-metropolitan and rural water delivery agencies' on a range of matters. This commitment is being delivered through the National Performance Reporting Framework (NPRF) and annual report published by the National Water Commission. However, unlike other jurisdictions, Queensland does not currently require mandatory reporting of the National Performance Reporting indicators and as such not all relevant service providers participate in the NPRF.

As part of the current review to improve the regulations governing the water and sewerage sector outside of SEQ, it is likely that reporting against all 117 indicators will become mandatory for large service providers (with more than 10,000 connections) and a subset of these for other service providers. Reporting will enable monitoring by the Queensland Government and industry and reveal trends in performance.

6 TOOLS AND OPTIONS FOR ACHIEVING REGULATIONS

6.1 SEQ reforms

As outlined in Section 2.4.4, a series of industry reforms have been implemented to improve and modernise the management of SEQ's water sector. The number of organisations involved in managing and distributing water supplies has been reduced from 21 entities to six and the SEQ Water Grid Manager (See attachment 9.4).

6.2 Creation of DERM combining water and environmental protection

The Department of Environment and Resource Management was formed on 26 March 2009 with the integration of the former Department of Natural Resources and Water, and the former Environmental Protection Agency.

DERM conserves and manages the natural environment for the benefit of all Queenslanders. It aims to deliver long-term sustainability for the state's natural environment by promoting sustainable living and resource use, and by strengthening the state's response to climate change.

The department considers social, economic and environmental outcomes when planning, allocating and managing natural resources, to ensure the state's economic growth and its natural heritage are maintained now and in future.

DERM's key responsibilities include:

- water—securing the quality and supply of water;
- climate change—preparing for the impacts of climate change;
- land—managing land and vegetation including native title; and
- environmental services—building resilience in natural landscapes and conserving Queensland's natural and cultural heritage.

6.3 Drinking water and recycle water regulation

In mid 2008 Queensland introduced new drinking water quality management provisions and recycled water management provisions aimed at protecting public health (Water Supply Act). This outcome is achieved primarily through the regulatory frameworks for:

- drinking water quality which requires drinking water service providers regardless of size or location to:
  - undertake monitoring and reporting on drinking water quality (stage one); and
  - have an approved drinking water quality management plan (DWQMP) in place (stage two). An approved DWQMP must be in place by 1 July 2011, 2012 and 2013 for large, medium and small drinking water service providers, respectively
  - Non-potable water supply schemes are not captured through the legislation.
- recycled water quality which requires recycled water providers to either:
  - have an approved recycled water management plan;
  - have an exemption from submitting a recycled water management plan; or
  - be covered by transitional arrangements which stages requirements over time.

A recycled water provider is (a) an entity that owns infrastructure for the production and supply of recycled water or (b) another entity that owns infrastructure for the supply of recycled water. Sources of water captured under the recycled water regulatory framework are discussed in Section 3.6.5.

In the case of drinking water, requirements of the legislation have been phased in over the two stages to allow drinking water service providers to adapt their services to meet these obligations, over a sufficient timeframe, particularly given the small and

remote service providers within Queensland. The drinking water quality management provisions in Queensland follow a risk management approach, and have regard to the Australian Drinking Water Guidelines. For additional information about drinking water regulation, refer to 9.2.

For recycled water, recycled water service providers that hold exemptions are still required to meet specific obligations (e.g. meeting minimum water quality criteria, reporting requirements, advising of changing circumstances or intent to cease supply). The legislation also allows the Queensland Government to declare a recycled water scheme as 'critical' to ensure the continued supply of recycled water of the required quality. Critical schemes could include, for example, those augmenting a drinking water supply, dual reticulations schemes supplying a specified volume of water, or those necessary to meet a region's water supply needs. Extra requirements are placed on these critical schemes, including extended notification of the intent to cease supply.

The regulatory frameworks focus on managing risks to public health and maintaining the quality of the water produced and supplied. Both drinking water service providers and recycled water service providers are responsible for the overall management and quality of water produced by their services respectively. The Queensland Government plays a regulatory oversight role in ensuring that the legislative obligations are met by these service providers aimed at protecting public health.

Jurisdictional and national standards for drinking water and recycled water quality should reflect the latest and best science aimed at protecting public health.

6.4 Environmental regulation

Community objectives are set across Queensland for water quality and environmental values. The process for setting and approving these objectives are outlined in the *Environmental Protection (Water) Policy 2009* under the *Environmental Protection Act 1994*. This legislation is assisted by programs including the stream and estuary assessment program and the framework for assessment of river and wetland health.

Ecological outcomes are determined for each water resource plan. These outcomes consider the current impact on the environment by water resource development and the desired ecological state for each plan area. Most plans have both general and specific ecological outcomes for each plan area. General ecological outcomes relate to maintaining the integrity of aquatic ecosystems across the plan area. Specific ecological outcomes relate to particular sections of a water resource plan area and often focus on a specific species.

High conservation value aquatic ecosystems have been identified in 20 water resource plans. An independent technical advisory panel identifies high conservation value aquatic ecosystems and determines the flow requirements needed to maintain the health of the ecosystems in the stream. 20 plans in which high conservation value aquatic ecosystems assets have been identified have been completed. It is anticipated that all water resource plans and declared Wild Rivers will have high conservation value aquatic ecosystems identified.

6.5 Building regulation and approval

Queensland has implemented a major program for improving the energy and water efficiency of all new buildings implemented through changes to the *Queensland Development Code* and the *Plumbing and Drainage Act 1994*, overseen by the Department of Infrastructure and Planning.

Under the Sustainable Housing Policy Stage 1 in 2007, all new houses were required to be more energy and water efficient through the installation of such devices as water efficient shower roses, dual flush toilets, energy efficient lighting, water pressure limiting devices in areas where there is high water pressure and greenhouse efficient hot water systems. In existing properties undergoing bathroom renovations, water efficient shower roses and dual flush toilets must be installed.

Sustainable Housing Policy Stage 2 commenced in 2009 expanded on Stage 1 measures and addresses broader environmental and social housing designs in new and existing homes. Specific water features of this stage included increasing the minimum WELS rating for dual flush toilets to 4-star from 3-star for new houses, townhouses and units. All showerheads and tapware must meet a minimum 3-star WELS rating. The policy also mandated a sustainability declaration, which is a compulsory checklist to be completed by the vendor when selling a house, townhouse or unit. The sustainability declaration identifies the properties environmental and social sustainability features in the areas of energy, water, access and safety. The declaration includes information on rainwater tanks, greywater systems, outdoor irrigation and the WELS rating of fixtures throughout the property.

Further changes to the Queensland Development Code include the requirement for the installation of an alternative water supply e.g. rainwater tanks or stormwater harvesting for all new commercial and residential buildings. These fixtures have to supply water for external use and internal appliances such as toilets.

The South East Queensland Healthy Waterways Program has a design group within its "Water by Design" Program who develop guidelines and training courses to improve use of best practice urban design to decrease the impact of urban development on waterways. This knowledge helps to improve sustainable urban development in Queensland.

6.6 Structural arrangements

The SEQ Water Grid Manager is a feature of the new water industry sector in SEQ which recognises that water is a regional resource and should be planned and managed as such. This principle is reflected in all aspects of water management in SEQ, from the level of service objectives to the institutional arrangements. See attachment 9.4 for further detail.

Urban water and wastewater services in regional Queensland (outside SEQ) are predominately provided by vertically integrated local government utilities. The Productivity Commission notes that structural reform in regional areas might take the form of amalgamating bodies. Structural reform in Queensland's urban water sector has already advanced significantly with the 2008 local government amalgamations. These reforms resulted in the number of local governments being reduced from 157 to 73, with the establishment of several large regional councils. Councils affected by 2008 amalgamations are progressively moving to integrate and standardise water and wastewater prices, service delivery and service standards across the amalgamated area. These reforms will take several years to be fully implemented.

7 KNOWLEDGE

7.1 Water Security Research Alliance

The Urban Water Security Research Alliance (Research partners: CSIRO, the University of Queensland and Griffith University), funded by a $50 million Queensland Government commitment, is carrying out research into integrated water management which is applicable to urban water supplies.

Research projects include:

- costing centralised and decentralised water systems e.g. comparing the energy cost of rainwater tank pumps with pumping reticulated supplies;
- lifecycle assessment of the urban water system e.g. to measure the environmental impacts of alternative water services options for the Gold Coast; and
- an analytical framework for monitoring the sustainability of alternative urban water systems, for developing metrics for water sensitive cities.

7.2 Research by DERM and other agencies on demand management

DERM undertakes research to understand the water use practices, community knowledge and perceptions on water usage and costs relating to water supply. The results of this research shapes the future demand management and education programs, under the WaterWise program.

The Queensland Governments Office of Economic and Statistical Research has also undertaken surveys on community opinions about water efficiency:

- 75% of Queenslanders believed that water conservation measures should remain in place forever;
- 76% were concerned about water shortages; and
- 94% agreed or strongly agreed that water is a precious resource.

8 CONCLUSION

The Queensland Government has over the past decade, been reviewing and improving the regulations that have been governing the water and sewerage sector. This evolving process aims to achieve safe, secure and sustainable water management objectives, which is reflective of population growth and climate change.

In meeting these objectives the reforms that have been achieved in Queensland to date have included the following elements –

- increased source diversity and climate resilient supply (see 3.6 – alternative water sources);
- increased recycling (see 3.6.5 – recycled water);
- increased interconnectivity (see 2.4 recent institutional reforms);
- improved drought readiness (see 3 supply of water and wastewater services and 4 consumption and demand management);
- pricing reforms (see 4.1 Water pricing);
- improved water sector efficiency (see 2.4 recent institutional reforms);
- embedded efficiency in new development (see 4.2 non-price demand management);
- management as a system rather than individual sources(see 2.5 future actions);
- improved water quality and risk management (see 3.7 integrated water management); and
- institutional reforms (see 2.4 recent institutional reforms).

In recent times, institutional reform was also introduced in SEQ to achieve safe and reliable water supplies. This outcome has been achieved in SEQ primarily through the creation of the SEQ water grid with the potential for further benefits of improved environmental management and financial sustainability to eventuate in the long term.

The Queensland Government, in partnership with industry, is currently examining the regulatory regime of the water and sewerage industry outside of SEQ. Under a Memorandum of Agreement with the industry peak bodies, a more outcomes-based approach to regulation is under consideration with an emphasis on capacity development for the smaller service providers.

ATTACHMENTS

8.1 Details of Acts and Agencies

Agency	Legislation and regulations	Deals with
Department of Environment and Resource Management	*Water Supply (Safety and Reliability) Act 2008*	• Service Providers • Drinking water • Recycled water
	Water Act 2000	• Water Resource Plans • Establishment and powers of Queensland Water Commission
	Environmental Protection Act 1994, regulations and policies	• Environmentally relevant activities including: - sewerage treatment plants of 21 equivalent persons and above - desalination of 0.5ML or more of water in a day • Environmental duty of care • Total Water Cycled Management Plans
Queensland Health	*Public Health Act 2005* and regulations	• Drinking water – must not knowingly supply drinking water which is not safe • Recycled water – must not knowingly supply recycled water which is not fit for use • Set standards for drinking water and recycled water
Department of Infrastructure and Planning	*Plumbing and Drainage Act 2002* and Queensland Development Code	• Sets water savings requirements for new and renovated buildings including installation of rainwater tanks, greywater and water efficient devices
	Local Government Act 2009 and regulations	• Requirements for financial plans and asset management plans for local governments • Provisions for consumption based water pricing
	Queensland Competition Authority Act 1997	• Oversight of monopoly

8.2 Details on drinking water regulation

In mid-2008, the Water Supply Act introduced new provisions dealing with drinking water to protect public health. At the same time the *Public Health Act 2005* and *Public Health Regulation 2005* (the Regulation) were amended to include provisions that relate to drinking water quality and safety.

A drinking water service provider is an entity that owns infrastructure for the treatment or transmission or reticulation of water for supply as drinking water; or is an entity that owns a water storage and the water in the storage contains recycled water intended to be used to augment a drinking water supply. Drinking water service providers are responsible for the overall management and quality of water produced by their drinking water scheme and must comply with the provisions of the legislation.

Utilising a phasing in approach, the Water Supply Act requires drinking water service providers in the first stage to undertake monitoring and reporting on drinking water quality in accordance with a notice issued by the regulator. The notice continues to apply until the drinking water service provider has an approved Drinking Water Quality Management Plan (DWQMP), the second stage. There are no exemptions available to drinking water service providers from meeting these requirements.

In the first stage, the notice specifies the monitoring requirements in which drinking water service providers are to:

a) monitor for water quality standards as set by Queensland Health. The only standard set under the Regulation to date is for *Escherichia coli (E. coli)* in the reticulation system for the drinking water service with frequency of sampling based on the size of the population served by that service; and
b) continue with their existing monitoring program for other water quality parameters.

The notice also specifies reporting requirements that must be undertaken by the drinking water service provider. In particular, the drinking water service provider must notify the regulator of any incident that will or is likely to adversely affect drinking water quality and report on their drinking water quality monitoring results (based on a defined list of parameters) on a quarterly basis. Drinking water service providers were also required to submit their drinking water monitoring program(s) to the regulator.

If a drinking water service provider identifies significant health related issues with water quality, the regulator may issue a further notice to the drinking water service provider requiring monitoring of a specific parameter at a designated sampling frequency. The monitoring done under notice then forms a component of the DWQMP.

In the second stage, unless transitional provisions apply, drinking water service providers are required to develop and implement a DWQMP, which must be approved by the regulator. The DWQMP is a documented, risk-based system for managing the supply of drinking water and drinking water service providers are required to comply with their approved plan and any conditions of the plan.

The purpose of a drinking water management plan is to protect public health (requiring the drinking water service provider to maintain water quality in accordance with water quality criteria for drinking water under the Water Supply Act). A DWQMP is prepared in accordance with regulatory guidelines and document the services provided, the infrastructure used, identifies potential risks that may affect water quality and management responses to those risks, it also includes details of

monitoring programs under the plan. The legislation also requires reviews and audits of the DWQMP.

Requirements for an approved DWQMP have been phased in based on the size of the drinking water service provider as detailed below:

- A drinking water service provider that was providing a drinking water service on or before 1 July 2008 must have an approved plan by:
  - 1 July 2011 for large[10] service providers;
  - 1 July 2012 for medium[11] service providers; and
  - 1 July 2013 for small[12] service providers.
- A service provider who becomes a drinking water service provider after 1 July 2008 must have an approved plan within 12 months of becoming a drinking water service provider.

DERM as the regulator continues to works closely with Queensland Health to respond to incidents with public health implications. Queensland Health also has the power to require action to be taken to protect public health by the issue of a public health order or an improvement notice to a drinking water service provider

[10] A large drinking water service provider is a service provider primarily providing bulk water services or a service provider with more than 25000 connections to a registered service.
[11] A medium drinking water service provider is a service provider with more than 1000 but not more than 25000 connections to a registered service.
[12] A small drinking water service provider is a service provider with 1000 or less connections to a registered service.

8.3 The Queensland Water Commission's Submission to the Whole-of-Government Response to the Productivity Commission's Issues Paper "Australia's Urban Water Sector"

INTRODUCTION

The Department of Environment and Resource Management (DERM) is coordinating a Queensland Government submission to the Productivity Commission Issue Paper: "Review of Urban Water Strategies" (the Paper).

The Paper is concerned with all urban water supplies, ranging from major capital cities to minor townships. The Queensland Water Commission's (QWC) response is limited to urban water supply arrangements in South East Queensland (SEQ). The QWC has prepared this document as input to the Queensland Government's submission.

THE QUEENSLAND WATER COMMISSION

The QWC was established as an independent statutory body in June 2006, under the *Water Act 2000*, with responsibility for achieving safe, secure and sustainable water supplies in SEQ and designated regions. Under Chapter 2A of the *Water Act 2000* the QWC's main functions are to:

- advise the Minister on matters relating to water supply and demand management for water;
- advise the Minister on the delivery of desired Levels of Service objectives for water supplied to the SEQ region and designated regions;
- facilitate and implement regional water security programs; and
- ensure compliance with the programs and with QWC water restrictions.

OVERALL COMMENTS

The QWC was established when SEQ was in the grip of the worst drought in 100 years. Water storages at historic lows, high population growth and strong economic development of SEQ also created additional challenges for securing SEQ's future water supplies. Hence the QWC's early efforts were focussed on a combination of demand reduction and water security.

More recently however, SEQ has had a significant amount of rain and its dams are now full. With water supply in SEQ secure for the short to medium term, the QWC is now focussed on maintaining a secure water supply in the face of climate change and continued population growth over the medium to longer term. The *South East Queensland Water Strategy* (Strategy), released on 15 July 2010, therefore focuses on maximising opportunities to use water and operating existing infrastructure more efficiently.

Comments on Chapter 5 – SUPPLY OF WATER AND WASTE WATER SERVICES

Should an options approach to supply augmentation be taken? Is this done at present?

The QWC believes that a full suite of feasible supply and demand side options should be investigated with respect to planning

Through its planning processes under the Strategy, the QWC will identify future supply constraints for SEQ. This will be a public process and will include opportunities for interested parties to provide information on infrastructure and non-infrastructure solutions. At a broader level, this future options approach is addressed in the Strategy in which the QWC explained if residential demand is kept to Target 200 (200 litres per person per day), proposed infrastructure may be significantly deferred.

The QWC is investigating this improved process which enables identification and assessment of all feasible options in a transparent and inclusive manner with appropriate engagement with all stakeholders. The aim of this process is to select projects for recommendation to the Government based on environmental, social and economic factors including least cost planning principles with reduced risks of prematurely rejecting options because of their scale or complexity.

The longer-term options model proposed by the QWC is to report to the community on:

- residential and non-residential demand;
- population growth expectations;
- options to meet supply (including demand side management); and
- decision-making criteria to assess all supply options (for example, level of reliability, environmental impact, etc.).

This options approach aims to actively engage the community on what is expected for water security.

Who should bear the risks for recovery of capital costs? Should these costs be recovered through the tax system, fixed charges on water users or volumetric charges on water users?

The general principle under which the QWC is to perform its functions for the SEQ region or a designated region is that water in the region is to be managed on a sustainable and integrated basis to provide secure and reliable supplies of water of acceptable quality for all uses.

The specific principles for cost sharing and pricing are:

- the cost of water sources should be shared among users who benefit from them; and
- pricing should be consistent with commitments of the State under intergovernmental agreements to which it is a party.

Is there scope to increase the efficiency of water treatment, transport and distribution? If so, how significant are these opportunities? What is preventing them from being realised?

Based on the recommendations of its 2007 report, *Our Water: Urban water supply arrangements in South East Queensland: Final Report*, the QWC implemented the new institutional framework for the wholesale sector of the Water Market commencing on 1 July 2008. The framework led to the establishment of four new

state-owned entities – the Bulk Water Supply Authority (Seqwater), Bulk Water Transport Authority (LinkWater), Manufactured Water Authority (WaterSecure) and the SEQ Water Grid Manager.

The second stage of the SEQ water reform program involved the separation of the distribution and retail water and wastewater functions from the 10 SEQ councils and the establishment of three separate vertically integrated distribution-retail businesses (Distributor-retailers).

With SEQ experiencing significant reform over the past 3 years, the expected efficiency gains from these reforms are in the process of being realised.

Are there efficiency gains available from the wide adoption of integrated water management? If so, what is preventing these from being realised?

In line with the *South East Queensland Regional Plan 2009-2031*, the QWC has developed a draft Sub-regional total water cycle management planning framework. The framework has been provided to the key stakeholders for review prior to finalisation in late 2010. The QWC and the Moreton Bay Regional Council have commenced planning to develop a sub-regional total water cycle management plan for the Caboolture West area by August 2011. Additionally, the QWC is engaging with the Ipswich City Council and the Sunshine Coast Regional Council to undertake a sub-regional total water cycle management plan for the priority areas of Ripley Valley and the Sunshine Coast (Palmview and Caloundra South).

In any significant urban area there are issues with the disposal of sewage effluent from a sewage treatment plant, and especially in environmentally sensitive areas. Integrated water management permits the use of the treated effluent, following further treatment if required, to be used in dual reticulation, industrial uses and agricultural or for other watering purposes such as golf courses. All classes of water can be considered.

What examples are there of good practice in integrated water management?

Examples of good practice in integrated water management in SEQ include:

- the Western Corridor Recycled Water Scheme which treats sewage effluent to purified recycled water standard for industrial use and is required to be available to supplement Wivenhoe Dam in the event of drought when the dam level drops below 40%;
- the Pimpama/Coomera dual reticulation scheme where urban demand is met from reticulated town water, rainwater and Class A+ treated sewage for external and toilet flushing;
- Fitzgibbon and Coolum Ridges developments which propose to utilise stormwater, roof water and sewage effluent;
- South Bank in Brisbane which has implemented a storm water harvesting scheme to supply water for watering and toilet flushing; and
- Mitchell EcoEnterprise Park is Australia's first industrial estate that is 100-per cent self-sustaining and carbon neutral. Rainwater is collected and treated for onsite use, and run-off from the road is captured in tanks and used for irrigation. So far, the park has captured and stored the equivalent of 5.5 Olympic swimming pools. This development won the 2010 Premiers ClimateSmart Built Environment Award.

Comments on Chapter 6 – CONSUMPTION AND PRICING

What impact might growth in population and trends in technology, consumer behaviour and climate have on the demand for water and wastewater services in the future?

Population growth is a key driver of demand for water and wastewater services in SEQ.

Following the introduction of water restrictions and increases in water use efficiency, individual consumption in SEQ fell from around 300 litres per person per day in 2007 to approximately 150 litres per person per day at the present time. Household consumption has also fallen due to a range of factors including changes to building and planning regulations and increasing requirements for water efficient appliances.

Since 2008, the Queensland Development Code has required all new housing (Class 1 buildings) that is connected to a reticulated water supply system to meet a specified water savings target. In the SEQ region, the water savings targets are 70 kilolitres per year for new detached houses and 42 kilolitres per year for other new class 1 dwellings (i.e. townhouses and units). The QWC does not expect demand to rebound to the levels previously experienced due to the embedded structural efficiencies such as mandated water savings targets contained in the Queensland Development Code.

How might demand for different qualities of water (for example, potable and non-potable water) evolve?

Demand for non-potable water will most likely come from the non-residential sector with some businesses not requiring potable quality water.

The use of such water might be more likely in Greenfield development areas where significant businesses might be able to negotiate direct access to non potable supplies.

Demand for non-potable water could also come from customers that are located within close proximity of water treatment plants. The advantage is that they take treated effluent and then treat again on site which may be more cost effective.

Demand for non-potable water for the residential sector may increase over time for a variety of reasons (most likely in Greenfield developments) to:

- meet the 70 kilolitres per year saving for new detached houses and 42 kilolitres per year for townhouses and units under the Queensland Development Code; and
- develop localised supply options to use grey water and treated effluent to reduce potable requirements and reduce local capital augmentations.

Should more flexible (scarcity-based) pricing be introduced to assist in management of demand in the face of the variability of rainfall-dependent supply?

Pricing of water is already moving to cost-reflectivity, however, this change must also take into account the impact on customers. From 1 July 2013, the three SEQ Council-owned Distributor-retailers will be subject to full price regulation by the Queensland Competition Authority. The Distributor-retailers will need to justify any increases and the timing of such increases, ensuring investment to meet growth is adequate but also that customers are able to reasonably bear any increases. The Distributor-retailers have a legislative obligation to consider and consult on a portfolio of supply and demand options, taking into account the total impact of any infrastructure decision.

To what extent are efficiency gains in the supply of water and wastewater services dependent on pricing reform (that is, on obtaining better price signals to guide supply augmentation investment)?

Pricing reform is one mechanism in a suite of tools available to increase efficiency in the supply of water and wastewater services. While pricing reform is important it needs to be used in conjunction with other reforms such as information provision, cost identification and allocation and clear specification of service standards.

Can improvements be made in the area of metering and billing? What changes could be made? What are the costs and benefits of these changes?

The second stage of the SEQ water reform program, which involved the establishment of three separate vertically integrated Distributor-retailers as at 1 July 2010, has recently been implemented. As a result of these reforms, the previous water and wastewater activities of 10 SEQ Councils have been combined into the three Distributor-retailers. As the Distributor-retailers are currently integrating the metering and billing functions of these Councils, improvements in these functions are expected. Benefits such as more accurate information on water consumption (i.e. a reduction in estimates), increased transparency and comparability across periods are expected as a result of these reforms.

Have the non-price demand management measures implemented by policy makers been effective?

On 1 December 2009, Permanent Water Conservation Measures (PWCM) commenced across SEQ. For the first time the entire SEQ region now operates under the QWC's consistent out-of drought, water conservation measures.

PWCM are low level water restrictions designed for long term, post-drought use. The measures aim to ensure efficient use of water, embed water use behaviours, and guide the operational use (for example, water devices and equipment) of water. In the first 10 months after PWCM were introduced, SEQ residents used an average of 154 litres per person per day. This is well below the voluntary savings target of 200 litres per person per day.

Structural measures have been shown to be an effective non-price demand management measure. These include:

- changes to the plumbing and building codes with requirements to install water efficient fittings;
- metering devices as well as tanks, grey water and storm water systems in new dwellings;
- guidelines for "fit for purpose" irrigation systems; and
- participation in national schemes such as the Water Efficiency Labels and Standards Scheme and Watermark.

Further structural measures require all businesses using more than 10 megalitres per annum to prepare Water Efficiency Management Plans (WEMPS). These measures affect around 1015 businesses in SEQ.

What kinds of costs have these measures imposed on consumers? What is the evidence on how large these costs are?

At a broad level, the most significant impact for businesses from restrictions was the costs of preparing, implementing and complying with WEMPS. A tailored approach was adopted for non-residential restrictions to manage these impacts.

Compared to price-based approaches, what are the advantages and disadvantages of non-price approaches?

There are several advantages of non-price demand management. In particular non-price approaches:

- have the ability to be tailored to meet community expectations and balance issues such as water security, quality and cost;
- provide consumers with the flexibility to choose how they reduce their water consumption given their specific circumstances and options available to them such as the use of water efficient devices and/or assistance with understanding consumption decisions can be a useful way of achieving reductions in consumption; and
- have the ability to rapidly affect demand. With dams at 17.57% in March 2007, high level water restrictions reduced demand from around 300 litres per person per day to approximately 129 litres per person per day during the 2007-08 financial year. As identified above, achieving this level of demand reduction was due to number integrated demand management strategies.

What are the costs and benefits of information campaigns, voluntary targets and water efficiency programs? How do they compare with more prescriptive water restrictions? How effective would these measures be in the absence of water restrictions?

A cost-benefit analysis of demand measurement measures should be viewed in the context of avoided costs associated with grid augmentation.

CHAPTER 8 – TOOLS AND OPTIONS FOR ACHIEVING REFORM

Are the existing regulatory arrangements for protection of water customers — including hardship policies — effective? Are there improvements that could be made?

For the SEQ Distributor-retailers as large water entities, improvements are in train with proposed legislation to impose a range of customer protection arrangements:

- customers will receive more information in their water and wastewater bills;
- a Customer Water and Wastewater Code will be developed in late 2010 targeted towards SEQ residential and small business customers. The Code will outline the obligations of the Distributor-retailers in supplying water and wastewater services;
- it is proposed to legislate for an Energy and Water Ombudsman to deal with water and wastewater disputes from these customers from 2011; and
- the QCA (which currently has a pricing oversight role) will be undertaking water pricing determinations for the Distributor-retailers with the first determination intended to commence from 1 July 2013.

8.4 SEQ Water Grid Manager – Submission to Productivity Commission: Australia's Urban Water Sector November 2010