Welcome to the National Water Commission’s eNewsletter. Distilled is published monthly and brings you the latest news from the National Water Commission.

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Looking to the future of urban water pricing

Australia’s National Water Commissioners recently released a report on Approaches to urban water pricing, which assesses urban water pricing options and suggests there is scope to improve current arrangements.

Commissioner, Chloe Munro said, ‘This Waterlines report prepared by Frontier Economics, together with the Commission’s accompanying Position Statement, shows that new approaches to water pricing have the potential to deliver better outcomes for water users, reducing the reliance on costly water restrictions.

‘One of the options is to move away from the “inclining block” tariffs currently in use, towards a single volumetric price. Inclining block tariffs disadvantage households with large numbers, and are difficult for customers to understand and respond to.

‘There is also scope to introduce metering and billing arrangements that send clearer usage-based pricing signals to water users. The Commission encourages consideration of scarcity pricing for urban water.

‘Just like prices for other goods and services, under a scarcity pricing approach, the variable component of the water charge would vary relative to available supply. Scarcity pricing may be a more efficient way of balancing supply and demand and could significantly reduce the need for water restrictions.

Other options worth considering include the merits of locational or peak pricing on a case-by-case basis, and allowing greater price differentiation, including for different levels of supply security.'
Ms Munro said, ‘Getting our water prices right will encourage wiser water use, ensure that new sources of water supply are brought on line in a timely fashion, and ensure water service providers have sufficient revenue to allow the efficient delivery of the required water services and to plan for the future.

‘The prospect of rising water demands in urban areas due to population growth, coupled with declining water availability in many of our cities, highlights the need for a well planned, efficient, sustainable and responsive water sector’, said Ms Munro.

Commission Position Statement - Urban water pricing

The following is the Commission’s Position Statement on urban water pricing which identifies additional areas that may warrant policy reform. These areas extend beyond the actions originally specified under the National Water Initiative.

The prospect of rising water demands in urban areas due to population growth, coupled with declining water availability in many of our cities, highlights the need for a well planned, efficient, sustainable and responsive urban water sector.

Urban water reform has become more urgent since the 2004 signing of the National Water Initiative (NWI), with the need to secure water supplies for Australia’s towns and cities now recognised as a critical national challenge.

The National Water Commission has therefore recommended that COAG commit to a supplementary reform agenda to lift the standard of urban water management across Australia.

Continuing metropolitan water restrictions underline the need to ensure reliable urban water supplies and restore public confidence in the security of their supply. The Commission regards long-term temporary water restrictions as an inequitable and inefficient way of balancing supply and demand. While demand management certainly has an important part to play, the Commission considers improved supply to be critical to delivering secure, sustainable urban water into the future.

Improved water pricing is central to urban water reform. Water prices convey important signals to customers and signal the viability of investment in new sources of supply. Getting urban water charging right is therefore critical to ensuring that water is used wisely and that new sources of water supply are brought on line in a timely fashion.

Urban water pricing reform and the National Water Initiative

Under the NWI, all states and territories made a number of explicit commitments in relation to urban water management. These commitments included improving pricing for metropolitan water as well as:

> providing healthy, safe and reliable water supplies.
> increasing water use efficiency.
> encouraging the re-use and recycling of wastewater where cost-effective.
> facilitating water trading between and within the urban and rural sectors.
> encouraging innovation in water supply sourcing, treatment, storage and discharge.

Progress in urban reform

In its 2007 Biennial Assessment and 2008 COAG Update Report on progress in water reform, the Commission found that reasonable progress is being made against urban water reforms in the NWI, but that in retrospect, NWI provisions for urban water were insufficiently challenging. Urgent action is required to tackle urban planning, pricing, market and institutional reforms.

1 In this context, long-term temporary water restrictions are distinct from permanent water conservation measures.
Future reform priorities

The Commission has identified additional areas for policy reform for improving urban water pricing and institutional arrangements. These extend beyond the actions originally specified under the NWI.

Stronger independent pricing oversight

Some states must introduce stronger independent pricing oversight to ensure that approaches to setting charges are technically sound and fully consistent with NWI principles.

More transparent pricing

Some states must further improve transparency in water charging. The Commission recommends that, to improve transparency, some governments and economic regulators seek to employ more effective public engagement processes when making pricing decisions.

Greater use of scarcity pricing

The Commission supports further consideration of scarcity pricing in urban areas on the basis that scarcity pricing may be a more efficient way of balancing supply and demand and could significantly reduce the need for water restrictions.2

Improved pricing for new water sources

Urgent progress is required to improve pricing policies for recycled water and stormwater. Consistent with NWI commitments, pricing policies for recycled water and stormwater should be congruent with pricing policies for drinking water so as to stimulate efficient water use regardless of the source. Recycled water and stormwater re-use schemes need to be considered in a system-wide context and prices should reflect externalities and avoided or deferred costs. Prices for recycled water and stormwater should reflect underlying cost differences associated with providing products of different quality and fit for a range of different uses.

End of inclining block tariffs

Two-part, inclining block tariffs are commonly used in the urban water sector across Australia. A two-part tariff is made up of a fixed (service availability) charge and a variable (usage-based) charge. In most jurisdictions, two or more blocks or tiers (up to eleven) are incorporated into the variable charge levied on residential users so that the variable component of the charge increases as water consumption exceeds these pre-determined blocks or thresholds. This tariff structure is commonly referred to as an inclining block tariff.

Inclining block tariffs are inequitable as they disadvantage households with larger numbers. They are also not very effective in influencing consumption as the cost impact of reaching higher tiers is often not evident until well after the event; particularly where billing is infrequent. Inclining block tariffs often result in a departure from marginal cost pricing. The Commission therefore considers a two-part tariff with a single variable charge to be a more efficient and equitable tariff structure, and one which is simpler for customers to understand and respond to.

Using more direct instruments than water charges to pursue equity objectives

Recognising that increasing water charges may lead to higher water bills for some businesses and households, the Commission acknowledges the prerogative of governments to offer some form of relief for targeted consumer groups. However, the Commission encourages governments to explore the feasibility of

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2 Much like prices for other goods and services, under a scarcity pricing approach, the variable component of the water charge would be more responsive and vary inversely with available supply. As water availability falls and water becomes more scarce, the variable component of the charge would rise to reflect the increasing ‘scarcity value’. The Commission recognises that desalination options may reduce or alleviate supply scarcity.
using more direct and less distortionary measures, rather than suppressing water charges, to address any substantial equity issues.

Improved metering and billing

Improving metering and billing practices in urban centres will provide better information to consumers and facilitate better responses to pricing policies. The Commission encourages governments to consider ‘smart metering’ of households and individual metering of medium and high-density dwellings. There may be opportunities for the water industry to capitalise on recent developments on smart metering in the energy sector. Further reform is required in some states to ensure that a water usage charge is levied directly on users. Tenants, for the most part, are not currently billed or provided information on their water usage.

More transparent security of supply

Decisions to invest in urban water infrastructure involve trade-offs between cost and reliability of supply. The Commission recommends that levels of urban water security be more clearly articulated in plans and that governments explore the feasibility of a national minimum reliability benchmark for water supply in major centres, specifying expected frequency and severity of water restrictions. The Commission recommends that the minimum reliability benchmark be developed in consultation with the community.

Further institutional reform

Institutional reform in the water sector has not kept pace with other sectors such as telecommunications, electricity, gas and ports. Institutional arrangements in the water sector should be reviewed to provide greater opportunity for private sector investment and innovation. Regulatory reforms, including price-setting, allocation and tradability of bulk water resource access rights and third-party access to natural monopoly infrastructure, have the potential to promote more efficient resource use and greater choice in water services and water products.

More competition

The Commission’s view is that structural reform of the urban water sector would provide opportunities to ensure competitive pressure is brought to bear where it makes sense to do so (e.g. in sourcing water at the wholesale level and at the retail supply level).

Continued structural reform

All urban water providers should be adequately resourced and capable of providing a healthy, safe and reliable supply of water to customers. Where the lack of financial and technical resources available to small (typically local government) water providers is compromising the quality of service provision, this problem must be addressed urgently.

The National Water Commission is supporting efforts to advance urban water pricing and institutional reforms and has released the accompanying Waterlines publication in the interests of highlighting alternative institutional and water charging options.

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3 Increases in water charges need to be put in perspective; in 2003-04 the Australian Bureau of Statistics reported that the cost of water charges made up only 0.7 per cent of average annual household expenditure.

4 Smart meters are able to be read remotely and allow for real time, continuous water consumption data to be collected. Collecting this data can support ‘time of use billing’ and opens up a range of alternate pricing approaches including peak/off-peak pricing. Analysing the consumption data can identify system inefficiencies such as leaks and allows customers to see a detailed break-down of their consumption patterns through time.

5 A natural monopoly exists where a single provider can deliver a product or service at a lower cost than two or more providers could. Natural monopolies typically exist in utility industries where there is a high proportion of fixed costs.
Exporting Australian skills and water industry products

Increasing Australia’s export efforts

In late June the Commission and the Water Industry Alliance convened a dinner to discuss the possibility of establishing a national entity to assist with the export of Australia’s water-related skills and products to world markets.

Australia is not alone in facing water-related challenges and as a result there are significant opportunities to leverage exports off an unprecedented level of investment in water-related activities.

The dinner was attended by over twenty senior officials representing the science community, government and industry.

The view was that coordinating export-oriented efforts could have benefits in a range of areas including:

> assisting with partnerships, consortia and cooperation between entities
> attracting people and skills into the water industry
> coordinating public sector and private sector efforts
> enabling Australian firms to promote linkages and to market and offer a complete package of skills and services to international customers
> determining a number of characterising themes to project internationally
> speaking with a coordinated message to:
  - Australian Government agencies (e.g. Austrade, CSIRO)
  - Universities and other training-focused institutions
  - International bodies and forums
> collaborating on “common-good” issues such as training, and
> contributing collectively to trade and investment missions and initiatives.

In an international context Australia has a number of relative advantages in a range of water-related areas including:

> water policy development and implementation
> water science
> water asset management
> construction and project management
> technology development, and
> integrated water management.

In many of these areas, Australia is among the world leaders.

It was agreed that a high level planning committee would be established to explore the ideas discussed further.

The Commission will continue to support the progression of this important initiative.
A new look for the Commission’s website

The Commission has just launched a new and improved website.

Not only does the redeveloped website sport a new look, it also been extensively re-engineered to enable users to locate water reform information with ease.

For example, on the new front page you will not only find standard information on the Commission, water reform, our funding programs, publications and media releases, but also detailed information on:

- Groundwater
- Urban water
- Water for the environment
- Water availability & use
- Water markets
- Water pricing

Further, in the new What’s Hot section you will find information on:

- Water planning
- Water in northern Australia
- Indigenous water management
- Water industry skills
- Climate change

This section will be updated regularly as the Commission conducts detailed examinations of topical issues in water reform.

A new water directory now features a range of Australian organisations that play an active role in water reform, management and research. You can find links for:

- Australian Government water agencies
- State and Territory agencies
- Water providers
- Water related research agencies

The Commission is always interested in the views of Distilled readers, so if you have a comment on the new website or any suggestions on how to make it even better, please contact enquiries@nwc.gov.au

Indigenous Water Policy Group publication

The Indigenous Water Policy Group (IWPG) has commissioned a publication Indigenous Legal Rights to Freshwater: Australia in the International Context.

The IWPG is an initiative created and facilitated by the North Australian Indigenous Land and Sea Management Alliance (NAILSMA) with funding from the Raising National Water Standards Program. One of the objectives of the IWPG is to engage in research relating to Indigenous rights, responsibilities and interests in water resources and this paper forms part of that research.

The paper undertakes a comparative overview of the legal position of Indigenous people in
relation to freshwater rights in four countries: the United States, Canada, New Zealand, and Australia. It is organised around four themes of particular concern to Indigenous people: ownership of water, water rights, commercial rights, and management rights. The law in each country in relation to these themes is briefly canvassed with the aim of comparing the legal position of Indigenous Australians with their overseas counterparts.

This paper reveals that Indigenous people in the United States, Canada, and New Zealand benefit from a comparatively advantageous legal position in relation to their water rights. As such, this research provides a starting point for debate as it offers insight into how Indigenous Australians might realise and protect their legal interests in freshwater.

The concept of ‘virtual water’

As drought conditions continue in much of Australia, there is increasing concern about the most appropriate uses of Australia’s limited water resources. The concept of ‘virtual water’, also termed ‘embodied water’, has attracted attention recently. Virtual water is a measure of the total water used in the production of a good or service. The indicative measures of virtual water have been estimated at around 1,000 litres of water embodied in a kilogram of wheat or rice produced in Australia, about 5,000 litres of water in a kilogram of meat, and around 900 litres of water in a litre of milk.

Using the concept to guide the allocation of Australia’s scarce water resource

Water is a finite resource, and its relative scarcity in most situations around Australia, means that difficult decisions have to be made between alternative uses of the water.

In concept and in practice, the most useful tool to guide decisions on the best allocation of the nation’s scarce water resource is the concept known as “opportunity cost”. Opportunity cost measures the value given up when one application of the scarce water is given preference over another.

The measurement of virtual water can not provide a useful and reliable benchmark for choosing between alternative uses of the nation’s scarce water resource. Two examples illustrate this:

- An irrigator’s decision on whether to plant rice or wheat. The ‘virtual-water’ measure would rank wheat and rice applications together (around 1,000 litres per kilogram of either rice or wheat), and takes no notice of the many other considerations that should be factored in if the best allocation is to be made. These considerations include the cost of other inputs required to make the rice or the wheat, and the different values of selling the kilogram of wheat versus the kilogram of rice. Considerations such as these are omitted entirely from the ‘virtual-water’ numeraire.

- A decision for a Catchment Management Authority (CMA) between watering two alternative wetlands this season. The wetland that uses the least water per hectare, would receive the highest ranking under a ‘virtual water’ benchmark. Consider the case of two wetlands in the CMA’s region - one which was an internationally-recognised and highly valued wetland but which required (say) 1% more water per hectare of wetland, than did a second wetland area which had low environmental value. In this situation, the ‘virtual water’ benchmark would produce the perverse result of ranking the second low-value wetland as a preferred user of the CMA’s seasonal water resources.

For these reasons, the NWC considers that the measurement of virtual water has little practical value in decision making regarding the best allocation of Australia’s scarce water resources.

Update on Water industry skills issues

Recent progress in addressing water industry skills issues has been made on two fronts, through the Water Industry Skills Taskforce and through the Council of Australian Governments (COAG) Water Skills Audit and Strategy.
The Water Industry Skills Taskforce

The Water Industry Skills Taskforce held its first meeting in Sydney this month. At this meeting the Taskforce endorsed three industry initiatives:

- **H2Oz Water Industry Employment Recruitment Campaign**: This campaign will raise awareness of the unique opportunities offered by a career in the water industry. Its key focus is to attract skill and talent to the sector.

- **Water Industry Mentoring Program**: This program will pass on the knowledge and experience held by older members of the industry to younger professionals. The aim is that younger professionals remain in the workforce for the longer term.

- **Water Industry Secondment Program**: This program will enable organisations to provide employees with development opportunities through secondments to and from other organisations in the industry.

The Water Industry Skills Taskforce was established following the National Water Industry Skills Forum held in March 2008 and is funded from the Raising National Water Standards Program.

COAG Water Skills Audit and Strategy

Earlier this year, the Council of Australian Governments commissioned a skills audit of the water industry. This was completed this month. The team commissioned by COAG is now developing a strategy to address the looming water skills shortages. This strategy will be presented to the Department of Environment, Water, Heritage and the Arts in August, prior to presentation to CoAG in October.

Australian Water Resource Information System (AWRIS) update

In 2007 the Commission produced the baseline assessment of Australia’s water resources, *Australian Water Resources 2005*, in collaboration with a range of stakeholders to benchmark the progress of water reform. The project managers also scoped the user requirements, system architecture and the implementation and investment requirements for an ongoing and enduring water resource information system in Australia. This was the genesis of the Australian Water Resources Information System (AWRIS).

Under the Australian Government’s Water for the Future $12.9 billion water investment program the Bureau of Meteorology’s (BoM) expanded role includes $450 million for the Improving Water Information Program which is supported by the Commonwealth Water Act 2007 and key stakeholders.

Under this expanded role the BoM will be responsible for:

- Issuing national water information standards
- Collecting and publishing water information
- Conducting regular national water resources assessments
- Publishing an annual National Water Account
- Providing regular water availability forecasts
- Giving advice on matters relating to water information, and
- Enhancing understanding of Australia’s water resources.

To ensure the improved water information is provided in a way to maximise the benefits to the National Water Initiative, the National Water Commission has provided $10 million of seed funding from the Raising National Water Standards Program to assist the BoM to establish the Australian Water Resource Information System (AWRIS).

AWRIS will be freely accessible to the public and is designed to assist a range of uses and users to more effectively manage Australia’s water resources. For example, through AWRIS users will find answers to a
range of water resource management questions, such as:

- How much water is in storage, aquifers and flowing in rivers?
- How much might there be in coming days, months and years?
- Who has rights to use water and how much?
- What is the pattern of water use and how is it changing?
- How much water is being traded and to where?
- How much water is the environment getting?, and
- How is water quality in our rivers and aquifers changing?

AWRIS will collect, quality control, analyse and value add to the current measurements of river flows, reservoir storage volumes, water quality, water use, water entitlements and water trading data that are held by over 200 organisations across Australia. It will become the national central authoritative repository for all water data and reporting.

AWRIS will significantly improve the decision-making capabilities of users engaged in policy development, planning, operations, public enquiry, education and research by providing data, dashboards, information, tools and reports including:

- Regular National Water Resources Assessments
- Annual National Water Accounts
- Real-time water reporting services, and
- Real-time water availability forecasts.

The first phase of AWRIS will deliver an operational system by the end of 2009. The future development and ongoing operation of AWRIS will be provided by the BoM and will evolve and expand to deliver more content, faster access and more sophisticated functionality into the future.

The Bureau of Meteorology’s water information role

On 30 June this year the Commonwealth Water Regulations 2008 came into force. The Regulations support the Bureau of Meteorology’s new role in collecting water information under the Commonwealth Water Act 2007.

The Bureau’s role has also been supported by the Commonwealth Government’s $450 million Improving Water Information Program (itself part of the $12.9 billion Water for the Future program).

Who must provide water information?

The Regulations specify certain ‘persons’ that must give the Bureau particular water information. Persons are grouped into categories under the Regulations (Categories A to H) based on their functions. The eight categories of persons under the Regulations are:

- Lead water agencies
- Other agencies of the Commonwealth or a State
- Hydroelectricity generators
- Owners or operators of major storages
- Rural water utilities
- Urban water utilities
- Catchment management authorities and others, and
Providers of water information for flood forecasting and warning.

*Persons* may be individuals or groups, and may be included in multiple categories depending on the functions that they perform.

**What water information must be provided?**

Persons are required to provide certain types of water information (in an electronic format) to the Bureau. Water information is categorised as follows:

- Surface water resource information
- Ground water resource information
- Information of major and minor water storages
- Meteorological information
- Water use information
- Information about rights, allocations and trades in relation to water
- Information about urban water management
- Information about water restrictions, and
- Water quality information.

A publicly available [search tool](#) is available on the Bureau’s website to assist in identifying individuals/organizations that are required to provide water information to the Bureau, and the type of information that is required. The search tool allows a *person* to generate an individualised Water Regulations Report (a basic summary) of their reporting requirements.

**When are persons required to provide water information?**

The Regulations came into force on 30 June 2008, however there is an interim period between this date and the time by which a particular category of persons must start giving their specified water information.

The initial focus of the Regulations is upon category A, B and C *persons* (government agencies and hydro generators), who are required to provide some of their categories of water information by 1 October 2008.

The longest interim period under the Regulations is twelve months, and therefore all *persons* will have started to provide new information to the Bureau by 1 July 2009.

Following the start of the reporting obligations, water information may be required by the Bureau on a daily, weekly, monthly or annual basis, depending on the particular category of water information.

The Bureau’s [website](#) provides extensive detailed information about the Regulations and the collection of water information.

**Water stewardship initiative**

The National Water Commission has recently committed seed funding of $60 000 from the [Raising National Water Standards Program](#) to the Water Stewardship Initiative (WSI) with a view to assisting it to set up a self sustaining entity that can govern, manage, set standards, verify compliance, brand, license and promote the Water Stewardship concept.

The Water Stewardship concept has been in development for over a year and aims to find a process, and the associated standards, to reward large scale water users around the world for the responsible use of water. Responsible water use should benefit people, the environment and society at large.

The aim is to set a standard that will lift international efforts to match greater efficiency in water use with improved social and environmental impacts. The Initiative is not just seeking to devise a water efficiency
brand or marketing tool that describes the water used by the product but rather is seeking to devise a standard that denotes that water use has played a primary role in decisions throughout the production chain.

As part of this process WSI is involved with like-minded international groups to ensure that any Australian standards can influence and are compatible with those being developed overseas.

The Initiative has assembled a representative group of Australians to act as a Reference Group to consider ideas as they develop and has drawn executives from the Commission, Visy, Fosters, Woolworths, the Murray Darling Association, Dairy Australia, Timbercorp, South East Water, Westpac and others. Development of the standard therefore draws on expertise that covers policy, water retailers, processing, primary production, beverages, finance, conservation, traditional owners and community representation. WSI has also recognised that it is critical to learn from others and has recruited Reference Group members with experience in setting up the Timber and Forestry brands.

The first part of an Options Paper has been circulated to the Reference Group for comment. It is anticipated that the next Forum will convene in early October to present the outcome of deliberations of the Reference Group to a wider audience.

Mapping seawater intrusion in the coastal plain of the Northern Territory

The $1.05 million project Northern Territory Coastal Plain: Mapping seawater intrusion in coastal plain aquifers using airborne electromagnetic data has commenced.

The National Water Commission’s Groundwater Action Plan is contributing $480,000 to this project which will use the expertise of the Northern Territory (NT) Department of Natural Resources, Environment and the Arts and Geosciences Australia (GA) to assess the occurrence and potential risk of seawater intrusion into coastal aquifers in the Darwin peri-urban area.

Developing a greater understanding of the hydrogeology, geology and geophysics of the area will improve the ability to manage its water resources sustainably. This is even more critical in areas such as the coastal aquifers in the Darwin peri-urban area where there is increased pressure for local groundwater resources in the region as a result of urban growth and landuse changes such as horticulture expansion.

Under the National Water Initiative all governments of Australia have acknowledged the importance of groundwater and committed to a ‘whole of water cycle’ approach. Specific actions include improving the understanding of environmentally sustainable extraction rates and regimes, developing common approaches to achieving sustainability.

Other funding contributions to the total cost of the project include $200,000 from the Northern Territory Government and $378,850 from Geosciences Australia. The project will be managed by Geoscience Australia and will complement Geoscience Australia’s Onshore Energy Security Program (OESP). The project also has potential synergies with the Tropical Rivers and Coastal Knowledge (TRaCK) program, led by Charles Darwin University.

Science Seminar - the 2005-06 Agricultural Census Mesh Block Coding Project

Ms Jerralyn Wright from the Australian Bureau of Statistics recently presented to the Commission on the success of the recently completed 2005-06 Agricultural Census Mesh Block Coding Project. This project was funded under the Raising National Water Standards program.

Ms Wright has thirteen years experience working within Australian Bureau of Statistics mainly in areas of agriculture and environment. In the past seven years she has specifically focused on developing ways of collecting and coding rural addresses and producing a range of different geographical outputs.

The Agricultural Census is conducted every 5 years by the Australian Bureau of Statistics (ABS). The 2005-
06 Agricultural Census (155,000 individual farms) included information on area and production for a wide range of crops, fruits and vegetables, as well as stock numbers for livestock and questions on water use and sources of water. The Census also requested information on the physical location address of each farm.

Ms Wright’s presentation included information on the 2005-06 Agricultural Census process, including the preparation of the 2005-06 publication “Water Use on Australian Farms”.

The project used the information on the physical location address to code each farm to a ‘Mesh Block’. The Mesh Blocks were then used as a ‘building block’ to provide information on farming activity in a range of finer scale geographical areas than had previously been possible, including Surface Water Management Areas and Groundwater Management Areas.

The data from the project is now publicly available from the ABS. If you would like a copy of Ms Wright’s presentation please contact Joanne Barbaro on joanne.barbaro@nwc.gov.au.

Science Seminar - Climate change and Australian water resources: national estimates from IPCC Fourth Assessment report models.

Dr Benjamin Preston from the Centre for Australian Weather and Climate Research recently presented to Commission staff and invited guests on Climate change and Australian water resources: national estimates from IPCC Fourth Assessment report models.

Dr Preston is a research scientist with the Climate Change Research Group of the Centre for Australian Weather and Climate Research and is also active with CSIRO’s inter-disciplinary Climate Adaptation Flagship research initiative. His research focuses on the development and application of methods for assessing the spatial dimensions of climate change vulnerability and risk. He is also interested in the use of probabilistic tools for managing climate uncertainty in decision-making.

Dr Preston told the Commission that Australia is the driest inhabited continent in the world and that as changes in rainfall were often magnified in terms of effect on surface runoff (i.e. a 10% rainfall reduction could result in a 30% reduction in runoff), understanding and planning for climate change impacts would be essential for future water management strategies.

Dr Preston provided details of recent improvements in climate change science published by the Intergovernmental Panel on Climate Change (IPCC), and explained the implications for Australia’s water resources in terms of reduced rainfall and runoff. The results of the most recent IPCC4 modeling provide a more pessimistic outlook for Australia than the previous IPCC3, however it was acknowledged that the uncertainty bounds on the estimates were significant. Dr Preston explained that one of the challenges would be to make robust decisions in the context of these wide uncertainty bounds.

In contrast with an earlier emphasis on changes in mean climate, changing climate variability and seasonal patterns of rainfall and runoff are now widely recognised as the greatest source of climate-induced stress affecting hydrological systems. This process may involve the existing pattern of variability shifting to a new mean climate, creating new extremes, or involve changing patterns of variability. A whole of climate approach to water resource management is required, where climate change projections are combined with knowledge of ongoing processes affecting both short and long-term climate variability.

Many of Australia’s water resources are already heavily developed and utilised. A high proportion of both surface and groundwater management areas are already either fully or over-allocated in eastern Australia. Projected climate change can be expected to exacerbate these pressures, including in the agriculturally important Murray Darling Basin, and in urban areas such as Perth and South East Queensland. The ecological effects of climate change are also likely to be significant. Dr Preston said that water management challenges will grow in the decades ahead due to climate change with a tendency for dry areas to get drier and wet areas to get wetter.

The National Water Commission is investing significant funds to improve the understanding of potential climate change impacts on water resources through the CSIRO Murray-Darling Basin Sustainable Yields
study and potential applications of that approach to other areas including Northern Australia. As the National Water Initiative, the Australian Government’s Water for the Future Plan, and other water reforms are implemented they can help develop the adaptive capacity required to adequately respond to a changing climate.

In Brief

- The National Water Commission is delighted to advise that it has been able to secure the services of Russell Cooper on a part-time project basis as Special Advisor to the CEO. Mr Cooper was formerly the CEO of Goulburn Murray Water and has also held many other roles in the water industry. Mr Cooper will use his extensive experience and skills to assist the Commission with policy development, provision of advice and preparation of papers related to high priority items on the Commission’s work program.

- The Commission has also recently appointed Mr Ross Martin as General Manager, Water Reform Group. Mr Martin’s most recent work has been in the private sector, including a range of infrastructure and finance issues. He has previous experience in the Australian Public Service at SES level, including in the Department of Finance. Mr Martin will lead the Commission on water pricing, water markets, urban water and assessments including the Biennial Assessment and the auditing of water plans in the Murray-Darling Basin.

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