Australian Government Department of Agriculture Logo

REVIEW OF THE NATIONAL URBAN WATER PLANNING PRINCIPLES – FINAL REPORT

May 2015

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# Executive Summary

The National Urban Water Planning Principles (the Principles) were finalised in 2008 by state and territory governments, with the aim of assisting jurisdictions undertake long-term planning for urban water supplies to ensure that future demand was met.

This review of the Principles was prompted by reports by the Productivity Commission, the National Water Commission and Infrastructure Australiarecommending a number of updates to the Principles. The objective of the Review is to assess the uptake of the Principles and identify opportunities for improvements.

The Review’s methodology comprises four parts: an overview of planning arrangements in each state and territory; the planning requirements of state and territory governments; case studies of eight utilities; and a literature review. The case studies component was undertaken by the independent consultant Marsden Jacob Associates. The case studies feature a selection of large and medium-small utilities across Australia: Water Corporation, from Western Australia; Wide Bay Water and Seqwater, from Queensland; Power and Water Corporation, from the Northern Territory; Gosford and Wyong councils, MidCoast Water and Sydney Water, from New South Wales; and Wannon Water, from Victoria.

Overall, the Review assesses the extent of implementation of the Principles; their effect on urban water planning decisions by jurisdictions and utilities; and their role in advancing new approaches to planning, such as risk or adaptive management planning, water-sensitive urban design and integrated urban water management.

The Review found that while the Principles are not used or referenced in every jurisdiction, urban water plans and planning processes reflect the issues and concepts expressed by the Principles. The Principles are generally seen as a useful set of national guidelines that will continue to be relevant into the future but could be made more accessible by defining some key terms and explaining them in the context of possible local circumstances.

# Introduction

## Background

The National Urban Water Planning Principles were finalised in 2008 by state and territory governments, when they were facing similar pressures in securing water resources for cities and towns during the Millennium Drought. The aim of the Principles was to assist jurisdictions undertake long-term planning for urban water supplies to ensure that future demand was met. The Principles were subsequently endorsed by the Council of Australian Governments (COAG) in November 2008.

The Principles, at **Appendix A** of this report, are intended to achieve optimal urban water planning outcomes across Australia. In brief, the Principles address:

* Delivering urban water supplies according to agreed service levels
* Using evidence-based planning and continuous improvement in the knowledge base to address uncertainty in supply and demand
* Adopting a partnership approach so that stakeholders are able to make an informed contribution
* Integrating potable water supply management with other aspects of the whole urban water cycle
* Consideration of the full portfolio of demand and supply options
* Sustainable management, ensuring ongoing protection of the environment and waterway health
* Using water pricing and markets to help achieve a supply and demand balance
* Periodically reviewing water plans and the assumptions used, ensuring plans can adapt to changing circumstances.

This review of the Principles was prompted by recommendations made in reports by the Productivity Commission (PC),[[1]](#footnote-1) the National Water Commission (NWC)[[2]](#footnote-2) and Infrastructure Australia.[[3]](#footnote-3) The recommendations are provided in full at **Appendix B**. In summary:

* The PC suggested that governments should consider supply augmentation and demand management options together. The analysis of costs and benefits of all water supply options should be considered in an objective and transparent manner, using a real options approach.
* The NWC recommended that water service providers adopt adaptive and risk-based approaches to supply–demand planning and strive for greater transparency.
* Infrastructure Australia recommended the introduction of a set of national guidelines for urban water planning which would consider all possible demand management and supply augmentation options.

The objective of the Review is to assess the uptake of the Principles and identify opportunities for improvements.[[4]](#footnote-4) Specifically, this means assessing and making recommendations for improvements in:

* the extent of implementation of the Principles and the effect on urban water planning decisions by utilities and local governments
* the role of the Principles in advancing new approaches to planning, such as real options, risk or adaptive management planning, water-sensitive urban design and integrated urban water management.

The demands placed on urban water planning vary significantly across Australia. The Review has attempted to take into account those differences and the respective planning challenges they can create.

## Methodology

The Review’s methodology comprises four parts:

1. An overview of planning arrangements, providing the context for urban water planning in each jurisdiction, with a brief description of institutional and governance arrangements and of the state or territory government’s urban water plans.
2. State/territory governments’ planning requirements, to assess the extent to which the Principles have informed urban water planning requirements in each jurisdiction; and the ‘new’ approaches to urban water planning and management, referred to in the Review’s objectives, are incorporated in government requirements. Information for this part was mainly provided by state/territory government officials.
3. Case studies on the implementation of the Principles, providing a perspective on the extent to which urban water service providers (utilities and local councils[[5]](#footnote-5)) have implemented them.

An independent consultant, Marsden Jacob Associates, was engaged to undertake a number of case studies, featuring a selection of large and medium-small utilities across Australia: Water Corporation, from Western Australia; Wide Bay Water and Seqwater, from Queensland; Power and Water Corporation, from the Northern Territory; Gosford and Wyong councils, MidCoast Water and Sydney Water, from New South Wales; and Wannon Water, from Victoria.

Marsden Jacob undertook a desktop analysis of the selected utilities’ water plans and interviewed relevant staff to assess the extent of implementation of the Principles. The interviews focused on whether the Principles provide adequate guidance on the adoption of ‘new’ approaches to planning, and how the Principles could be improved.

1. Literature review: the original aim of the literature review was to analyse leading practice in urban water planning since 2008, thereby enabling a better understanding of how urban water planning practice has changed since the introduction of the Principles, both in Australia and internationally.

However, as very little recent work was found on urban water planning overall, either in Australia or internationally, the scope of the literature review was modified: it now consists of a selective review of literature published since 2008 that relates to new approaches to urban water planning (such as adaptive management); and a brief examination of the urban water plans from four cities in English-speaking countries. The purpose of this latter component is to provide some insight into the differences and similarities between the concepts expressed in the Principles and the urban water planning arrangements of the selected cities.

# Planning responsibilities and governance across Australia

The structure of the Australian urban water industry varies across jurisdictions and between metropolitan and regional urban areas. One major utility operates in the least populous states and territories of the ACT, the Northern Territory, South Australia, Western Australia and Tasmania. The other states have large metropolitan utilities, supported by regional utilities in Victoria and by local government services in Queensland and New South Wales. The governance of those services, particularly with regard to planning, also varies and can be the responsibility of a number of agencies, including utilities.

This section summarises the planning and governance arrangements for urban water in each jurisdiction. It is based on information provided by state and territory government agencies responsible for urban water and/or publicly available information. More detailed descriptions are at **Appendix C**.

## Australian Capital Territory

The ACT has one utility, ACTEW, providing water and wastewater services for the territory. Urban water planning is set out under the ACT Government’s water resource strategy, with oversight by two inter-agency water management committees. The ACT Water Strategy 2014–44: Striking the Balance sets out how the Territory will manage water resources over the next 30 years.

There are a number of ACT statutes and regulations that govern water planning and water management:

* *Utilities Act 2000* and related instruments
* *Water Resources Act 2007* and related instruments
* Independent Competition and Regulatory Commission Act 1997
* Planning and Land Act 2007.

Non-statutory triggers of urban water planning are the ACT’s Water Strategy and the Canberra Plan.

## New South Wales

### Metropolitan Areas

Urban water supply and sewerage services in New South Wales for the greater Sydney region and the lower Hunter region are provided by three state-owned metropolitan water utilities: Sydney Water, the Sydney Catchment Authority (SCA) and Hunter Water.[[6]](#footnote-6) Water planning for these two urban regions is coordinated by the Metropolitan Water Directorate, with oversight by the Metropolitan Water Chief Executive Officers’ Committee.

The plans currently in operation in New South Wales are the 2010 Metropolitan Water Plan and the 2014 Lower Hunter Water Plan. There is no statutory framework for either of these plans, although it was a New South Wales government decision to develop and implement them.

The supply of bulk water and retail water services and supply to the Sydney and Hunter metropolitan regions is regulated by the following legislation:

* State Owned Corporations Act 1989
* Sydney Water Act 1994
* Hunter Water Act 1991
* Sydney Catchment Management Act 1998
* *Water Management Act 2000* (regarding access to raw water).

There are no non-statutory planning requirements, but functions of the Metropolitan Water Directorate align with a number of priority actions of the NSW 2021 plan, such as securing Sydney’s water supply; involving the community in decision making; and supporting liveable urban communities.

### Regional Areas

In regional New South Wales, urban water supply and sewerage services are provided by 105 local water utilities, which are mostly local government councils. The New South Wales Office of Water manages the New South Wales government’s Country Towns Water Supply and Sewerage Program, oversees and monitors utility performance and is the primary regulator for the 105 local water utilities.

Most utilities are subject to regulation under the *Local Government Act 1993*, with five utilities regulated under the *Water Management Act 2000*.

All the local water utilities are expected to implement the 19 requirements of the 2004 NSW Best‑Practice Management of Water Supply and Sewerage Framework.[[7]](#footnote-7) That framework is the key driver for the reform of planning, management, pricing and continuing productivity improvement by the regional utilities. All the utilities are also required to prepare a 30-year integrated water cycle management (IWCM) strategy. The IWCM strategy must include a total asset management plan, a financial plan, and a drinking water management system in accordance with the NSW Guidelines for Drinking Water Management Systems, NSW Health and the NSW Office of Water.

An IWCM strategy is required every eight years and needs to be reviewed after four years as part of the utility’s strategic business plan. The total asset management and financial plans are updated annually and any necessary corrective action needs to be included in the utility’s annual action plan to council.

## Northern Territory

In the Northern Territory, the Power and Water Corporation (PWC) provides water and sewerage services to the main urban centres of Darwin, Alice Springs, Katherine, Tennant Creek and Yulara, as well as supplying water to 13 minor centres and sewerage services to five of those. Two small urban centres, Jabiru and Nhulunbuy, are serviced by a local council and a mining company respectively.

PWC undertakes all planning functions for these areas, except for Jabiru and Nhulunbuy. The Department of Land Resource Management (DLRM) is responsible for water policy and water resource management in the Northern Territory. However, there is no Northern Territory government agency responsible for urban water planning. DLRM administers water extraction licences and water allocation plans under the Northern Territory *Water Act*.

Northern Territory government statutory requirements regarding urban water management are limited to those under the *Water Supply and Sewerage Services Act*. They relate to the provision of asset management plans to the Northern Territory Utilities Commission, and the management and reporting of water quality.

PWC has determined levels of service for the main urban supply in Darwin, through an industry benchmarking and system analysis approach which has been noted by government. Levels of service have not been formalised for other urban areas, other than for water quality.

The primary government-planning documents are the water allocation plans, which set the extraction limits, rules and security levels for urban water supply. They are in place for the Alice Springs Water Control District, Ti Tree Water Control District, Western Davenport Water Control District and Daly Roper Water Control District.

## Queensland

Queensland has a total of 91 urban water and sewerage service providers, most of which are local councils. In south-east Queensland, there are five distribution and retail providers: two local-government-owned distributor-retailers (Queensland Urban Utilities and Unitywater) and three local governments providing water and sewerage services directly (Gold Coast, Logan and Redland city councils).

Urban water planning is generally the responsibility of utilities. Seqwater, a Queensland-government-owned bulk water supplier, is responsible for strategic and operational planning for the south-east Queensland (SEQ) region.

Under the *Water Act 2000*, Seqwater is required to develop a water security program to facilitate the achievement of the levels of service specified by the state for the SEQ region. State-wide there is a requirement under the *Water Supply (Safety and Reliability) Act 2008* to comply with dam safety and drinking water regulations.

Most urban water providers must meet specified asset management standards, and regulatory and pricing oversight requirements. Guidelines covering asset management and planning, as well as Water Services Association of Australia codes, provide a non-statutory framework for planning.

Queensland’s newly released water plan is the 30-year water strategy WaterQ. It includes a commitment from the Queensland Government to facilitate water supply security assessments for potential high-growth regions. These assessments will forecast water demand for various population growth scenarios, taking into account water availability, water reliability and multiple water users, and the effects of changing climate conditions. The three-year work program is designed to help utilities better understand their water needs. Water service providers will be responsible for determining and implementing water supply solutions and engaging with their communities to consider infrastructure solutions as well as demand management and water efficiency measures as part of an overall solution for the region.

The Department of Natural Resources and Mines manages the allocation and management of surface and groundwater. The Department of Energy and Water Supply provides regional planning support where multiple urban, rural, mining and industrial water service providers are involved, such as in SEQ.

## South Australia

SA Water provides water and wastewater services to the majority of South Australia. Local government provides urban water services for some small communities.

South Australia’s approach to water planning and management is generally not defined as urban or non-urban; it focuses more on the overall planning and management of natural water resources (e.g. surface water, groundwater, wastewater and stormwater). The Department of Environment, Water and Natural Resources is the lead agency for policy, management and administration of the state’s water and other natural resources. Local councils are responsible for planning and managing stormwater, with other state government agencies involved in a regulatory or monitoring capacity.

Two Acts provide the primary legislative basis for managing natural water resources in South Australia, including (but not limited to) water resources available to urban areas. The *Natural Resources Management Act 2004* is the foundation for the sustainable management of water in South Australia. The *Environment Protection Act 1993* provides the basis for management of water quality and pollution.

*The Water Industry Act 2012* provides the framework to facilitate water supply planning. In addition, it provides for regulation of the water industry through establishment of a licensing regime and provides for regulation of prices, customer service standards, technical standards for water and sewage infrastructure and plumbing, and performance monitoring of the water industry.

Underpinning the state’s legislative requirements, the government’s water security plan to 2050, Water for Good, outlines 94 actions to ensure the future availability of water. Other relevant government plans are regional demand and supply statements, water allocation plans and the 30-Year Plan for Greater Adelaide, which includes policies and targets relating to water-sensitive urban design and protection of water supply catchments from inappropriate development.

SA Water prepares long-term plans to ensure that its customers have a secure water supply and that its wastewater treatment plants have capacity to meet potential increases in demand. These plans have a 25–30-year timeframe.

## Tasmania

In November 2012, the Tasmanian government enacted legislation to establish a single water and sewerage corporation to provide urban water and wastewater services on a statewide basis. The Tasmanian Water and Sewerage Corporation Pty Ltd (TasWater), a local-government-owned business, commenced on 1 July 2013. One of its main objectives is to ensure that infrastructure planning occurs on a statewide basis.

Tasmania currently does not have statutory requirements that specifically apply to urban water planning. However, utilities that are regulated under the *Water and Sewerage Industry Act 2008* are required by the Tasmanian Economic Regulator to prepare a price and service plan as an input to the regulator’s price determination, on a schedule determined by the regulator – currently every three years. Regulated entities must include a section in their price and service plan that addresses their water supply planning framework.

## Victoria

Urban water services in Victoria are provided by 17 utilities. Four utilities service metropolitan Melbourne; the remainder service regions outside Melbourne. The Department of Environment and Primary Industries (DEPI) provides governance oversight.

The Office of Living Victoria (OLV) was established in 2012 to deliver urban water reform, focusing on the widespread implementation of a whole-of-water-cycle management approach. One of its objectives was to integrate urban planning and water cycle management planning at a city and regional scale. The OLV was moved back into the DEPI in the second half of 2014.

In accordance with the *Water Act 1989*, each utility must submit an annual corporate plan that provides a statement of corporate intent, lists expected activities and provides a financial forecast for the following five years. DEPI and the Department of Treasury and Finance are responsible for reviewing the corporate plans and business cases. The *Water Act 1989* also covers aspects such as drinking water quality, environmental protection, price regulation and consumer protection.

Water plans are required every five years. They include details about proposed revenue requirements and tariff and pricing structures and are assessed by the Victorian Essential Services Commission.

## Western Australia

The state government-owned Water Corporation (Water Corp) provides water and wastewater services to most of urban Western Australia. Other entities supply potable water in Bunbury, Busselton, Rottnest Island, Dampier, Paraburdoo and Tom Price. These areas are variously serviced by state government-owned corporations, statutory bodies and private companies.

Water service providers undertake water supply planning at various levels for different purposes. Water Corp develops water supply strategies such as Water Forever that take into account overarching state or regional water security strategies or policies developed by the Western Australian Department of Water (DoW). These are largely intended to inform the community of supply options and demand management to meet future growth in a drying climate.

Water service providers also undertake a range of more detailed water supply planning activities (with a 5–10-year horizon), including providing forecast capital expenditure details to Treasury, via the Minister for Water, alongside their annual statement of corporate intent.

The DoW plans and manages self-supplied water use in urban environments; develops urban water plans that integrate with land-use planning processes; and provides technical and policy advice on both scheme and self-supplied water plans by water service providers and industry.

Water services are regulated under the *Water Services Act 2012*. Under this Act, licensed utilities are required to meet water quality and customer service standards. The DoW issues licences for taking water under the *Rights in Water and Irrigation Act 1914*. No statutory management plans have been developed despite legislative provisions introduced in 2001 to allow the Minister to make regional, sub-regional and local area management plans for the management of water resources.

Water allocation planning is mainly triggered for areas where water resources are approaching full allocation, are of strategic significance or have rapidly increasing demand. Regional and local water supply strategies are developed where major deficits in the supply–demand balance are forecast and competition for limited water supplies exists. They are developed to address possible constraints to local and regional development.

# Summary of Review Findings for Jurisdictions and Water Service Providers

The purpose of this part of the Review was to assess the extent to which the Principles inform planning both at the state/territory government level and at the level of those organisations that provide urban water and wastewater services.

Evidence was gathered from state and territory government officials and from the utilities included in the Review’s case studies, complemented by Marsden Jacob’s assessment of the utilities’ plans.

This section of the report provides a summary analysis of these findings.[[8]](#footnote-8) Some details of jurisdictions’ and utilities’ responses can be found at **Appendix C**. Feedback gathered from the case studies informed the findings and conclusions.

## Extent of implementation of the Principles

Line of enquiry:

* Jurisdictions were asked to provide details of the extent to which the Principles were referred to in their government’s planning documents, with reference to their own planning processes and to any requirements placed on the planning processes of utilities in their jurisdiction.
* Utilities were asked about their awareness of the Principles and the extent to which the Principles were referred to in their own plans.

### Awareness of the Principles

While all jurisdictions are aware of the Principles, few have taken steps to actively promote the Principles to utilities. Some jurisdictions (for example the ACT and New South Wales) refer to the Principles when engaging with the industry and/or community, but activities such as incorporating the Principles in learning and development material and/or training workshops with utilities do not appear to occur.

Most utilities were aware of the Principles, but the level of that awareness could be quite shallow. For example, the Northern Territory Power and Water knew the Principles existed but had not used or referred to them in their planning processes. Lower levels of awareness among utilities could be the result of a number of factors:

* a lack of reference to the Principles in corresponding jurisdictional planning documents (e.g. in the Northern Territory)
* the utility not having lead responsibility for urban water planning (e.g. Sydney Water)
* other forms of guidance being used more prominently (e.g. the NSW Best-Practice Management of Water Supply and Sewerage Framework).

In jurisdictions with a relatively high number of small- to medium-sized utilities, the true extent of awareness and/or use of the Principles is unknown. For example, Queensland government representatives stated that, while they believed the consistency of utilities’ urban water planning with the Principles would be highly variable, they did not monitor the extent to which the Principles are followed. Sydney Water believed that many council-run utilities in New South Wales would have no awareness of the Principles, although New South Wales government representatives noted that all would be aware of the NSW Best-Practice Management of Water Supply and Sewerage Framework (which addresses the requirements of the Principles) and further noted that many of the regional utilities have 20- to 30-year water and sewerage strategic business plans and financial plans.

### Reference to the Principles

New South Wales, Victoria and (to a lesser extent) the ACT referenced the Principles in a number of planning documents. The remainder of the jurisdictions, and most of the utilities, did not explicitly mention the Principles in their planning documents, and the Northern Territory and Tasmania did not use the Principles at all. However, these findings should not necessarily be interpreted as an indicator of the Principles’ implementation. For example:

* governance arrangements in some jurisdictions have resulted in little or no urban water planning documentation (e.g. Northern Territory and Tasmania)
* the plans of some utilities (e.g. Gosford and Wyong councils) were developed before the Principles were introduced in 2008)
* government agencies and utilities in New South Wales and Queensland tend to rely on their own sets of planning guidelines (although noting that these guidelines reference and reflect the Principles).

The significant finding is that among both jurisdictions and utilities plans and planning processes are generally consistent with the issues expressed by the Principles, even though the Principles may not be directly referenced or cited. As one of the state government officials commented, the Principles are ‘basically common-sense good planning … and generic statements of good practice’.

Also of interest is that the extent of planning documents’ consistency with the Principles was not the same for all the Principles, particularly for the reviewed utilities. Marsden Jacob’s analysis indicates that the utilities’ plans showed higher levels of consistency with Principles 1, 2, 6 and 8. This is not surprising as the concepts expressed by these are generally fundamental to planning good practice; for example, delivering in accordance with agreed levels of service and periodically reviewing plans.

The utilities’ plans displayed lower levels of consistency with Principle 4, concerning whole-of-water cycle management; and Principle 7, concerning the use of pricing and markets to balance supply and demand. Again, however, certain mitigating circumstances exist. For example, in many cases certain elements of water cycle management were the responsibility of agencies other than the utility (e.g. stormwater management is often the responsibility of local government). Similarly, developing and setting price signals is often the responsibility of government agencies rather than providers of urban water services.

It is more difficult to gauge jurisdictional plans’ consistency with each Principle, mainly due to the varied governance arrangements for urban water planning. It is sufficient to say that in all jurisdictions there are numerous documents concerning the planning of urban water supply and management, authored either by government agencies or by water service providers. Evidence provided by jurisdictional representatives indicates that many of these documents reflect and/or address issues covered by the Principles (see **Appendix C** for details).

Some jurisdictions have indicated that their planning documents cover some issues more comprehensively than do the Principles. For example:

* As part of the 2004 NSW Best-Practice Management of Water Supply and Sewerage Framework, New South Wales regional water utilities are required to prepare and implement a 30-year integrated water cycle management (IWCM) strategy for their water supply, sewerage and stormwater services. The IWCM strategy needs to compare scenarios and identify the scenario which provides the best value for money on the basis of social, environmental and economic considerations.
* In Western Australia, principles and practices of integrated water cycle management are incorporated into the design and development of new urban and redevelopment areas. Department of Water staff assess whether local and regional land-use planning strategies and other aspects of development applications take into account total water cycle management and water-sensitive urban design principles.

In designing the methodology for the case studies, jurisdictions were interested to find out whether the circumstances under which utilities operate made any difference to the extent of adoption of the Principles. For example, one hypothesis was that the larger the organisation the more likely it was to have heard about and to be using the Principles. Marsden Jacob asked the reviewed utilities whether they thought the following characteristics had influenced their adoption of the Principles:

* location of organisation
* size of organisation
* governance arrangements for planning in the organisation’s state/territory
* organisation’s operational environment (e.g. degree of certainty in its water supply).

Marsden Jacob found that the location and size of the communities serviced by each organisation made the most significant difference to the overall adoption of the Principles. Planning for very small and remote communities (such as some of those serviced by the Western Australian Water Corporation and the Northern Territory Power and Water Corporation) is less comprehensive than for larger communities, due to a relative lack of supply and demand information, the high cost of engagement, and jurisdictions’ prioritising of larger population centres.[[9]](#footnote-9) At the other extreme, planning for the large population centres such as Sydney, South-East Queensland and Perth was well resourced, had access to high-quality information and was focused on best practice management.

The utility’s size made little difference overall but was a factor in the case of those Principles that involve significant information gathering or academic research (for example Principles 2 and 7). Many of the medium-sized organisations did not have sufficient resources to capture the information needed for planning processes, instead relying on larger organisations, industry bodies or government agencies.

Governance arrangements affected the adoption of Principles advocating whole-of-cycle water management and the use of pricing/markets, mainly because utilities often did not have the responsibility for these aspects. For example, Seqwater noted that, as the organisation did not provide wastewater services, there was no mandate to integrate recycled water into its long-term planning.

All the utilities (except the Northern Territory Power and Water Corporation) consistently reported that the recent drought and consequent levels of water security had made a significant impact on their planning. However, as the drought is widely recognised to have driven many of the planning changes that have become standard practice, it is likely that the changes utilities made to their planning processes would have happened anyway, regardless of the Principles.

## Usefulness of the Principles and suggestions for change

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| Line of enquiry:  Jurisdictions and utilities were asked:   * how useful the Principles had been in guiding urban water planning, both in their state/territory and nationally * whether the Principles are still, and will continue to be, relevant * for suggestions to improve the Principles. |

### Usefulness and relevance of the Principles

As outlined above, most jurisdictions’ and utilities’ planning documents did not explicitly refer to the Principles. However, all jurisdictions and most of the utilities strongly supported the Principles, both for their content and their purpose. For example:

* the Principles were perceived as generally reflecting standard good practice in urban water planning, and as being pitched at a high enough level to be flexible to local circumstances
* the Principles are the only nationally accepted set of guidelines for urban water planning, and their endorsement by COAG informs and legitimises planning processes, particularly in the context of stakeholder engagement.

While the Northern Territory Power and Water Corporation considered that the Principles were not useful in its own planning processes, it nonetheless commented that all of the Principles were relevant in guiding urban water planning in general. The ACT and Tasmania, which had made little or no use of the Principles in the past, recognised their potential for future planning activities in the context of envisaged stronger government involvement in urban water planning in their respective jurisdictions.

There was general agreement that the wording of the Principles was broad enough to cater to the range of urban water circumstances across Australia. However, a number of jurisdictions suggested that some water planning entities may be in a better position to comply with the Principles than others, and that it was important for the Principles to retain their inherent adaptability to local circumstances and communities. Some jurisdictions also pointed out that physical and/or political circumstances may not allow for certain aspects of urban water management, such as an integrated water cycle approach or water recycling.

All jurisdictions and utilities agreed that the Principles remain valid for contemporary urban water planning and are sufficiently broad to be relevant for the future. However, there were a number of suggestions to review certain Principles in light of recent and emerging developments in urban water planning, pricing and technology. For example, a number of comments relate to the lack of detail in the current set of Principles on integrated urban water cycle management and/or the growing practice of integrating urban/regional planning with water planning. These and other suggestions for improvements to the Principles are outlined in detail below.

### Improving the content of the Principles

One of the challenges for achieving a set of Principles that is relevant across Australia is the different governance arrangements that exist for urban water planning, both between and within jurisdictions. One of the consequences of these arrangements is that the Principles’ potential audience is very broad, ranging from small utilities to state/government agencies. This was particularly highlighted in the case studies element of the review:

* Sydney Water was aware of the Principles but did not refer to them because the Principles were perceived as applying to planning undertaken by the New South Wales Metropolitan Water Directorate
* MidCoast Water took the view that the Principles’ primary stakeholders in some states (particularly New South Wales and Queensland) were the urban water regulators, and suggested that the Principles should be written and communicated with this in mind
* Wide Bay Water suggested the Principles should be made more accessible to all levels within water businesses.

Despite these somewhat conflicting views, most utilities and jurisdictions suggested making some changes in some aspects of the Principles. A number of utilities thought the wording of the Principles should be more detailed, with certain terms being defined. This would reduce ambiguity and make the Principles more meaningful to urban water planners, especially those in smaller organisations. For example, an explanation of the term ‘whole of water cycle’ would be useful, as would defining and expanding on the aspects and implications of ‘sustainability’. Interpretation of the term sustainability is particularly relevant in the context of ‘agreed levels of service’ (Principle 1) and ‘managing within sustainable limits’ (Principle 6).

Some utilities suggested that Principle 3’s recommendation to adopt a ‘partnership’ with customers is unrealistic and should be removed. The New South Wales Metropolitan Water Directorate and the NSW Office of Water disagreed, as they believed community consultation and engagement to be a very significant part of the development and review of water plans for Sydney, the Lower Hunter and the regional water utilities. A potential compromise could be to rewrite the Principle so that there is a clear distinction between stakeholder partnerships and community engagement and consultation.

Principle 7 (use pricing and markets to help achieve planned urban water supply–demand balance) was strongly supported by some, including the NSW Office of Water,[[10]](#footnote-10) but seen as problematic and/or inappropriate by a number of utilities, often because price setting and regulating was usually the responsibility of another entity. One jurisdiction thought that this was more of a pricing principle and was not really a feasible way of achieving optimal planning outcomes. Western Australia’s Water Corporation suggested that the principle could be split into two, one addressing price and a second covering the use of markets for procurement and management of water sources.

There were also a number of suggestions for new principles, mostly focusing on urban water management approaches that have become more widely used since the Principles’ introduction in 2008, such as integrated urban water management and water-sensitive urban design. For example, one jurisdiction suggested adding a principle that considers the economic and social objectives of urban water supply planning rather than only environmental sustainability objectives.

### Improving communication and uptake of the Principles

The Principles were released with very little explanatory text and without any accompanying guidance as to how planners could adapt them to suit local circumstances. This may have hindered their widespread awareness and/or implementation, at least among utilities.

Some jurisdictions and a number of the utilities involved in the case studies suggested that targeted engagement with government agencies and/or peak bodies (such as the Water Services Association of Australia) would help to achieve wider dissemination of the Principles. Wide Bay Water suggested the development of a framework and guidelines to roll out the Principles at all levels within water businesses, with accompanying promotion through water journals and magazines. This would help explain how and why the Principles are being used.

Interestingly, MidCoast Water in New South Wales wanted to have a better understanding of how the Principles and the NSW Best-Practice Management of Water Supply and Sewerage Framework align.[[11]](#footnote-11) This suggests a potential response in other jurisdictions where alternative forms of guidance are used, such as Queensland and the Northern Territory.

## Influence of the Principles on ‘new’ approaches to planning

Line of enquiry:

Jurisdictions and utilities were asked:

* how useful the Principles had been in advancing new approaches to planning, such as risk or adaptive planning, real options planning, water-sensitive urban design and integrated urban water management
* how the Principles could be amended to better support/advance these issues.

Most of the utilities reported that they had developed new approaches to planning independently of the Principles and, in many cases, that they had begun developing these approaches prior to the release of the Principles. For example, Sydney Water, Gosford and Wyong councils and Western Australia’s Water Corporation stated that their foundations for adaptive and risk-based planning were established before 2008.

This sentiment was echoed by some jurisdictions. For example, the 2004 NSW Best-Practice Management of Water Supply and Sewerage Framework, which pre-dates the Principles, requiresregional utilities to prepare and implement a 30-year integrated water cycle management strategy for their water supply, sewerage and stormwater services. Western Australia considered that jurisdictions and utilities hold an adequate level of knowledge and expertise regarding contemporary planning approaches and that therefore there is limited benefit in providing detail on new approaches to planning in the Principles.

Marsden Jacob undertook its own analysis of the incorporation of new approaches in utilities’ plans and found that, while organisations had considered risks in their planning processes, adaptive management approaches were only partially implemented. None of the organisations had utilised the more advanced frameworks and techniques of formal real options planning. Western Australia’s Water Corporation had investigated the use of real options analysis but found that the data requirements were too great. The adoption of integrated urban water management and particularly of water-sensitive urban design was limited by fragmented responsibilities for different aspects of the water cycle and for overall urban planning.

Other jurisdictions considered that the Principles did not provide adequate guidance on new approaches to planning, but were ambivalent as to whether the Principles would be an appropriate source of future guidance.

* The New South Wales Metropolitan Water Directorate pointed out that there is very little guidance in any form on how these approaches can be applied to water planning, as methods for incorporating risk can be highly technical and are not easily understood. Furthermore, modelling complex water systems requires very large data-processing and/or storage capacity, which is only recently becoming available.
* Queensland respondents suggested that a national approach is warranted to address knowledge gaps in this area, but were not clear how best to achieve this. They suggested though that at a minimum there needs to be nationally collaborative work on benchmarking.
* Western Australia suggested that local demonstration sites that promote the application of water-sensitive urban design would be more useful.

The literature review, **Appendix D**, revealed widespread agreement among Australian and international commentators that adaptive management approaches are more effective than traditional planning methods in dealing with the complex and varied challenges of contemporary urban water planning, and especially with climate change issues. Having agreed that adaptive management approaches are effective, recent commentary appears to have moved away from the ‘what’ of adaptive management towards the ‘how’, focusing on the socio-institutional aspects of urban water planning and the need to achieve a ‘transformational’ change in the structures and practices of urban water planning in order to achieve a sustainable supply–demand balance.

# Key Findings and recommendations

## Key findings

1. While the Principles are not used or quoted in every jurisdiction, current plans and planning processes reflect issues and concepts expressed by the Principles.
2. The Principles are generally seen as a useful set of national guidelines which are pitched at a broad enough level to be appropriate across time and space.
3. There is an acknowledged tension, however, between the need to be applicable to changing circumstances and the need to be substantial enough to be of material use yet not overly prescriptive.
4. The Principles have not been particularly instrumental in advancing new approaches to planning. Where local and political circumstances permit, there are a number of alternative ways to assist organisations to adopt these approaches. For example, some jurisdictions suggested creating opportunities for collaboration and/or establishing an analytical community to share information on the adoption of new approaches, combined with workshops to demonstrate tools, their application and outcomes.
5. Some Principles do not reflect all local circumstances or current government policy positions; for example, Principle 3: regarding stakeholder relationships, and Principle 7: using pricing and markets to achieve urban water supply–demand balance.
6. The Principles would become more accessible by defining some key terms and explaining them in the context of possible local circumstances.
7. A number of utilities and jurisdictions suggested using urban water peak bodies as the best way to promote the Principles in the future.
8. A literature review revealed very little recent work on urban water planning overall, and found no evidence of a set of national urban water planning guidelines similar to the Principles, at least in English-speaking countries. This indicates that the Australian Planning Principles were, and continue to be, groundbreaking.
9. The literature review revealed widespread agreement among Australian and international commentators that adaptive management approaches are more effective than traditional planning methods in dealing with the complex and varied challenges of contemporary urban water planning. Recent commentary seems to focus on the need for organisations and governments to re-examine their institutional arrangements in order to accommodate adaptive management and other ways of planning that have been developed since the Principles were agreed.

## Recommendations

1. That jurisdictions use the Review and its findings as a platform for the ongoing sharing of information on urban water planning concepts and practices.
2. That consideration be given to reviewing the wording of the Principles, taking into account, but not limited by, the following options:
   1. defining key concepts, especially regarding new approaches to planning, such as adaptive management or whole-of-cycle water management
   2. expanding the explanatory text that currently accompanies the Principles
   3. updating certain Principles to more closely reflect local arrangements; for example, clarifying the terms ‘stakeholders’ and ‘community’ in Principle 3
   4. considering the value of including explicit references to the various aspects of adaptive and risk-based management, which may extend to adding a Principle that focuses on these issues.

# Appendices

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| A | National Urban Water Planning Principles |
| B | Table of recommendations from the Productivity Commission, National Water Commission and Infrastructure Australia |
| C | Detailed comments from jurisdictions |
| D | Literature review |

APPENDIX A

## National Urban Water Planning Principles

National principles for urban water planning should be universally applicable when developing plans to manage the supply/demand balance of a reticulated supply for an urban population.

Key principles to achieve optimal urban water planning outcomes are:

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

The service level for each water supply system should specify the minimum service in terms of water quantity, water quality and service provision (such as reliability and safety).

Levels of service should not apply uniformly, but rather should be set for each supply system and potentially for different parts of an individual supply system. Agreement on levels of service will allow the community to understand how seasonal variability and climate change will impact on supply into the future and how different levels of service relate to costs. Measures undertaken to minimise risk and maximise efficiency in supplying water should be in accordance with agreed levels of service.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1. Periodically review urban water plans.

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

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

APPENDIX B

## Recommendations relevant to the review of the National urban water planning principles

**Productivity Commission Inquiry Report on Australia’s Urban Sector[[12]](#footnote-12)**

Recommendation 5.2

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

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

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

**National Water Commission Urban Water: Future Directions[[13]](#footnote-13)**

Recommendation 3

Governments should implement the national urban water planning principles, and compliance with the principles should be assessed independently and reported publicly.

Recommendation 3

Governments should remove all policy and legislative barriers to the even-handed consideration of recycled water and potable reuse, new dams, and rural–urban and inter-catchment water trading. This should include facilitating water trading by urban water service providers (and potentially by large customers).

Recommendation 6

Governments should review and amend policy settings to ensure that there is a cohesive approach that allows an efficient portfolio of supply- and demand-side measures to emerge and evolve over time, without direct and ad hoc government intervention. Responsible agencies and service providers should adopt risk-based approaches to supply–demand planning. All parties should strive for greater transparency.

**Infrastructure Australia Review of Urban Water Security Strategies[[14]](#footnote-14)**

Recommendation 2

Preparation of comprehensive national guidelines for urban water planning:

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

The guidelines should enforce that planning assessments should consider all possible demand management/supply augmentation options, ensuring that ‘policy bans’ do not limit the scope for independent appraisal of optimal supply development strategies.

1. Productivity Commission 2011, Inquiry Report on Australia’s Urban Water Sector [↑](#footnote-ref-1)
2. National Water Commission 2011, Urban Water in Australia: Future Directions [↑](#footnote-ref-2)
3. PricewaterhouseCoopers 2010, *Infrastructure Australia: Review of Urban Water Security Strategies* May 2010, Infrastructure Australia, , accessed 6 January 2012: [www.infrastructureaustralia.gov.au/water/files/UrbanWaterSecurityReportForInfrastructureAustralia.pdf](http://www.infrastructureaustralia.gov.au/water/files/UrbanWaterSecurityReportForInfrastructureAustralia.pdf) [↑](#footnote-ref-3)
4. National Water Reform Work Plan 2013–2017 [↑](#footnote-ref-4)
5. The term ‘utility’ is used throughout this report to mean any organisation that provides reticulated water and/or wastewater management to an urban area. [↑](#footnote-ref-5)
6. In March 2014 the New South Wales government announced the merger of the Sydney Catchment Authority and the State Water Corporation, which together manage the supply of bulk water across the entire state. [↑](#footnote-ref-6)
7. [www.nsw.gov.au](https://www.nsw.gov.au/) [↑](#footnote-ref-7)
8. Details regarding Victorian government planning processes are limited, as Victoria did not provide the necessary information. [↑](#footnote-ref-8)
9. This is not the case in regional New South Wales, where from August 2014 the NSW Office of Water will be providing a comprehensive planning dataset back to 1994–95 for each utility (www.water.nsw.gov.au). [↑](#footnote-ref-9)
10. See the NSW Best-Practice Management of Water Supply and Sewerage Framework, which strongly supports full cost recovery and the use of price signals to encourage efficient use of water services. [↑](#footnote-ref-10)
11. The NSW Office of Water clarified that the Best-Practice Framework addresses the requirements of the Principles. [↑](#footnote-ref-11)
12. Productivity Commission 2011, Inquiry Report on Australia’s Urban Water Sector [↑](#footnote-ref-12)
13. National Water Commission 2011, Urban Water in Australia: Future Directions [↑](#footnote-ref-13)
14. PricewaterhouseCoopers 2010, Infrastructure Australia: Review of Urban Water Security Strategies May 2010, Infrastructure Australia [↑](#footnote-ref-14)